

360iResearch

Telecom Energy Storage System Market

Global Forecast 2026-2032

MRR-7B550E008D7F | October 2026

Great Place To Work. Certified FEB 2026-FEB 2027 INDIA

Table of Contents

1. Preface 7
   1.1. Objectives of the Study 7
   1.2. Market Definition 7
   1.3. Market Segmentation & Coverage 8
   1.4. Years Considered for the Study 23
   1.5. Currency Considered for the Study 23
   1.6. Language Considered for the Study 23
   1.7. Key Stakeholders 24
2. Research Methodology 25
   2.1. Introduction 25
   2.2. Research Design 25
      2.2.1. Primary Research 26
      2.2.2. Secondary Research 26
   2.3. Research Framework 26
      2.3.1. Qualitative Analysis 27
      2.3.2. Quantitative Analysis 27
   2.4. Market Size Estimation 28
      2.4.1. Top-Down Approach 28
      2.4.2. Bottom-Up Approach 28
   2.5. Data Triangulation 28
   2.6. Research Outcomes 29
   2.7. Research Assumptions 30
   2.8. Research Limitations 30
3. Executive Summary 31
   3.1. Introduction 31
   3.2. CXO Perspective 32
   3.3. New Revenue Opportunities 33
   3.4. Next-Generation Business Models 34
   3.5. Industry Roadmap 35
4. Market Overview 37
   4.1. Introduction 37
   4.2. Key Growth Contribution 38
   4.3. Industry Ecosystem & Value Chain Analysis 53
      4.3.1. Supply-Side Analysis 54
      4.3.2. Demand-Side Analysis 55
      4.3.3. Stakeholder Analysis 55
   4.4. Market Dynamics 56
      4.4.1. Key Drivers 57
         4.4.1.1. Risk-based continuity obligations support application-specific purchasing 57
         4.4.1.2. Hybrid site-energy arrangements connect storage to managed power delivery 57
         4.4.1.3. Permitted grid participation adds a secondary commercial use 57

4.4.1.4. Customer-premises continuity creates a separate purchasing decision....58
4.4.2. Key Restraints....58
4.4.2.1. Buyer acceptance gates restrict the addressable purchasing relationship....58
4.4.2.2. Contractual allocation can weaken the purchaser's incentive to invest....59
4.4.2.3. Secondary-use rights and obligations constrain multipurpose participation....59
4.4.3. Key Opportunities....59
4.4.3.1. Accountable retrofit and lifecycle fulfillment....59
4.4.3.2. Contract-authorized managed-power sourcing....60
4.4.3.3. Information-accountable EU battery supply....60
4.4.3.4. Authorized secondary use of backup storage....60
4.4.3.5. Buyer-specific customer-premises fulfillment....61
4.4.4. Key Challenges....61
4.4.4.1. Retrofit interfaces complicate warranty and service accountability....61
4.4.4.2. Delivery and retirement require qualified commercial counterparties....61
4.4.4.3. Finished-battery information duties require upstream commercial coordination....62
4.5. Porter's Five Forces Analysis....62
4.6. PESTLE Analysis....64
4.7. Market Outlook....65
4.7.1. Near-Term Market Outlook (0-2 Years)....66
4.7.2. Medium-Term Market Outlook (3-5 Years)....67
4.7.3. Long-Term Market Outlook (5-10 Years)....68
4.8. Go-to-Market Strategy....69
5. Market Insights....71
5.1. Consumer Insights & End-User Perspective....71
5.2. Consumer Experience Benchmarking....71
5.3. Opportunity Mapping....72
5.4. Distribution Channel Analysis....75
5.5. Pricing Trend Analysis....76
5.6. Regulatory Compliance & Standards Framework....77
5.7. ESG & Sustainability Analysis....78
5.8. Disruption & Risk Scenarios....79
5.9. Return on Investment & Cost-Benefit Analysis....80
6. Cumulative Impact of Artificial Intelligence 2026....83
7. Telecom Energy Storage System Market, by Product Integration....84
7.1. Battery Cells and Monoblocs....88
7.2. Integrated Storage and Power Conversion Systems....93
7.3. Storage Banks and Racks....98
7.4. Storage Modules and Packs....103
7.5. Storage-Integrated Telecom Power Systems....108
8. Telecom Energy Storage System Market, by Storage Technology....114
8.1. Lead-Acid Batteries....120
8.1.1. Valve-Regulated Lead-Acid Batteries....125
8.1.1.1. Absorbent Glass Mat Batteries....131
8.1.1.2. Gel Batteries....136
8.1.2. Flooded Lead-Acid Batteries....141

8.2. Lithium-Ion Batteries 146
8.2.1. Phosphate-Cathode Lithium-Ion Batteries 151
8.2.2. Metal-Oxide-Cathode Lithium-Ion Batteries 156
8.3. Multi-Technology Storage Systems 161
8.4. Nickel-Based Batteries 166
8.4.1. Nickel-Cadmium Batteries 172
8.4.2. Nickel-Metal Hydride Batteries 177
8.4.3. Nickel-Zinc Batteries 182
8.4.4. Nickel-Iron Batteries 187
8.5. Sodium-Based Batteries 192
8.5.1. Sodium-Ion Batteries 197
8.5.2. Sodium-Nickel Chloride Batteries 202
8.5.3. Sodium-Sulfur Batteries 207
8.6. Metal-Air Batteries 212
8.7. Flow Batteries 217
8.8. Flywheel Storage 222
8.9. Supercapacitor Storage 227
9. Telecom Energy Storage System Market, by Network Application 232
9.1. Wireless Access Networks 237
9.2. Customer-Premises Network Equipment 242
9.3. Fixed Access Networks 247
9.4. Core and Switching Facilities 252
9.5. Transport Networks 257
9.6. Telecom Edge Computing 262
9.7. Shared Network Facilities 267
10. Telecom Energy Storage System Market, by Storage Purpose 273
10.1. Service Continuity Backup 277
10.2. On-Site Generation Integration 282
10.3. Multipurpose Operation 287
10.4. Electricity Cost Management 292
10.5. Peak Power Support 297
10.6. Grid Services 302
11. Telecom Energy Storage System Market, by Economic Buyer 308
11.1. Telecommunications Network Operators 313
11.2. Shared Telecommunications Infrastructure Owners 318
11.3. Customer-Premises Owners 323
11.4. Telecom Energy-Service Companies 329
11.5. Private Network Owners 334
11.6. Equipment Leasing Companies 339
12. Telecom Energy Storage System Market, by Installation Environment 345
12.1. Uncontrolled Enclosures 348
12.2. Climate-Controlled Enclosures 353
12.3. Sheltered Installations 358

12.4. Weather-Exposed Installations....363
13. Telecom Energy Storage System Market, by Ownership Model....369
13.1. User-Owned Equipment....372
13.2. Provider-Owned Managed Energy....378
13.3. Equipment Leasing....383
14. Telecom Energy Storage System Market, by Sales Channel....389
14.1. Direct Supply....392
14.2. OEM and Project-Integrator Supply....397
14.3. Distributor and Reseller Supply....402
15. Telecom Energy Storage System Market, by Grid Availability....408
15.1. Reliable Grid....410
15.2. Weak Grid....416
15.3. Off-Grid....421
16. Telecom Energy Storage System Market, by Power Interface....427
16.1. DC Interface....429
16.2. AC Interface....434
16.3. Combined AC/DC Interfaces....440
17. Telecom Energy Storage System Market, by Procurement Lifecycle....446
17.1. Replacement and Retrofit....449
17.2. First Deployment....454
17.3. Capacity Expansion....459
18. Telecom Energy Storage System Market, by Region....464
18.1. Asia-Pacific....471
18.2. Europe....491
18.3. North America....511
18.4. Africa....530
18.5. Middle East....549
18.6. Latin America....568
19. Telecom Energy Storage System Market, by Group....587
19.1. BRICS....591
19.2. NATO....610
19.3. G7....630
19.4. European Union....649
19.5. ASEAN....668
19.6. GCC....687
20. Telecom Energy Storage System Market, by Country....705
20.1. China....713
20.2. United States....731
20.3. India....749
20.4. Russia....766
20.5. Germany....783
20.6. Mexico....800

20.7. Brazil 817
20.8. France 835
20.9. Japan 852
20.10. United Kingdom 869
20.11. Canada 886
20.12. Italy 903
20.13. Spain 920
20.14. South Korea 937
20.15. Australia 954
21. Competitive Landscape 972
21.1. Market Share Analysis, 2025 972
21.2. Market Concentration Analysis, 2025 989
21.3. Recent Developments & Impact Analysis, 2025 993
21.4. Product Portfolio Analysis, 2025 995
21.5. Benchmarking Analysis, 2025 1003
22. Company Profiles 1009
22.1. EnerSys 1009
22.2. Polarium 1010
22.3. Shoto 1011
22.4. Vertiv 1013
22.5. Exicom 1014
22.6. HBL Engineering Limited 1015
22.7. ZTT 1015
22.8. Baterias Moura 1016
22.9. Precision Group 1017
22.10. Tempel Group 1018
22.11. Pixii AS 1019
22.12. IPT PowerTech 1020
22.13. Emtel Energy 1022
22.14. Phinergy 1022
22.15. FDK 1023
22.16. RFI 1024
22.17. HORIEN Salt Battery Solutions 1025
23. Companies Covered 1028
24. Key Experts 1062

1. Preface

1.1. Objectives of the Study

- Which suppliers have documented offerings relevant to the defined telecommunications applications, and at which Product Integration and Storage Technology categories do those offerings participate?
- What qualification, integration, service-continuity, and support conditions govern buyer acceptance, and what must be established before an economic buyer can retain or switch a supplier?
- Which regulatory permissions, ownership or licensing rights, distribution relationships, and service commitments govern commercial access for an identified offering in a particular jurisdiction?
- How do User-Owned Equipment, Equipment Leasing, and Provider-Owned Managed Energy allocate asset control, maintenance, replacement, and continuity responsibilities among the contracting parties?
- Which commercial requirements distinguish the defined network applications, installation environments, grid conditions, and power interfaces, and what evidence supports comparison of competing offerings within the same context?
- What buyer permissions, electricity-system relationships, and service obligations would allow storage to address On-Site Generation Integration, Electricity Cost Management, Peak Power Support, Grid Services, or Multipurpose Operation alongside telecommunications requirements?
- How do First Deployment, Capacity Expansion, and Replacement and Retrofit differ in procurement access, incumbent relationships, integration accountability, and the capabilities required of a supplier or intermediary?
- Which offering and contractual boundaries permit defensible comparison of component suppliers, integrated-system providers, leasing businesses, and managed-energy providers without conflating telecommunications storage with adjacent activity?

1.2. Market Definition

The Telecom Energy Storage System market covers storage offerings serving telecommunications applications within the Global geographic boundary. Included offerings extend from Battery Cells and Monoblocs through Storage Modules and Packs and Storage Banks and Racks to Integrated Storage and Power Conversion Systems and Storage-Integrated Telecom Power Systems. The scope includes the battery and nonbattery categories defined under Storage Technology, with applications spanning access, transport, core and switching, telecommunications edge, customer-premises network equipment, and shared network facilities.

The study includes storage for continuity, generation integration, electricity cost management, peak power support, grid services, and multipurpose operation. Its economic buyers comprise telecommunications network operators, shared infrastructure owners, telecommunications energy-service companies, private network owners, customer-premises owners, and equipment leasing companies. User ownership, leasing, and provider-owned managed energy remain distinct commercial relationships. Included operating contexts encompass Off-Grid, Weak Grid, and Reliable Grid conditions; Climate-Controlled Enclosures, Uncontrolled Enclosures, Sheltered Installations, and Weather-Exposed Installations; and DC Interface, AC Interface, and Combined AC/DC Interfaces.

The offering boundary excludes upstream raw materials, standalone generation assets, telecommunications equipment without an included storage offering, and energy storage outside the defined telecommunications applications. Power conversion remains included when part of a defined integrated offering. Licensing, installation, monitoring, maintenance, financing, and retirement arrangements are relevant where they govern access or obligations for that offering; their relevance does not extend the boundary to every adjacent activity. At shared facilities and under managed-energy arrangements, storage participation is distinguished from broader facility and service activity.

1.3. Market Segmentation & Coverage

Product Integration distinguishes the commercial form supplied: Battery Cells and Monoblocs, Storage Modules and Packs, Storage Banks and Racks, Integrated Storage and Power Conversion Systems, and Storage-Integrated Telecom Power Systems. These categories retain separately supplied components and integrated offerings while distinguishing the boundary at which supply and integration responsibilities must be examined.

Storage Technology includes Lead-Acid Batteries, comprising Flooded Lead-Acid Batteries and Valve-Regulated Lead-Acid Batteries, with Absorbent Glass Mat Batteries and Gel Batteries under the latter. Lithium-Ion Batteries includes Phosphate-Cathode Lithium-Ion Batteries and Metal-Oxide-Cathode Lithium-Ion Batteries. Nickel-Based Batteries includes Nickel-Cadmium Batteries, Nickel-Metal Hydride Batteries, Nickel-Zinc Batteries, and Nickel-Iron Batteries. Sodium-Based Batteries includes Sodium-Ion Batteries, Sodium-Nickel Chloride Batteries, and Sodium-Sulfur Batteries. The remaining categories are Metal-Air Batteries, Flow Batteries, Supercapacitor Storage, Flywheel Storage, and Multi-Technology Storage Systems. This classification establishes scope without assuming equal commercial maturity, availability, or interchangeability.

Network Application comprises Wireless Access Networks, Fixed Access Networks, Transport Networks, Core and Switching Facilities, Telecom Edge Computing, Customer-Premises Network Equipment, and Shared Network Facilities. The axis identifies the telecommunications function served, rather than treating every activity within a facility as part of the storage offering.

Storage Purpose comprises Service Continuity Backup, On-Site Generation Integration, Electricity Cost Management, Peak Power Support, Grid Services, and Multipurpose Operation. It distinguishes the intended commercial use and supports examination of combined uses

without assuming that permission, service compatibility, or economic benefit follows from inclusion.

Economic Buyer comprises Telecommunications Network Operators, Shared Telecommunications Infrastructure Owners, Telecom Energy-Service Companies, Private Network Owners, Customer-Premises Owners, and Equipment Leasing Companies. It identifies the party making the economic commitment, which need not be the network beneficiary, installer, or operating party.

Installation Environment comprises Climate-Controlled Enclosures, Uncontrolled Enclosures, Sheltered Installations, and Weather-Exposed Installations. It provides the context for examining applicable commercial qualification and support commitments without treating the environment label as proof of an offering's suitability.

Ownership Model comprises User-Owned Equipment, Equipment Leasing, and Provider-Owned Managed Energy. The axis organizes questions about asset control and responsibility for maintenance, replacement, and service obligations; the applicable allocation depends on the commercial relationship.

Sales Channel comprises Direct Supply, Distributor and Reseller Supply, and OEM and Project-Integrator Supply. It identifies the route through which the buyer obtains the offering and the counterparties whose distribution rights, integration responsibilities, or support commitments may affect access.

Grid Availability comprises Off-Grid, Weak Grid, and Reliable Grid. It describes electricity-supply context separately from enclosure conditions and intended storage purpose, allowing continuity and other commercial uses to be examined within the relevant setting.

Power Interface comprises DC Interface, AC Interface, and Combined AC/DC Interfaces. It supplies a compatibility lens for comparing commercial offerings and integration responsibilities within a defined telecommunications application.

Procurement Lifecycle comprises First Deployment, Capacity Expansion, and Replacement and Retrofit. It distinguishes purchasing situations in which incumbent relationships, existing integration commitments, and the qualification of an alternative supplier require separate examination.

These axes are independent views of the same market. An offering can be described across several axes, and those cross-classifications support commercial comparison rather than additive market opportunities.

Table 1. Global Telecom Energy Storage System Market Segmentation & Coverage

Segmentation	Coverage
Economic Buyer	• Telecommunications Network Operators • Shared Telecommunications Infrastructure Owners • Customer-Premises Owners • Telecom Energy-Service Companies • Private Network Owners • Equipment Leasing Companies
Grid Availability	• Reliable Grid • Weak Grid • Off-Grid
Installation Environment	• Uncontrolled Enclosures • Climate-Controlled Enclosures • Sheltered Installations • Weather-Exposed Installations
Network Application	• Wireless Access Networks • Customer-Premises Network Equipment • Fixed Access Networks • Core and Switching Facilities • Transport Networks • Telecom Edge Computing • Shared Network Facilities
Ownership Model	• User-Owned Equipment • Provider-Owned Managed Energy • Equipment Leasing
Power Interface	• DC Interface • AC Interface • Combined AC/DC Interfaces

Table 1 - continued

Segmentation	Coverage
Procurement Lifecycle	• Replacement and Retrofit • First Deployment • Capacity Expansion
Product Integration	• Battery Cells and Monoblocs • Integrated Storage and Power Conversion Systems • Storage Banks and Racks • Storage Modules and Packs • Storage-Integrated Telecom Power Systems
Sales Channel	• Direct Supply • OEM and Project-Integrator Supply • Distributor and Reseller Supply
Storage Purpose	• Service Continuity Backup • On-Site Generation Integration • Multipurpose Operation • Electricity Cost Management • Peak Power Support • Grid Services
Storage Technology	• Lead-Acid Batteries o Valve-Regulated Lead-Acid Batteries ▯ Absorbent Glass Mat Batteries ▯ Gel Batteries o Flooded Lead-Acid Batteries • Lithium-Ion Batteries o Phosphate-Cathode Lithium-Ion Batteries o Metal-Oxide-Cathode Lithium-Ion Batteries • Multi-Technology Storage Systems • Nickel-Based Batteries o Nickel-Cadmium Batteries o Nickel-Metal Hydride Batteries o Nickel-Zinc Batteries o Nickel-Iron Batteries • Sodium-Based Batteries o Sodium-Ion Batteries o Sodium-Nickel Chloride Batteries o Sodium-Sulfur Batteries • Metal-Air Batteries • Flow Batteries • Flywheel Storage • Supercapacitor Storage

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery

- Taxonomy evidence: The stationary telecom/ICT battery specification defines aqueous nickel-based batteries separately from lithium-ion cathode and anode labels, supporting the retained nickel parent without combining nickel-containing lithium-ion products into it. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: Nickel-cadmium is explicitly recognized in the stationary telecom/ICT battery classification and illustrated in a telecom-site example; recognition is not current purchasing volume. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: Nickel-metal hydride is explicitly included within the aqueous nickel-based stationary classification; the document does not establish current telecom equipment transactions. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: Nickel-zinc is explicitly included within the aqueous nickel-based stationary classification, supporting identity but not current telecom commercial materiality. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: Nickel-iron is explicitly included within the aqueous nickel-based stationary classification; this does not establish a currently purchased telecom package. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: An informative telecom-site example identifies an LFP storage module, strengthening telecom-specific recognition of the phosphate branch without establishing phosphate variants beyond LFP. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: The stationary telecom/ICT specification distinguishes cells, modules, packs, strings and battery systems; these terminology distinctions support assembly-level analysis, not a prescribed revenue segmentation. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: Modules and packs are separately defined storage assemblies; packs may include protective housing and associated electronics. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
- Taxonomy evidence: The specification distinguishes lithium-ion cathode labels from anode types, explicitly identifying LTO as an anode type. This supports avoiding overlapping cathode/anode siblings. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

2. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies

- Taxonomy evidence: The institutional study distinguishes standalone telecom power-asset businesses from connectivity operators and tower companies providing bundled power. This supports role-based buyer precedence, not current buyer shares. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
- Taxonomy evidence: Its definition requires owning power assets and supplying contracted power to telecom sites, excluding equipment-only, installation-only, and maintenance-only businesses. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
- Taxonomy evidence: Tower companies offering Power-as-a-Service are explicitly separated from standalone telecom energy-service companies, supporting the infrastructure-role distinction without establishing battery title under every contract. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
- Taxonomy evidence: The study uses its own outage-based definitions for connected-grid classes and distinguishes sites without national-grid connection. Those study boundaries are not a universal site-adequacy rule and are not adopted as global allocation thresholds. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
- Taxonomy evidence: The qualitative commercial discussion distinguishes operator-owned site power assets from Power-as-a-Service arrangements that shift capital responsibility to energy providers. Quantitative estimates and externally attributed research claims were not used. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
- Taxonomy evidence: The report describes telecom operators owning power assets while sometimes outsourcing their management, supporting separation of equipment ownership from maintenance responsibility. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
- Taxonomy evidence: The report describes tower-company and specialist-provider Power-as-a-Service models in which providers bear capital requirements and supply contracted power. Its discussion connects these models with battery energy storage. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

3. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule

   · Taxonomy evidence: The operator's customer agreement separately offers backup-source purchases for VoIP and fiber-terminal continuity, and its schedule identifies battery-backed micro-UPS packages. This is a dedicated premises telecom application, not generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Taxonomy evidence: Customers may purchase backup sources from the operator or a third-party retailer separately from monthly networking-equipment lease charges, supporting a subscriber purchasing role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Taxonomy evidence: Scheduled backup equipment is presented as a separate customer purchase rather than automatically included in the networking-equipment lease, supporting the user-purchase distinction without disclosing underlying operator acquisition values. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Taxonomy evidence: Although the lease's equipment definition mentions UPS equipment, scheduled backup sources are separately purchased. This document therefore does not establish a storage-specific lease of identified battery assets. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Taxonomy evidence: The explicit third-party retailer purchase option establishes a retail resale route for dedicated telecom premises backup, not a completed producer-direct sale. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

4. Elisa Estonia Deploys Elisa Industriq's Gridle Optimization to Support Grid Balancing and Strengthen Network Resilience

· Taxonomy evidence: The May xx.xx 2026 announcement reports deployment of battery management across Elisa Estonia's mobile base stations, establishing a dated wireless-access storage operating setting rather than 2025 equipment sales. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

· Taxonomy evidence: The described assets belong to the operator's mobile-network activity, supporting the operator asset-demand role rather than relying on a supplier portfolio. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

· Taxonomy evidence: The announced deployment maintains mobile-network operation during power disruptions, supporting continuity duty without verifying a particular backup-duration tier. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

· Taxonomy evidence: The operator identifies electricity-cost reduction as an economic use of its base-station battery assets; no savings percentage or equipment allocation is adopted. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

· Taxonomy evidence: The announcement identifies wholesale and balancing-market participation associated with telecom batteries in Estonia, supporting an observed grid-services setting rather than universal market eligibility. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

· Taxonomy evidence: Continuity, electricity-cost management, and grid balancing coexist in the deployment; the announcement does not establish co-primary purchase-contract duties or inseparable equipment values. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

5. NSW Government - Operational Telecommunications Equipment, Infrastructure and Services Scheme
   - Taxonomy evidence: The NSW procurement scheme places IP-MPLS items within a core-network purchasing label while separately listing transmission equipment. Consequently, national purchasing labels cannot alone determine the retained function-based access, transport, and core partition. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
   - Taxonomy evidence: The government purchasing scheme separates core, transmission, stationary terminal, and power-system equipment. Its power category expressly includes backup battery banks and lithium-ion storage. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
   - Taxonomy evidence: The scheme's power category separately lists backup battery banks, lithium-ion storage, rectifiers, inverters, and generators. Its broader power-equipment scope is not equivalent to storage-only revenue or proof that every listed item forms one purchased integrated package. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
   - Taxonomy evidence: The scheme identifies narrowband switching and broadband packet-core equipment as core-network categories. This is a purchasing classification, not storage-specific expenditure. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
   - Taxonomy evidence: Transmission and satellite-backhaul categories cover network transit and stationary gateway infrastructure, supporting function-based treatment rather than a separate geographic or satellite-platform axis. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
   - Taxonomy evidence: The scheme serves government-operated telecommunications networks and government-agency buyers, establishing a captive public-network purchasing setting distinct from public subscriber operators. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
6. ETSI ES 203 700 V1.1.1 - Sustainable Power Feeding Solutions for 5G Network
   - Taxonomy evidence: The core-room modernization discussion explicitly considers lithium batteries replacing lead-acid batteries. This establishes battery substitution as a recognized telecom investment concept, but not a completed replacement order, retirement record, or current expenditure. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))
   - Taxonomy evidence: The distinction between battery substitution and separately discussed battery expansion supports retaining replacement and additive expansion as different lifecycle concepts. Allocation still requires prior-asset and order-line evidence. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))
   - Taxonomy evidence: The aggregation and core-room discussion recognizes battery-bearing power solutions with both AC and DC load outputs, establishing a combined-interface configuration without proving present sales or market share. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))
   - Taxonomy evidence: The network-modernization discussion identifies battery expansion as an investment requirement when site demand increases. Its numerical cost and deployment estimates were not used. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))
7. IEC 60896-21:2004 - Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test
   - Taxonomy evidence: The international standard expressly covers stationary lead-acid cells and monobloc batteries used in telecom and related applications, establishing deployment-level product terminology. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))
   - Taxonomy evidence: The standard identifies stationary lead-acid equipment as a battery family used in telecommunications. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))
   - Taxonomy evidence: Its scope specifically addresses valve-regulated stationary lead-acid cells and monobloc batteries, including telecom use. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))

8. IEC 60896-11:2002 - Stationary lead-acid batteries - Part 11: Vented types - General requirements and methods of tests

   · Taxonomy evidence: This international publication separately identifies vented stationary lead-acid batteries, supporting the flooded/vented branch rather than combining it with valve-regulated equipment. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))

9. ETSI ES 202 336-11 V1.2.1 (2025-09) - Battery system with integrated control and monitoring information model

   · Taxonomy evidence: The telecom battery classification distinguishes a managed integrated battery unit from an integrated battery system containing connected units. ([etsi.org](https://www.etsi.org/deliver/etsi_es/202300_202399/xx.xx/xx.xx.01_60/es_20233611v010201p.pdf))

   · Taxonomy evidence: An integrated battery system can contain several battery units and optional master management, supporting a separately purchased assembled-storage level without equating management electronics to a complete power plant. ([etsi.org](https://www.etsi.org/deliver/etsi_es/202300_202399/xx.xx/xx.xx.01_60/es_20233611v010201p.pdf))

10. ETSI TS 102 121 V1.4.1 (2025-02) - Power distribution to telecommunications and datacom (ICT) equipment

    · Taxonomy evidence: The ICT power-distribution classification addresses UPS equipment and battery-backed power-conversion arrangements. It supports the architecture distinction, but not the proposed commercial package-allocation rule by itself. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

    · Taxonomy evidence: The specification separately describes telecom supply arrangements combining rectifiers, batteries and load supply, supporting the distinction between storage equipment and a broader telecom power system. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

    · Taxonomy evidence: The February 2025 telecom power-distribution framework separately recognizes AC and DC equipment interfaces and battery-supported configurations, supporting interface classification independently of storage chemistry. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

    · Taxonomy evidence: The framework recognizes conventional telecom DC distribution and higher-voltage DC interfaces. These are load-interface families rather than individual battery-cell voltages. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

    · Taxonomy evidence: The framework recognizes AC-powered telecom/ICT equipment and AC UPS arrangements with battery support. Telecom attribution remains necessary because its broader ICT scope includes adjacent computing demand. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

11. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
    - Taxonomy evidence: The stationary ICT overview identifies battery and supercapacitor families and presents a broader electrical-storage classification. Recognition does not establish market shares or current purchases. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Its electrochemical classification identifies flooded, AGM and gel lead-acid types. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: AGM is explicitly identified within the lead-acid classification. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Gel is explicitly identified within the lead-acid classification. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: The classification distinguishes sodium-ion and high-temperature sodium battery names within sodium-based storage. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Sodium-ion is explicitly named, without establishing current telecom sales. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Sodium-nickel chloride is separately named within sodium-based batteries. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Sodium-sulfur is separately named; direct telecom commercial relevance is not established by this classification. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: The August 2019 specification distinguishes interruption resilience, renewable self-consumption, and smart-grid uses of stationary telecom storage. It establishes use-case recognition, not purchasing shares. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Sections xx.xx and xx.xx describe storage supporting short supply disturbances and longer outages, supporting a continuity category without imposing duration tiers. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Section xx.xx identifies storage of excess renewable generation for subsequent telecom consumption in both grid-connected and off-grid settings. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Section xx.xx recognizes telecom-site storage providing grid power and frequency support. Recognition does not establish participation in every electricity market. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: The stationary ICT-storage overview distinguishes off-grid systems, unreliable or poor-quality grids, and good-quality utility supply. It does not establish the proposed global site-adequacy threshold. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: The overview explicitly recognizes energy storage in off-grid telecom networks. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: The overview identifies poor grid reliability or quality and frequent or long outages as distinct telecom-storage demand conditions. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
    - Taxonomy evidence: Good-quality grids with minimal outages remain eligible for telecom storage; reliable grid service does not eliminate storage demand. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

12. ANSI Standards Action - May 16, 2025 - BSR/IEEE 1657 stationary-battery project notice
    - Taxonomy evidence: The May xx.xx 2025 project notice identifies telecom stakeholders and four stationary nickel battery families. It is a standards-development notice, not evidence of completed product purchases. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
    - Taxonomy evidence: Nickel-cadmium is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
    - Taxonomy evidence: Nickel-metal hydride is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
    - Taxonomy evidence: Nickel-zinc is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
    - Taxonomy evidence: Nickel-iron is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
    - Taxonomy evidence: The notice also separately recognizes sodium-nickel chloride stationary batteries. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
13. IEC 62620:2014 - Secondary lithium cells and batteries for use in industrial applications
    - Taxonomy evidence: The international industrial lithium-battery standard expressly includes stationary telecom applications within its scope. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))
14. ITU-T Recommendation L.1221 (11/2018) - Innovative energy storage technology for stationary use - Part 2: Battery
    - Taxonomy evidence: The stationary telecom/ICT battery classification names LFP; its placement within a broader phosphate-cathode category is analytical. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
    - Taxonomy evidence: LCO, LMO, NCA and NMC are named lithium-ion families; their consolidation into a conventional oxide-cathode category is analytical. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
    - Taxonomy evidence: Metal-air batteries are recognized separately within the stationary battery overview; this does not resolve consumable-revenue treatment. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
    - Taxonomy evidence: Flow batteries are recognized as a distinct stationary battery family. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
15. ITU-T Recommendation L.1222 (05/2018) - Innovative energy storage technology for stationary use - Part 3: Supercapacitor technology
    - Taxonomy evidence: The international recommendation explicitly addresses supercapacitor storage for stationary telecommunications and access-network applications. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
    - Taxonomy evidence: The recommendation discusses supercapacitors integrated with batteries, independently establishing a combined-storage configuration without proving current package sales. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
    - Taxonomy evidence: Its application discussion identifies telecom supercapacitor modules, supporting technology-neutral module terminology. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
    - Taxonomy evidence: A supercapacitor bank is identified separately from individual modules. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))
16. Los Alamos National Laboratory Engineering Standards Manual - Chapter 7, Section D5090 - Revision 2, October 27, 2006
    - Taxonomy evidence: The October xx.xx 2006 infrastructure manual addresses critical telecommunications UPS loads and identifies batteries or flywheels as associated energy storage. This is historical infrastructure recognition, not current sales evidence. ([lanl.gov](https://www.lanl.gov/orgs/eng/engstandards/esm/electrical/Ch7_D5090-R2.pdf))
    - Taxonomy evidence: The manual distinguishes UPS equipment from storage delivered in a separate cabinet or rack, supporting the commercial distinction between storage assemblies and storage-conversion equipment. ([lanl.gov](https://www.lanl.gov/orgs/eng/engstandards/esm/electrical/Ch7_D5090-R2.pdf))

17. Sandia National Laboratories - EESAT 2007 Conference Archive

· Taxonomy evidence: The official conference archive lists a case-study presentation on vanadium-redox storage at a telecommunications point-of-presence. The agenda corroborates historical telecom relevance but does not independently establish deployment results or current availability. ([sandia.gov](https://www.sandia.gov/ess/events/conference-archive/eesat-2007))

18. ETSI EN 302 099 V2.2.1 - Powering of Equipment in Access Network

· Taxonomy evidence: The February 2021 standard addresses access-network powering and backup across network-side equipment, local exchanges, and customer premises, including copper and fiber access. ([etsi.org](https://www.etsi.org/deliver/etsi_en/302000_302099/xx.xx/xx.xx.01_60/en_302099v020201p.pdf))

· Taxonomy evidence: The standard separately identifies customer-premises equipment within access-network power protection, supporting its distinction from network-side access assets. ([etsi.org](https://www.etsi.org/deliver/etsi_en/302000_302099/xx.xx/xx.xx.01_60/en_302099v020201p.pdf))

· Taxonomy evidence: Section xx.xx identifies local batteries providing additional power when access traffic increases, establishing capacity supplementation distinct from outage backup or tariff savings. ([etsi.org](https://www.etsi.org/deliver/etsi_en/302000_302099/xx.xx/xx.xx.01_60/en_302099v020201p.pdf))

19. ETSI ES 203 228 V1.4.1 - Assessment of Mobile Network Energy Efficiency

· Taxonomy evidence: The April 2022 framework identifies base stations, backhaul, edge equipment, and site batteries within mobile-network assessment; these are network functions, not separate battery-sales totals. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

· Taxonomy evidence: The framework recognizes multiple base-station asset classes and associated site batteries, supporting wireless access as an application independent of radio generation. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

· Taxonomy evidence: Backhaul is identified as equipment interconnecting base stations with the core network, supporting a transport-function distinction from subscriber radio access. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

· Taxonomy evidence: Multi-access edge equipment is explicitly recognized; its inclusion does not independently identify a telecom-only storage-equipment allocation. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

· Taxonomy evidence: The assessment includes batteries alongside fixed-network, backhaul, and edge equipment. This establishes coexistence, not proof that one purchased storage bank serves all functions inseparably. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

20. U.S. Census Bureau - 2022 NAICS Manual

· Taxonomy evidence: The 2022 manual distinguishes telecommunications carriers, service resellers, agents, and equipment-leasing establishments. These roles support separating asset-demand buyers from intermediaries. ([census.gov](https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf))

· Taxonomy evidence: Wired, wireless, and satellite carrier classifications recognize network-service provision; resale-only classifications separately recognize firms that do not operate transmission infrastructure. The global buyer category adapts these role distinctions rather than copying national codes. ([census.gov](https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf))

· Taxonomy evidence: The machinery-and-equipment leasing classification expressly includes telecommunications equipment. It establishes a lessor business role, not a telecom-storage purchase or battery-ownership record. ([census.gov](https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf))

21. Federal Communications Commission - Ensuring Continuity of 911 Communications, Final Rule

- Taxonomy evidence: The October xx.xx 2015 final rule addresses backup for non-line-powered fixed residential voice service, establishing dedicated subscriber-premises telecom backup as a commercial application. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2015-xx.xx-xx.xx/pdf/2015-xx.xx.pdf))
- Taxonomy evidence: The historical rule expressly distinguishes providers offering backup solutions from subscribers choosing to purchase them. An offer requirement does not establish purchasing volume. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2015-xx.xx-xx.xx/pdf/2015-xx.xx.pdf))
- Taxonomy evidence: The rule's stated purpose is continued access to emergency calling during commercial power outages, supporting continuity as an economic storage duty. This is U.S.-specific evidence, not a universal regulation. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2015-xx.xx-xx.xx/pdf/2015-xx.xx.pdf))

22. Federal Communications Commission - Improving 9-1-1 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies

- Taxonomy evidence: The January xx.xx 2014 final rule includes central-office backup power for facilities serving emergency-call functions, including selective routing, and recognizes batteries among eligible backup sources. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2014-xx.xx-xx.xx/pdf/2014-xx.xx.pdf))
- Taxonomy evidence: The historical reliability framework links central-office backup to maintaining service functionality during loss of primary power; it does not require every backup arrangement to use battery storage. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2014-xx.xx-xx.xx/pdf/2014-xx.xx.pdf))

23. IFC - IPT PowerTech, Project 49095

- Taxonomy evidence: The project distinguishes telecom energy-service businesses from their mobile-operator and tower-company customers, supporting transaction-role classification rather than a supplier-customer list. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
- Taxonomy evidence: The disclosed energy-service role sources, operates, and maintains telecom energy assets; lithium-ion and lead-acid batteries are identified project components. Equipment integration alone is not the same buyer role. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
- Taxonomy evidence: The disclosure identifies telecom energy solutions combining grid supply, diesel generation, solar, and sourced batteries, corroborating a generation-storage integration setting without allocating equipment revenue. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))

24. Proparco Supports IHS Holding Limited in Successful Issuance of Dual Tranche Senior Notes Transaction

- Taxonomy evidence: The financing record distinguishes a shared communications-infrastructure owner that builds, leases, and operates towers from mobile-network customers using those assets. It does not independently establish who owns batteries under each tenancy or power contract. ([proparco.fr](https://proparco.fr/en/actualites/proparco-supports-ihs-holding-limited-successful-issuance-dual-tranche-senior-notes))

25. Elisa - Virtual Power Plant (DES)

- Taxonomy evidence: The operator describes using its own mobile base-station backup batteries, directly establishing an operator-deployed wireless-access storage setting. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
- Taxonomy evidence: The account concerns storage in the operator's own network, not only a supplier portfolio, supporting the operator asset-demand buyer role. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
- Taxonomy evidence: The operator describes using batteries to shift electricity purchases between lower- and higher-cost periods, establishing electricity-cost management as a distinct use. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
- Taxonomy evidence: The account identifies participation of base-station battery reserves in the electricity-grid balancing market. This is an observed operator setting, not a global participation estimate. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
- Taxonomy evidence: The described assets combine telecom backup, cost management, and grid balancing. This establishes combined uses but not co-primary purchase-contract duties or separate equipment values. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

26. ETSI TR 102 532 V1.1.1 - The Use of Alternative Energy Solutions in Telecommunications Installations

    · Taxonomy evidence: The June 2009 report recognizes telecom energy storage alongside alternative generation and hybrid power systems. It supports integration as an established application concept, not current purchasing volume or equipment-value allocation. ([etsi.org](https://www.etsi.org/deliver/etsi_tr/102500_102599/xx.xx/xx.xx.01_60/tr_102532v010101p.pdf))

27. ETSI EN 300 019-1-3 V3.1.1 (2026-05) - Stationary Use at Weatherprotected Locations

    · Taxonomy evidence: The May 2026 telecom environmental classification distinguishes weatherprotected locations by enclosure and climate control, supporting installation environment as a separate classification attribute. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

    · Taxonomy evidence: Class xx.xx recognizes temperature-controlled enclosed telecom locations without requiring humidity control, supporting the controlled-enclosure distinction. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

    · Taxonomy evidence: Class xx.xx recognizes enclosed telecom locations without temperature or humidity control. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

    · Taxonomy evidence: The weatherprotected-location definition distinguishes enclosed locations from sheltered locations where direct weather influences are not completely excluded. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

28. ETSI EN 300 019-1-4 V3.1.1 (2026-05) - Stationary Use at Non-Weatherprotected Locations

    · Taxonomy evidence: The May 2026 classification separately addresses stationary telecom equipment at non-weatherprotected locations, complementing the protected-location partition. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190104v030101p.pdf))

    · Taxonomy evidence: Non-weatherprotected locations are defined by direct exposure to weather; the classification covers open-air influences including precipitation and solar radiation. This concerns the deployment environment, not a claim that bare batteries are suitable for exposure. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190104v030101p.pdf))

29. BSNL Tender MM/BNO&M/BN-III/T-851/2025 - Development of the Middle Mile Network of BharatNet on a DBOM Model

    · Taxonomy evidence: The June xx.xx 2025 BharatNet procurement places network equipment and power-backup supply within a Design Build Operate and Maintain project contract, establishing a project-packaging supply path. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

    · Taxonomy evidence: The project implementation agency supplies network electronics and power-backup infrastructure; the package includes a lithium-battery-equipped hybrid UPS for network nodes. Only identifiable storage-equipment value belongs within this market. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

    · Taxonomy evidence: The contract distinguishes network creation and upgrading from subsequent capacity augmentation and end-of-life equipment replacement. These are procurement lifecycle distinctions, not disclosed storage-only allocations. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

    · Taxonomy evidence: Network development includes new electronics and power-backup supply. Establishing first storage deployment still requires a storage-specific prior-asset baseline. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

    · Taxonomy evidence: End-of-life solutions or equipment must be replaced with equivalent or higher specifications. Applicability to storage hardware is an inference from the contract's inclusion of battery-backed UPS equipment, not a verified storage-only replacement award. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

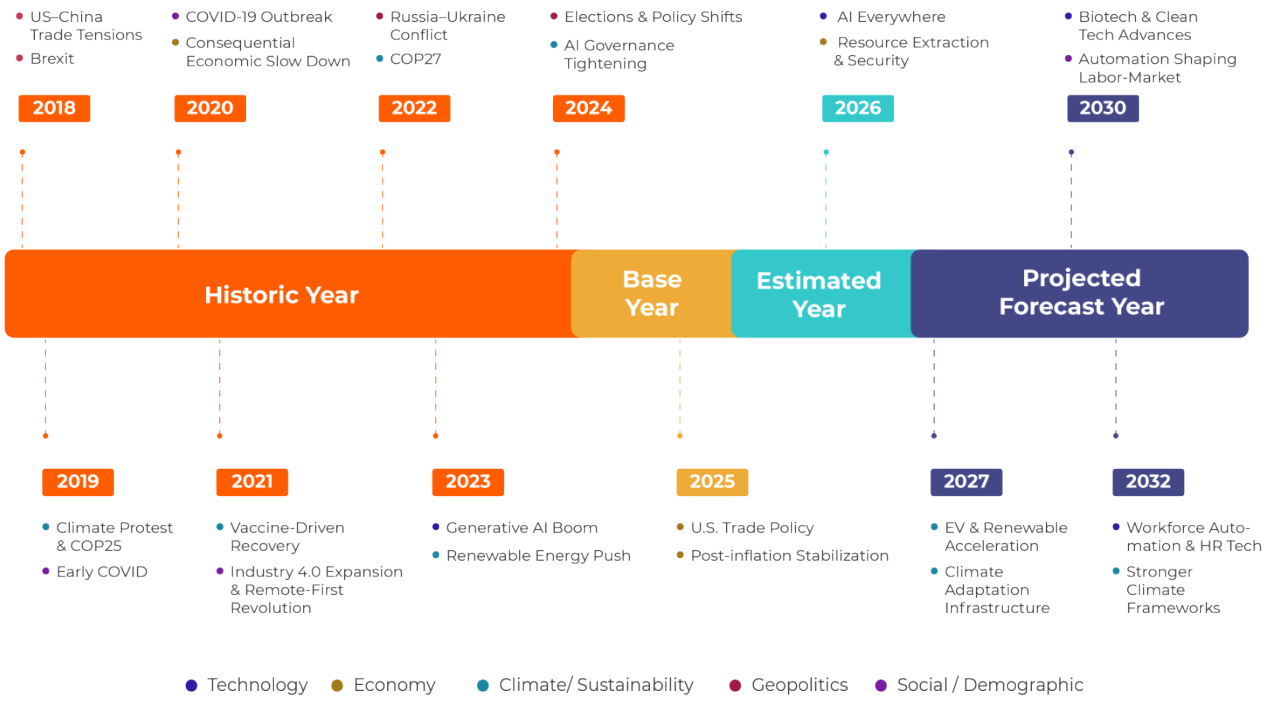
30. Commonwealth of Pennsylvania - Two-Way Radio Equipment & Services, Contract 4400016331, Change Notice 1

- Taxonomy evidence: The April xx.xx 2021 public contract change notice documents an authorized commercial resale path for network infrastructure and remote communications-site power equipment. ([emarketplace.state.pa.us](https://www.emarketplace.state.pa.us/FileDownload.aspx?file=xx.xx%5CChangeNotice.pdf))
- Taxonomy evidence: Contract schedules include communications-site backup batteries for DC power supplies through distributor product lines. Authorization letters identify the contract seller as an authorized reseller. This establishes a documented channel offering, not current shipment totals. ([emarketplace.state.pa.us](https://www.emarketplace.state.pa.us/FileDownload.aspx?file=xx.xx%5CChangeNotice.pdf))

1.4. Years Considered for the Study

The historical reference year is 2024, the base year is 2025, the estimated year is 2026, and the forecast endpoint is 2032. These roles distinguish historical observations, the base-period comparison, estimated-period assessment, and forward-looking interpretation.

Figure 1. Global Telecom Energy Storage System Market, Years Considered for the Study



1.5. Currency Considered for the Study

The reporting currency is USD. Monetary measures use absolute USD amounts.

1.6. Language Considered for the Study

The study is published in U.S. English.

1.7. Key Stakeholders

- Telecommunications Network Operators: Decisions on storage procurement, continuity obligations, compatibility with existing power arrangements, and the conditions for retaining or replacing suppliers.
- Shared Telecommunications Infrastructure Owners: Decisions on shared-facility storage responsibilities, counterparties' service commitments, allocation of asset risk, and procurement accountability.
- Telecom Energy-Service Companies: Decisions on Provider-Owned Managed Energy, storage procurement, maintenance and replacement accountability, and the division of responsibilities with telecommunications customers.
- Private Network Owners: Decisions on continuity requirements, vendor qualification, and control of storage assets serving private telecommunications applications.
- Customer-Premises Owners: Decisions on storage for Customer-Premises Network Equipment, responsibilities at the premises, and support through direct or intermediary supply.
- Equipment Leasing Companies: Decisions on asset ownership, lease obligations, replacement exposure, and the responsibilities transferred to or retained by equipment users.
- Storage suppliers and telecommunications power-system providers: Decisions about the integration levels and applications their documented offerings can address, and the commercial qualifications or service commitments needed for buyer access.
- Distributors, resellers, OEMs, and project integrators: Decisions on channel rights, access to economic buyers, integration accountability, and the boundary between component supply and the integrated customer offering.
- Regulators, conformity-assessment organizations, and electricity-system counterparties: Conditions concerning lawful access, recognized qualification, and rights associated with Grid Services in the relevant jurisdiction.
- Financiers, insurers, and end-of-life service providers: Exposure to asset ownership, continuity obligations, warranty and replacement responsibility, and commercial obligations associated with storage retirement.

2. Research Methodology

2.1. Introduction

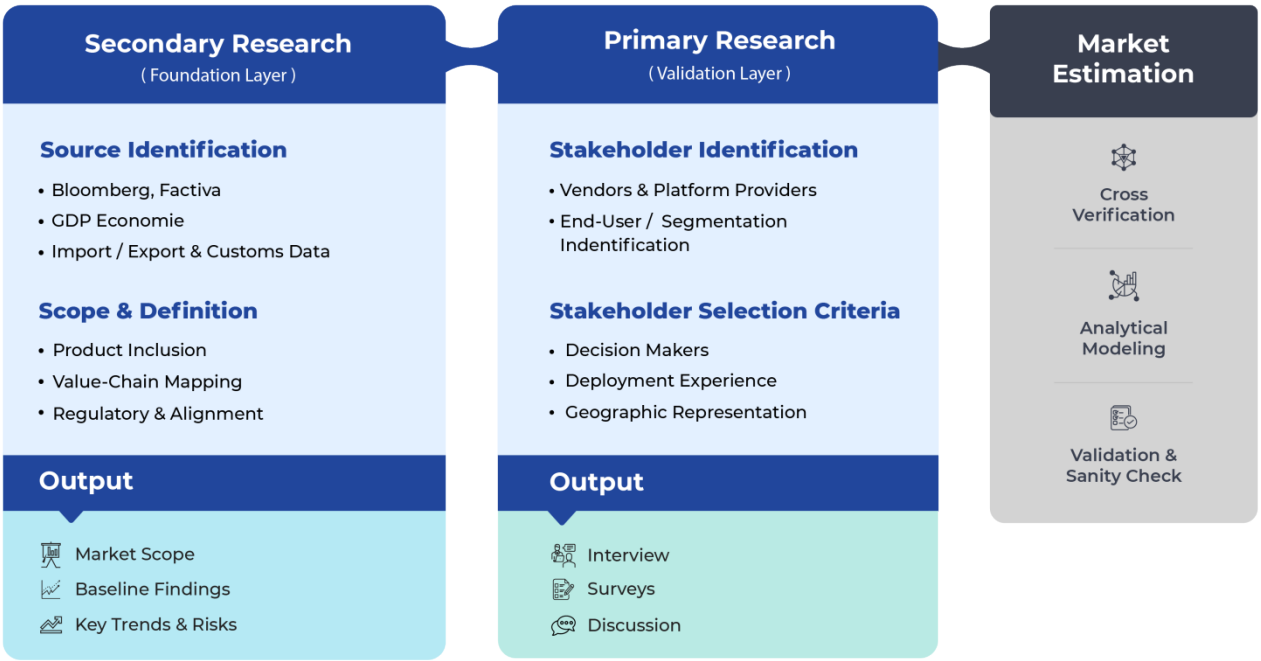
The Telecom Energy Storage System study frames storage as a commercial offering within telecommunications infrastructure. Its approach connects the supplied offering, the party making the economic commitment, the telecommunications application, and the obligations governing access and continued service. Analyst-led primary research provides a qualitative challenge layer, while the broader analytical purpose is to distinguish observed business conditions from conditional economic interpretation.

2.2. Research Design

The study's commercial questions require evidence specific to the relationship being examined: supplier and offering, buyer and qualification requirement, owner and service responsibility, or jurisdiction and access condition. Comparison boundaries follow the defined product integration level and telecommunications application, with ownership, channel, installation environment, grid availability, power interface, and procurement lifecycle retained as separate context.

A fact must be interpreted within its effective period and scope. Evidence concerning one supplier, buyer, facility, or country can establish a bounded case without establishing a Global condition. Offering identity and legal permission are distinct from interpretations of switching, bargaining, or economic benefit, particularly where the relevant commercial responsibilities remain conditional.

Figure 2. Global Telecom Energy Storage System Market, Research Design



2.2.1. Primary Research

The analyst team conducted primary research as a qualitative challenge layer for market definition, segmentation, demand conditions, adoption barriers, and competitive interpretation. This work tested analytical assumptions and sharpened explanations of market mechanisms without serving as standalone support for numerical estimates.

The qualitative challenge layer is evaluated alongside secondary evidence within the accepted market scope. It informs conditional market explanations and hypotheses for subsequent quantitative analysis. Numerical estimates require their own supporting evidence, and a forecast derived from a qualitative assumption does not independently validate that assumption. Final interpretation must reconcile the qualitative findings with the completed quantitative results.

2.2.2. Secondary Research

Official supplier portfolios and dated business communications are relevant to named offerings and stated commercial commitments. Mandatory filings are relevant to disclosed ownership, licensing, and business activity; buyer policies and public awards to specified qualification conditions and awarded relationships; and official legal or regulatory records to permissions and obligations within their jurisdictions.

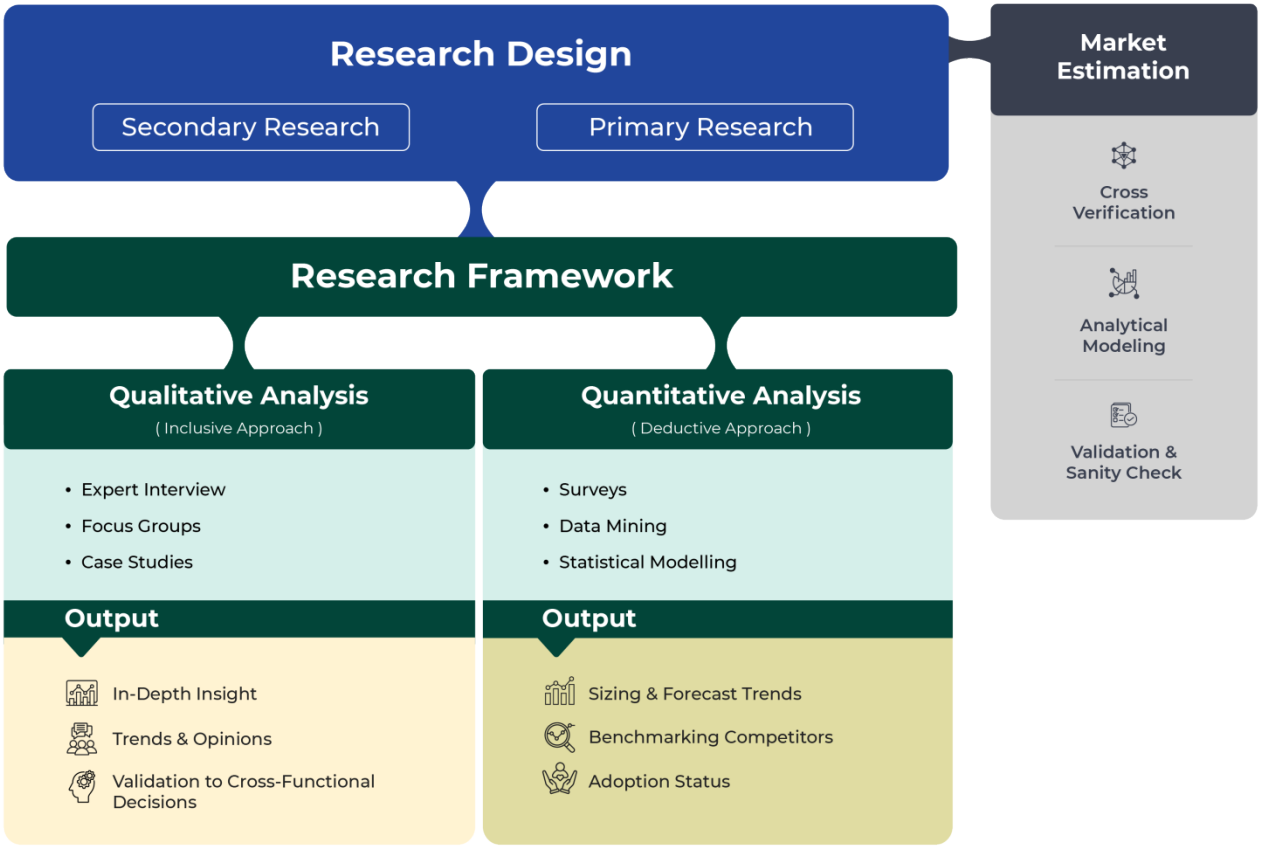
These evidence roles have different limits. An offering description does not establish buyer acceptance, an award does not by itself establish completed deployment, and an authorization does not establish adoption. Ownership, licensing, distribution, and service commitments require support for the exact relationship under discussion rather than inference from a company's broader portfolio or geographic presence.

2.3. Research Framework

The framework is intended to connect the market boundary and offering hierarchy with the commercial actors and relationships relevant to each telecommunications application. Product Integration and Storage Technology identify what is being compared; Economic Buyer, Ownership Model, and Sales Channel identify who commits, controls, and supplies; the remaining axes establish application, purpose, operating context, interface, and purchasing lifecycle.

Competitive interpretation should compare like commercial roles. Component supply, integrated system provision, distribution, leasing, and managed energy are different positions in the value chain, even when associated with the same storage deployment. Conclusions about access or competitive alternatives depend on the rights, qualifications, and obligations demonstrated for the relevant position.

Figure 3. Global Telecom Energy Storage System Market, Research Framework



2.3.1. Qualitative Analysis

Qualitative analysis is intended to explain how buyer qualification, integration accountability, continuity commitments, replacement responsibilities, and channel access influence choices among the defined product integration and ownership categories. Technology comparisons concern commercial suitability for a stated telecommunications application rather than presumed interchangeability between category labels.

Switching and adoption explanations require identifiable buyer conditions. An alternative offering may change integration, service, or asset responsibility as well as storage technology; the interpretation should therefore distinguish who gains discretion, who assumes obligations, and which conditions could reverse the commercial conclusion.

2.3.2. Quantitative Analysis

Quantitative interpretation requires an identified offering boundary, telecommunications application, period, geography, and commercial role for each contributing observation. The absolute USD reporting convention establishes presentation; it does not establish how a diversified supplier's disclosure should be attributed to telecommunications storage or how an integrated offering should be separated.

Comparisons must distinguish separately supplied components from their subsequent inclusion in modules, racks, or integrated systems. The segmentation axes describe the market

from different perspectives and are not separate totals to be added. A qualitative judgment about access, adoption, or suitability remains a hypothesis unless independently supported by evidence appropriate to the corresponding quantitative conclusion.

2.4. Market Size Estimation

A defensible monetary assessment depends first on the commercial perimeter. Separately supplied storage components, assembled storage offerings, and integrated telecommunications power systems are included, but their successive supplier-to-customer relationships are not automatically independent financial contributions. Attribution requires a distinction between telecommunications storage, unrelated business activity, and broader integrated or managed offerings.

Any estimate must retain its historical, base, estimated, or forecast role and make material scope assumptions explicit. A disclosed financial observation, an analytical attribution, and a forecast hypothesis are different forms of information; agreement with a qualitative explanation does not make any of them independently established.

2.4.1. Top-Down Approach

A top-down perspective can examine whether broader business or infrastructure disclosures contain activity consistent with the telecommunications storage boundary. Broad battery, energy, telecommunications equipment, or managed-service aggregates cannot be treated as this market without support for the relevant application and offering content.

The usefulness of that perspective depends on separable scope, geography, period, and commercial role. Where separation is not defensible, the broader disclosure provides context rather than an allocation. A technology label or telecommunications customer reference does not justify assigning an entire business activity to the market.

2.4.2. Bottom-Up Approach

A bottom-up perspective can organize evidence around identified suppliers, named offerings, documented buyers, and defined commercial relationships. An advertised storage category identifies a potential participant for examination, not an established telecommunications transaction; a buyer relationship supports only the offering and contractual scope actually established.

Aggregation would require reconciliation of Direct Supply, Distributor and Reseller Supply, and OEM and Project-Integrator Supply, together with component-to-system relationships. Alternative routes to the same offering do not independently establish additional market activity. Provider-Owned Managed Energy also requires a distinction between the storage offering and the broader service relationship.

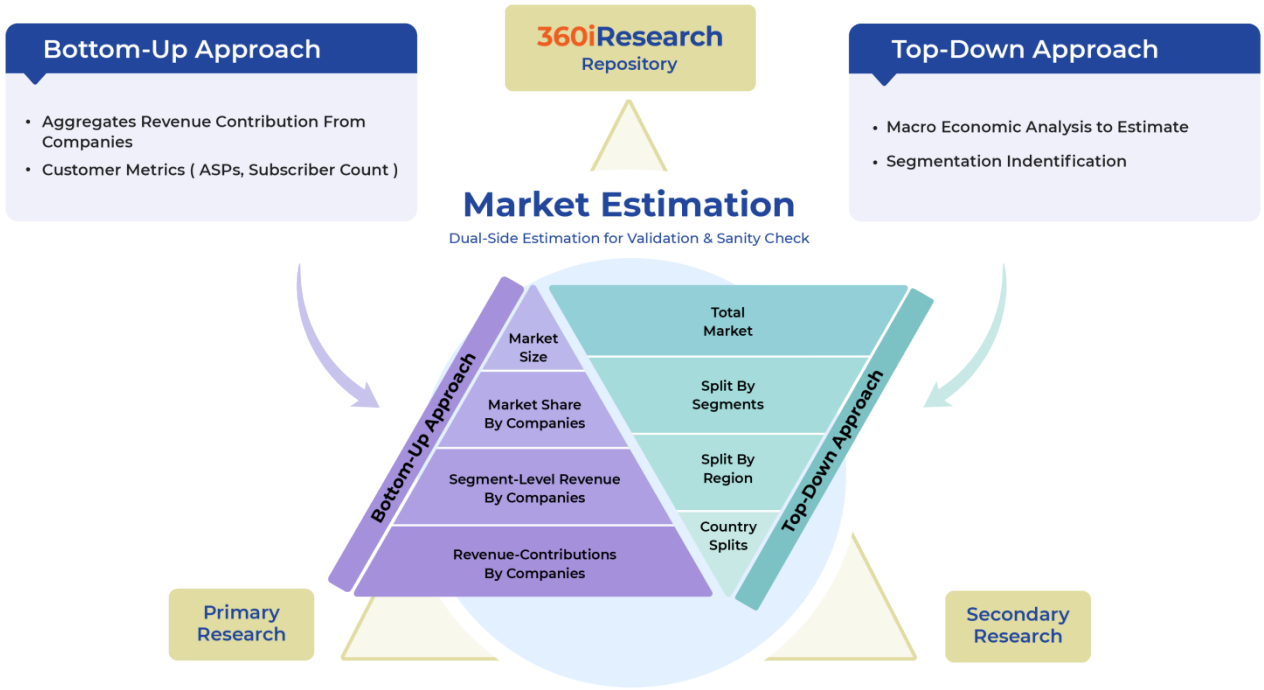
2.5. Data Triangulation

Triangulation is intended to examine whether independently grounded views of a telecommunications storage relationship agree on offering identity, buyer role, jurisdiction,

period, and commercial scope. A portfolio description, a contractual record, and an authorization answer different questions; their agreement can narrow an interpretation but cannot replace the particular fact each source is competent to establish.

Conflicting views require attention to boundaries and effective periods before reconciliation. Repetition of one underlying claim is not independent corroboration, and qualitative agreement cannot validate a numerical estimate. Material disagreement calls for a bounded interpretation with explicit conditions rather than forced convergence.

Figure 4. Global Telecom Energy Storage System Market, Data Triangulation



2.6. Research Outcomes

The intended outcomes are decision-useful distinctions among documented commercial participation, buyer qualification, market-access conditions, ownership responsibilities, and procurement options within the Global Telecom Energy Storage System market. These distinctions should help buyers compare obligations, suppliers identify prerequisites for addressing a telecommunications application, and investors distinguish an established business position from a proposed opportunity.

Decision support should identify the affected actor, the commercial choice, its prerequisites, the responsibilities or alternatives accompanying it, and the conditions that could change the conclusion. Conditional options and unresolved contractual questions remain distinct from established market outcomes.

2.7. Research Assumptions

- An offering's participation requires a documented connection to a defined telecommunications application; a supplier's broader battery, power, or energy portfolio is not assumed to belong wholly to this market.
- The economic buyer, asset owner, operating party, and bearer of maintenance, replacement, and continuity obligations are treated as distinct roles unless the commercial relationship establishes that they coincide. Ownership-model conclusions depend on that allocation.
- For Multipurpose Operation, uses beyond continuity remain conditional on applicable commercial rights and compatibility with telecommunications service obligations. Additional uses are not assumed to justify restricted access or additional responsibilities.
- Installation Environment, Grid Availability, and Power Interface are separate descriptors. An enclosure or interface category does not establish a site's electricity-supply conditions.
- Historical, base, estimated, and forecast periods retain separate roles. Continuation of an earlier purchasing practice, supplier commitment, or regulatory condition into a later period requires support rather than automatic extrapolation.
- Financial comparisons between separately supplied components and integrated offerings require distinguishable commercial boundaries. Nested supply relationships and bundled non-storage activities are not assumed to support additive totals.

2.8. Research Limitations

- An advertised or announced offering does not establish lawful availability in every jurisdiction or acceptance by a telecommunications buyer. Market-entry conclusions require support for the applicable commercial status and buyer conditions.
- Company-wide or broad energy-business disclosures can be relevant context without isolating telecommunications storage or a comparable integration level. Where attribution cannot be established, those disclosures cannot resolve the narrower market comparison.
- Where warranty scope, integration accountability, service commitments, or transfer of asset risk are not established, procurement and ownership-model conclusions remain conditional on the relevant contractual responsibilities.
- Classification within a storage technology or product integration category does not establish commercial suitability for every installation environment, grid condition, network application, or power interface. Application-specific comparisons require the relevant qualification evidence.

3. Executive Summary

3.1. Introduction

The Global Telecom Energy Storage System market connects storage purchases with responsibility for telecommunications continuity and energy management. EnerSys' PowerSafe mSeries combines telecom batteries and racking, whereas Vertiv's NetSure IPE incorporates storage within a telecom power system. These are different purchasing boundaries, not equivalent continuity-service commitments. Buyers must decide which integration and lifecycle responsibilities to retain and which to purchase through expressly included support.

Commercial catalysts also differ by operating context. UK risk-based resilience expectations, financed telecom power programs in Ethiopia, Liberia, and Sierra Leone, and Finnish secondary-use permission illustrate distinct purchasing rationales rather than a universal replacement cycle. Storage can remain alongside generation, and electricity-market permission does not transfer automatically to another operator or jurisdiction. The decisive commercial events are buyer acceptance, verified sourcing authority, completed fulfillment, and enforceable allocation of support and benefits-not a portfolio announcement or financing commitment alone.

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys
   · EnerSys advertises PowerSafe mSeries with integral racking for telecommunications, supporting a battery-package boundary distinct from broader power services. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
2. Vertiv NetSure IPE Series
   · Vertiv advertises NetSure IPE as a telecom power system incorporating lithium battery backup, establishing a system-level supply boundary. ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))
3. Sales & Services | EnerSys
   · EnerSys separately advertises installation, maintenance, and recycling for communications-related customers; this supports distinguishing equipment supply from contracted lifecycle support. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))
4. Helios Towers Sustainable Business Addendum 2025
   · Helios Towers reports using batteries and renewables while retaining fossil-fuel dependence at many sites, challenging complete generation-displacement assumptions. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))
5. Reserve Markets | Fingrid
   · Fingrid requires a reserve-market agreement, establishing an access relationship beyond ownership or advertised functionality. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
6. Virtual Power Plant | Elisa
   · Elisa reports Fingrid permission for Finnish base-station backup batteries to participate in grid balancing; this is jurisdiction-specific company-reported permission. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

7. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · Ofcom expects UK communications providers to align resilience plans and investment with assessed risks, supporting differentiated rather than uniform purchasing. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
8. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   · IFC announced financing for IPT PowerTech's solar- and battery-based telecom power activity in Ethiopia, Liberia, and Sierra Leone. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

3.2. CXO Perspective

For telecom operators, capital approval should follow the protected service, accepted equipment boundary, and enforceable replacement and support remedies. A consolidated retrofit proposal can close missing responsibilities; direct equipment supply remains preferable where accepted integration and local support already exist. Infrastructure owners and energy-service financiers face a different decision: whether the party funding storage retains the intended benefit. Helios Towers' disclosed service-contract escalators illustrate why cost protection does not settle storage-benefit allocation. Benefit-sharing and replacement funding should be agreed before commitment.

Manufacturers and entrants must address purchasing authority and supplier approval separately. Vodafone's high-risk approval specialists operate independently of commercial relationship staff, while Vertiv's Polarium listing advertises a particular integration route rather than unrestricted access for other suppliers. Entry through an integrator requires an actual supplier agreement, offering acceptance, and clearly included support. Managed-power sourcing should follow the party granted equipment-selection authority. IPT PowerTech's country-level seller and guarantor attribution remain unresolved, and overlapping IPT labels should not be treated as independent contractual alternatives.

Sources & Evidence

1. Sales & Services | EnerSys
   · The advertised lifecycle portfolio supports comparing consolidated support with retained buyer capabilities, without establishing inclusion in a particular transaction. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))
2. Telecom Lithium Batteries | Vertiv
   · Vertiv lists Polarium Batteries and advertises NetSure Control Unit monitoring, establishing a named integration proposition rather than open access for unrelated suppliers. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
3. Supply Chain | Vodafone
   · Vodafone's high-risk supplier approval specialists operate separately from commercial relationship staff; supplier-policy commitments form contractual purchasing conditions. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
4. Helios Towers - Unaudited Results for the Six Months Ended June 30, 2025
   · Helios' first-half 2025 results disclose CPI and power-price escalators in customer contracts; these do not establish storage-specific benefit allocation. ([heliostowers.com](https://www.heliostowers.com/media/0hibxjme/helios-towers-rns-vfinal.pdf))

5. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
   · IFC describes IPT's telecom sourcing, operation, and maintenance role and identifies IPI Group Holding Limited, without assigning transaction-specific country sellers or guarantors. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
6. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   · The announcement uses IPT PowerTech and IPT PowerTech Group for the financed business; it does not assign country sellers or guarantors. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

3.3. New Revenue Opportunities

Revenue options center on accountable Replacement and Retrofit for network owners with integration or local lifecycle gaps, contract-authorized supply to telecom energy-service companies, and distinct funding-scoped institutional network-backup and eligible residential replacement offers for Customer-Premises Owners. Baterias Moura's Brazilian services illustrate local lifecycle packaging, not uniform regional coverage. Grid-service income remains conditional on market agreements, asset authority, retained benefits, and continuity protection. EU passport information coordination supports qualifying finished-battery access; it is not an independently established stand-alone revenue stream. The Opportunity Mapping section details these routes and when equipment-only supply, continuity-only purchasing, or deferral is preferable.

Sources & Evidence

1. Sales & Services | EnerSys
   · Separately advertised installation, maintenance, and recycling provide a capability premise for conditional retrofit and lifecycle packaging. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))
2. Telecom Lithium Batteries | Vertiv
   · The documented controller-linked battery proposition makes integration acceptance and monitoring responsibility relevant to conditional retrofit packaging. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
3. Reserve Markets | Fingrid
   · Reserve participation requires an agreement and fulfillment of its commitments; hardware ownership alone does not establish income rights. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
4. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   · Lebanon Community School District's funding-year 2026 solicitation requested internal-network UPS equipment and separated eligible from district-funded commitments; it establishes a purchasing example, not an award. ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))
5. Digital Product Passport for Batteries | European Commission
   · The finished-battery economic operator holds passport creation and maintenance responsibility, supporting supply-information coordination rather than proving an additional stand-alone business. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))

6. How to buy a phone modem battery case for your Xfinity Voice service
   · Xfinity's premises voice-backup offer is limited to eligible equipment and retains upstream-network availability dependence, supporting a bounded residential purchasing proposition. ([xfinity.com](https://www.xfinity.com/support/articles/getting-a-new-battery))
7. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
   · IPT's documented sourcing and continuing-service role supports a conditional service-provider supply route; equipment-selection authority remains agreement-specific. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
8. Serviços Estacionários | Baterias Moura
   · Baterias Moura advertises Brazilian installation, monitoring, reverse logistics, and destination documentation, supporting local lifecycle packaging rather than uniform regional coverage. ([moura.com.br](https://www.moura.com.br/servicos-estacionarios))

3.4. Next-Generation Business Models

User-Owned Equipment can involve outsourced management, while Provider-Owned Managed Energy can combine provider financing with continuing power delivery. IFC's 2021 telecom-energy analysis documents that distinction, and EnerSys separately advertises Equipment Leasing options. Provider financing can shift capital responsibility but increase dependence and reduce equipment-selection freedom. These models do not establish storage-specific title, maintenance, replacement, or end-of-term obligations; a lease proposal is not an executed continuity-service contract.

Software-enabled secondary-use services add an electricity-market relationship alongside telecom backup. Elisa reports Finnish permission for its base-station batteries, while Fingrid requires a valid reserve agreement and allows delegated commercial administration. This establishes a jurisdiction-specific option, not portable eligibility or assured benefits. Asset controllers should secure participation rights, software and oversight responsibilities, retained benefits, and a secondary-service exit arrangement that preserves primary continuity. Continuity-only procurement remains preferable when those additional commitments cannot be secured.

Sources & Evidence

1. Reserve Markets | Fingrid
   · Fingrid permits delegated commercial administration while retaining the reserve-provider agreement, supporting a separate secondary-service relationship. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
2. Virtual Power Plant | Elisa
   · Elisa describes software-controlled telecom backup batteries with Finnish balancing-market permission, supporting an evidenced secondary-use service option rather than portable eligibility. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
3. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · Ofcom identifies software-related outage risks; this supports retaining telecom oversight when adding software-enabled secondary services. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

4. EnerSys Financial Solutions
   · EnerSys advertises capital and operating lease structures; the offer does not establish an executed telecom-storage lease or transferred lifecycle duties.
   ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
5. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
   · IFC's September 2021 analysis distinguishes operator-owned assets with outsourced management from provider-financed power delivery under service-level agreements. These model observations do not settle an individual contract.
   ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

3.5. Industry Roadmap

For 2026-2027, preparation centers on distinct access milestones. Qualifying EU industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service require a battery passport from February xx.xx 2027; relevant battery due-diligence obligations have a separate August xx.xx 2027 application date. Finished-battery economic operators should establish classification, upstream information rights, and continuing information responsibility. The due-diligence postponement does not defer the passport milestone. UK procurement should translate Ofcom's June xx.xx 2026 guidance into risk-proportionate commitments rather than a uniform replacement campaign.

For 2028-2029, broader managed-power commitments should follow verified country counterparties, awarded sourcing responsibilities, accepted delivery, and continuing service agreements. IFC's IPT PowerTech financing relationship in Ethiopia, Liberia, and Sierra Leone provides an identifiable commercial starting point, not a completion schedule for this horizon. Multipurpose extensions should be reassessed at agreement renewal, when participation rights, asset authority, and retained benefits can be confirmed.

For 2030-2032, operators should compare buyer-approved continued use, replacement, and retirement at renewal. Helios Towers' documented refurbishment and recycling practices challenge automatic replacement assumptions. Acceptance decisions, revised support terms, permission changes, and documented asset disposition are practical commitment triggers. These horizons describe conditional commercial choices, not scheduled deployments or an inevitable technology transition.

Sources & Evidence

1. Helios Towers Sustainable Business Addendum 2025
   · Helios documents battery repair or refurbishment and approved recycling when further use is unsuitable, supporting alternatives to automatic replacement.
   ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))
2. Reserve Markets | Fingrid
   · Continuing agreements and nationally governed market terms support reassessing participation rights at renewal, not extrapolating from functionality.
   ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))

3. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · The June xx.xx 2026 guidance supports risk-proportionate UK commitments and permits other appropriate compliance approaches.
   ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
4. Digital Product Passport for Batteries | European Commission
   · The Commission assigns passport creation and maintenance to the economic operator placing the finished battery on the market, not individual component suppliers.
   ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))
5. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   · Industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service require a passport from February xx.xx 2027.
   ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/news/guidance-support-preparations-digital-batteries-passport-2026-xx.xx-21_en))
6. Simplification: Council Adopts Law to Stop the Clock on Due-Diligence Rules for Batteries
   · The Council's July xx.xx 2025 adoption announcement postpones relevant battery due-diligence application until August xx.xx 2027, separately from passport requirements.
   ([consilium.europa.eu](https://www.consilium.europa.eu/en/press/press-releases/2025/xx.xx/xx.xx/simplification-council-adopts-law-to-stop-the-clock-on-due-diligence-rules-for-batteries/))
7. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   · The financed country program is an identifiable commercial relationship, not a published completion schedule for 2028-2029.
   ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

4. Market Overview

4.1. Introduction

The Global Telecom Energy Storage System market connects storage product purchases with telecommunications continuity and energy-management commitments. ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ These examples establish different commercial supply boundaries, not supplier leadership or product equivalence.

The study retains its battery and nonbattery Storage Technology categories across network and customer-premises applications. Service Continuity Backup, On-Site Generation Integration, Electricity Cost Management, Peak Power Support, Grid Services, and Multipurpose Operation represent distinct purchasing purposes. ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪

Figure 5. Global Telecom Energy Storage System Market Size, 2017-2040 (USD Million, Growth %)

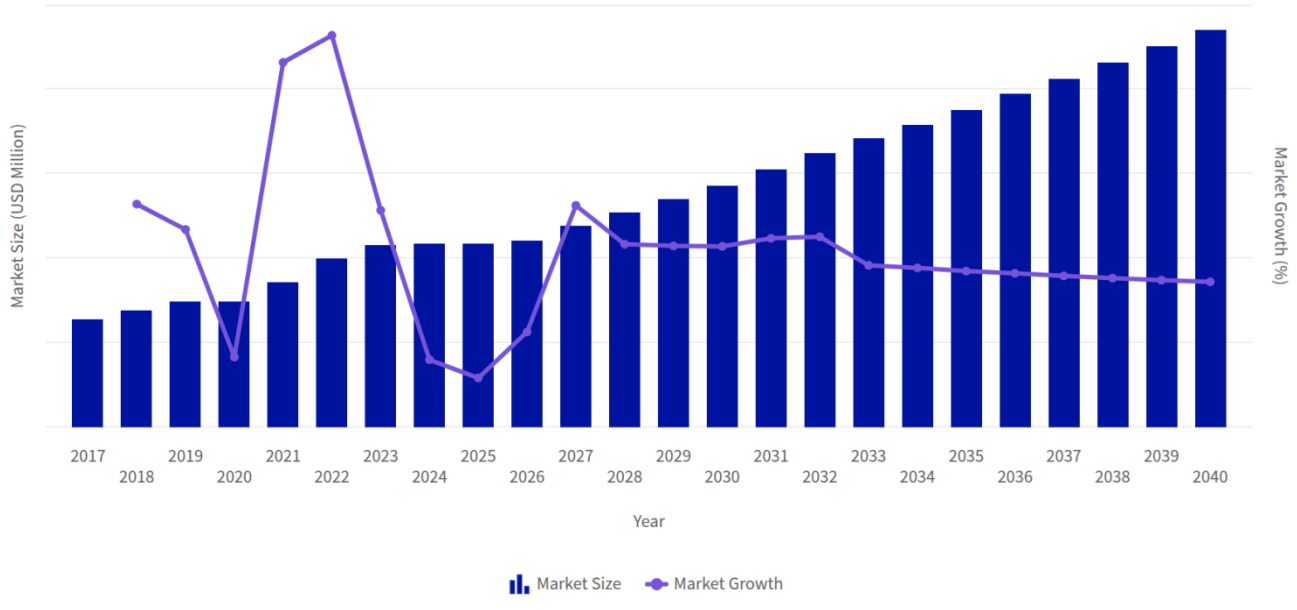


Table 2. Global Telecom Energy Storage System Market Size, 2017-2040 (USD Million, Growth %)

Metric	2017	2018	2019	2020	2021	2022
Market Size (USD Million)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Market Growth (%)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 2 - continued

Metric	2023	2024	2025	2026	2027	2028
Market Size (USD Million)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Market Growth (%)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 2 - continued

Metric	2029	2030	2031	2032	2033	2034
Market Size (USD Million)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Market Growth (%)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 2 - continued

Metric	2035	2036	2037	2038	2039	2040
Market Size (USD Million)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Market Growth (%)	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys
   · EnerSys positions PowerSafe mSeries as a VRLA battery offering with an integral racking system for telecommunications and other applications. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
2. Vertiv NetSure IPE Series
   · Vertiv describes NetSure IPE as a telecom power-system offering equipped with lithium battery backup. ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))

4.2. Key Growth Contribution

Risk-based continuity purchasing provides a supported adoption mechanism for telecom storage: Ofcom's UK guidance connects investment to assessed outage consequences rather than uniform equipment replacement. Serving that need requires an accepted storage offering and accountable integration, maintenance, and replacement arrangements; EnerSys' separately advertised lifecycle services illustrate capabilities buyers can contract. The counterforce is that equipment supply and service accountability are different commitments. Suppliers can address a documented continuity gap only when buyer acceptance and local obligations are secured, and the UK mechanism should not be treated as a global purchasing mandate.

Figure 6. Global Telecom Energy Storage System Market, Key Growth Contribution, by Region, 2025-2032 (USD Million)

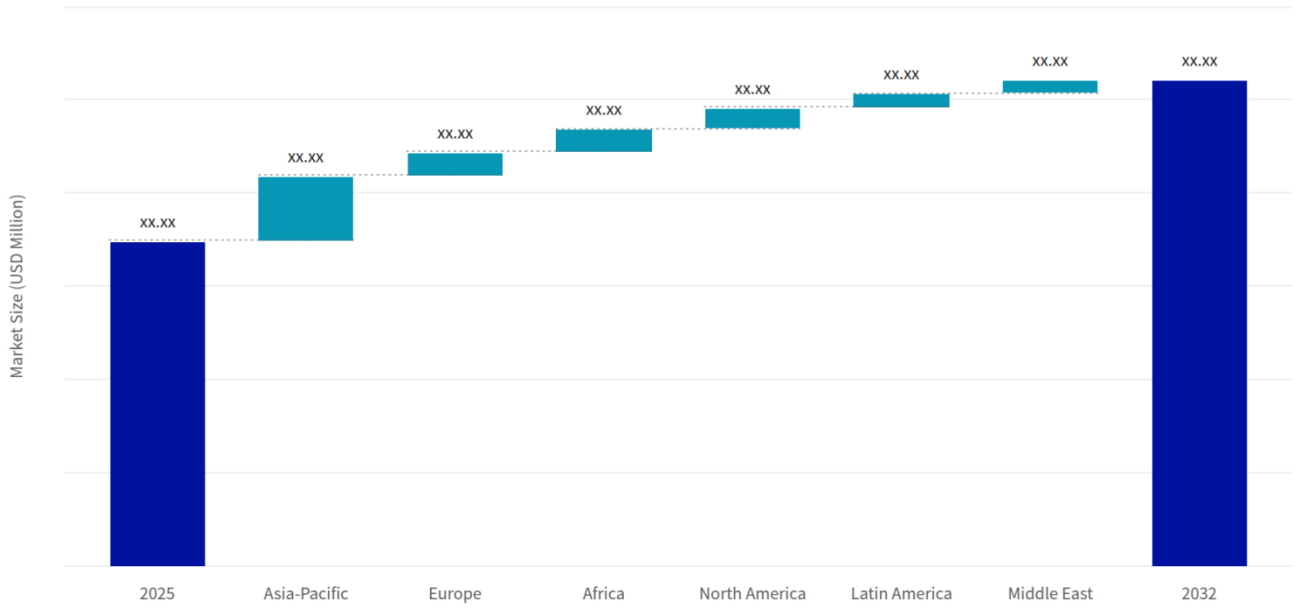


Figure 7. Global Telecom Energy Storage System Market, Key Growth Contribution, by Country, 2025-2032 (CAGR %)

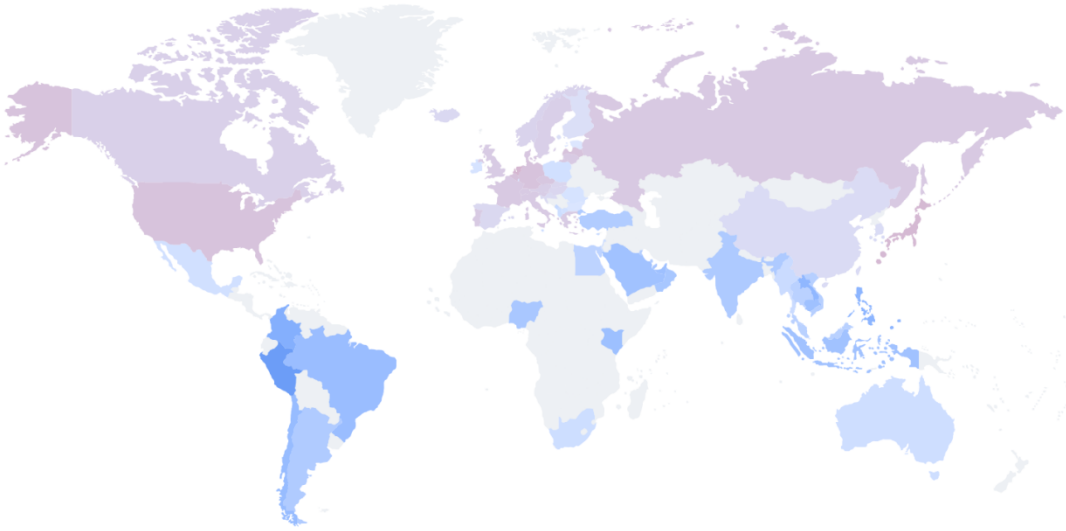


Table 3. Global Telecom Energy Storage System Market, Key Growth Contribution, 2025-2032

Scope	Leading Category	Added Market Size (USD Million)	Growth Share (%)	CAGR (%)
Country	xx.xx	xx.xx	xx.xx	xx.xx
Economic Buyer	xx.xx	xx.xx	xx.xx	xx.xx
Grid Availability	xx.xx	xx.xx	xx.xx	xx.xx
Installation Environment	xx.xx	xx.xx	xx.xx	xx.xx
Network Application	xx.xx	xx.xx	xx.xx	xx.xx
Ownership Model	xx.xx	xx.xx	xx.xx	xx.xx
Power Interface	xx.xx	xx.xx	xx.xx	xx.xx
Procurement Lifecycle	xx.xx	xx.xx	xx.xx	xx.xx
Product Integration	xx.xx	xx.xx	xx.xx	xx.xx
Region	xx.xx	xx.xx	xx.xx	xx.xx
Sales Channel	xx.xx	xx.xx	xx.xx	xx.xx
Storage Purpose	xx.xx	xx.xx	xx.xx	xx.xx
Storage Technology	xx.xx	xx.xx	xx.xx	xx.xx

Sources & Evidence

1. Sales & Services | EnerSys

   · EnerSys advertises installation, maintenance, and recycling services and identifies Communications Networks among its service categories. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))

2. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

   · Ofcom's June xx.xx 2026 guidance links UK resilience investment to assessed risks, retains provider responsibility under managed-service arrangements, and permits justified alternative approaches. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes

10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
11. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. China Tower Corporation Limited - Interim Report 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
16. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

17. Shuangdeng Group Co., Ltd. - Interim Report 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
18. Shuangdeng Group Co., Ltd. - Annual Report 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

19. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

20. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
21. EnerSys - PowerSafe mSeries Batteries
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
22. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

23. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
24. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
25. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

26. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
27. EnerSys - Financial Solutions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
28. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
29. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.

31. Telecom Battery and Cell Tower Batteries | StorEn
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.

32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.

33. Active Power Overview Brochure
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.

35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.

39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

4.3. Industry Ecosystem & Value Chain Analysis

Value creation moves from supplying storage hardware to accepting responsibility for its integration and lifecycle. Vertiv's NetSure IPE illustrates a storage-integrated telecom power offering, while EnerSys separately advertises installation, maintenance, and recycling services. ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■ ■■■■■■ ■■■ ■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■ ■■■■■■■■ ■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■ ■ ■■■■■■■ ■■■■■■■■■■

■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■ ■ ■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■ ■ ■■■■ ■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■ ■■■■■■ ■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■ ■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ Under Provider-Owned Managed Energy or Equipment

Leasing, the contract should identify asset ownership, replacement funding, and continuity accountability separately. Transferring ownership or financing does not, by itself, transfer the complete service obligation.

Sources & Evidence

1. Vertiv NetSure IPE Series
   - NetSure IPE provides an example of a storage-integrated telecom power-system supply boundary.
2. Sales & Services | EnerSys
   - EnerSys advertises installation, maintenance, and recycling services and includes Communications Networks among its service filters. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))
3. IHS Holding Limited - 2025 Form 20-F
   - IHS reports power-service responsibilities, outsourced management, service-level obligations, and power-equipment replacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

4.3.1. Supply-Side Analysis

Supply-channel reach and service responsibility are separate capabilities. ■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■■ ■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■ ■■■■■■■■■ ■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ A buyer choosing Direct Supply or Distributor and Reseller Supply should establish the contracting entity and the party responsible for field support and warranty administration.

Integration can create a supported compatibility dependency. ■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■ ■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■ ■■■■■ ■■ ■■■■■■■■■■■■■■■■ ■■■■■ ■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■ OEM and Project-Integrator Supply can consolidate accountability, but the buyer should establish approved compatibility and support responsibility rather than assume that either a bundled or independently supplied replacement is acceptable.

Sources & Evidence

1. Vertiv NetSure IPE Series
   - The portfolio identifies telecom applications and battery-integrated power supply; it does not establish acceptance for every installation.
2. Sales & Services | EnerSys
   - The advertised lifecycle services establish a capability, not transaction-specific regional coverage.
3. EnerSys 2026 Proxy Statement and Annual Report
   - EnerSys' fiscal 2026 filing describes company-level direct and distributor sales channels. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

4. Telecom Lithium Batteries | Vertiv
   - Vertiv advertises remote monitoring of telecom lithium batteries through the NetSure Control Unit. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
5. Vertiv Solutions for Efficient Edge Network and 5G Deployment
   - Vertiv advertises NetSure inverter arrangements backing AC and DC edge equipment from one battery bank. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

4.3.2. Demand-Side Analysis

Customer-premises network owners can procure storage through institutional purchasing rather than a telecom operator's infrastructure budget. Lebanon Community School District's funding-year 2026 Form xx.xx sought UPS backup for internal networks, identified necessary software and licenses, and described installation as an optional line item. ■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■ ■■■■■ ■■ ■■ ■■■■ ■■ ■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■ ■■ ■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■ ■■ ■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■■■

■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■ ■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■ ■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■ ■■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■ ■■■■■ ■■■■■ ■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■ Conversely, a customer-premises offer should not be represented as protection against an upstream network outage. The relevant decision is the supported service, purchasing party, and replacement responsibility, not simply the presence of a battery.

Sources & Evidence

1. Battery Back-Up | Farmers Telephone Cooperative
   - Farmers Telephone Cooperative advertises customer-purchased backup for voice continuity, supporting a separate customer-premises purchasing relationship. ([ftc.net](https://www.ftc.net/services/phone/battery-back-up/))
2. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   - Lebanon Community School District's funding-year 2026 solicitation sought internal-network UPS backup, necessary software and licenses, optional installation, and separately funded noneligible items. ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))

4.3.3. Stakeholder Analysis

Commercial negotiation and supplier approval need not be controlled by the same people. ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■ ■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■ The network operator, Shared Telecommunications Infrastructure Owner, or Telecom Energy-Service Company must also distinguish the economic buyer from the operating party and equipment financier; an Equipment Leasing Company can fund an asset without controlling application approval or assuming continuity responsibility.

Grid Services introduce another set of counterparties. Fingrid acts as reserve buyer and market maintainer, while Finland's Energy Authority supervises the market rules. ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪

Sources & Evidence

1. Supply Chain | Vodafone
   · Vodafone separates high-risk supplier approval specialists from commercial relationship staff. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
2. Reserve Markets | Fingrid
   · Fingrid identifies reserve-buyer, market-maintainer, supervisory-authority, reserve-provider, and service-provider roles. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))

4.4. Market Dynamics

Grid conditions change the reason for purchasing storage, not just the offering selected. ▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ These observations support distinct continuity, generation-integration, and secondary-use purchasing logics; improving grid supply need not eliminate backup demand, while grid-service eligibility does not automatically create a viable new purchase.

Integration can strengthen incumbent relationships while purchasing rules preserve alternatives. ▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ Procurement changes should be monitored through acceptance decisions, contract renewals, and changes in service or interface responsibility, rather than inferred from a new portfolio announcement alone.

Sources & Evidence

1. Vertiv Solutions for Efficient Edge Network and 5G Deployment
   · Combined backup arrangements illustrate how integration can change the purchasing boundary.
2. IHS Holding Limited - 2025 Form 20-F
   · The filing contrasts African power-management requirements with less emphasis in reliable-grid Latin American operations.
3. Virtual Power Plant | Elisa
   · Elisa describes a Finnish base-station backup-battery balancing-market role beyond continuity. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
4. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   · The solicitation admitted Eaton or Tripp Lite equivalents, providing a buyer-specific counterexample to universal incumbent lock-in.

4.4.1. Key Drivers

4.4.1.1. Risk-based continuity obligations support application-specific purchasing

Ofcom's June 2026 guidance expects mobile network operators to assess power-outage risks and make commensurate plans and investments. ▪▪▪▪ ▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ The counterforce is proportionality: resilience requirements do not establish that the same storage offering or commitment is appropriate at every site.

Sources & Evidence

1. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   - Ofcom's June xx.xx 2026 guidance expects mobile operators to assess outage risks and make commensurate plans and investments, including consideration of vulnerable communities. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

4.4.1.2. Hybrid site-energy arrangements connect storage to managed power delivery

▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪ These observations support storage demand as part of a managed site-energy package under Off-Grid or Weak Grid conditions. Buyers should assess the service package and replacement obligations; storage participation does not establish complete generation displacement or transferable economics across countries.

Sources & Evidence

1. IHS Holding Limited - 2025 Form 20-F
   - IHS describes hybrid battery power arrangements in African markets, excluding South Africa.
2. Helios Towers Sustainable Business Addendum 2025
   - Helios Towers describes leveraging batteries and renewables while retaining fossil-fuel dependence at many sites. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))

4.4.1.3. Permitted grid participation adds a secondary commercial use

▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ The route remains conditional on the applicable agreement, service-provider responsibilities, and protection of the primary telecom commitment. Finnish participation does not establish authorization elsewhere or guarantee that an additional use justifies new storage expenditure.

Sources & Evidence

1. Reserve Markets | Fingrid
   · Aggregated resources can participate in Fingrid's reserve arrangements.
2. Virtual Power Plant | Elisa
   · Elisa reports receiving permission from Fingrid to use its base-station batteries in Finland's balancing market; this is company-reported permission, not authorization elsewhere.

4.4.1.4. Customer-premises continuity creates a separate purchasing decision

Farmers Telephone Cooperative offers customer-purchased backup for its voice service, demonstrating a purchasing route separate from network infrastructure procurement. ■■■ ■■■■■■■■■■■■■■■■■ ■■■■■ ■■■■■ ■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■ ■■ ■■■■■■■■■ ■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■ This example does not establish customer take-up, a global purchasing obligation, or protection against an upstream network outage.

Sources & Evidence

1. Battery Back-Up | Farmers Telephone Cooperative
   · The provider-channel offering establishes a commercial route, not customer take-up or protection against every upstream outage.

4.4.2. Key Restraints

4.4.2.1. Buyer acceptance gates restrict the addressable purchasing relationship

Commercial access requires more than a telecom product label. ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■ ■■■■ ■■■■■■■■ ■■ ■■■■■ ■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■ ■ ■■■■■■■■■■■ ■■■■■■ The Verizon document is dated and does not establish current acceptance; passing a policy review likewise does not establish an equipment approval.

Sources & Evidence

1. Supply Chain | Vodafone
   · Vodafone requires supplier-policy commitments and prequalification due diligence for new suppliers.
2. Verizon Technical Purchasing Requirements VZ.TPR.9810 - Lithium-Ion Qualification Requirements, September 2015
   · Verizon's September 2015 purchasing requirement covers lithium-ion qualification and compatibility with existing DC power plants; it is a dated requirement, not current supplier approval. ([verizonnebs.com](https://www.verizonnebs.com/TPRs/VZ-TPR-xx.xx.pdf))

4.4.2.2. Contractual allocation can weaken the purchaser's incentive to invest

[redacted] Buyers and providers should establish that allocation before relying on an energy-cost rationale. An escalator is not proof that savings are retained by either party, and other contracts may distribute exposure differently.

Sources & Evidence

1. Helios Towers - Unaudited Results for the Six Months Ended June 30, 2025
   - Helios Towers' first-half 2025 results disclose CPI and power-price escalators in customer contracts. ([heliostowers.com](https://www.heliostowers.com/media/0hibxjme/helios-towers-rns-vfinal.pdf))

4.4.2.3. Secondary-use rights and obligations constrain multipurpose participation

Fingrid requires a valid reserve-market agreement and links compensation to delivery of the applicable reserve commitment. [redacted] Using a service provider can reduce commercial administration, but it does not erase contractual responsibility or establish that the same route is permitted in another jurisdiction.

Sources & Evidence

1. Reserve Markets | Fingrid
   - A valid reserve agreement is required; compensation depends on fulfilling the applicable commitment. Service providers can perform commercial functions.

4.4.3. Key Opportunities

4.4.3.1. Accountable retrofit and lifecycle fulfillment

[redacted] Vertiv's controller-linked battery offering and EnerSys' separate lifecycle services identify relevant commitments to consolidate. Capture requires explicit interface acceptance, monitoring rights, local replacement support, and retirement responsibility; equipment-only procurement remains suitable where the buyer already controls those functions.

Sources & Evidence

1. Sales & Services | EnerSys
   - Separately advertised lifecycle services provide a capability premise for a combined retrofit proposal; inclusion and local coverage require contractual confirmation. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))

2. Telecom Lithium Batteries | Vertiv
   · Vertiv lists Polarium Batteries and advertises remote monitoring through the NetSure Control Unit, establishing a named integration relationship rather than universal interchangeability. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))

4.4.3.2. Contract-authorized managed-power sourcing

[redacted] IFC documents IPT PowerTech's sourcing and continuing-service role. Access remains conditional on the country agreement, operator acceptance, replacement obligations, and a verified seller and guarantor; a financing announcement is not an open equipment award.

Sources & Evidence

1. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
   · IFC identifies IPT as a telecom energy-service company sourcing, operating, and maintaining energy solutions; IPI Group Holding Limited is the disclosed project company. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))

4.4.3.3. Information-accountable EU battery supply

Providers of qualifying EU finished batteries can strengthen market access by coordinating upstream information rights and continuing passport accountability. The responsible economic operator, not each component supplier, holds the finished-battery obligation. [redacted]

Sources & Evidence

1. Digital Product Passport for Batteries | European Commission
   · The Commission assigns passport creation and maintenance to the economic operator placing the finished battery on the market, rather than individual component or module suppliers. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))

4.4.3.4. Authorized secondary use of backup storage

[redacted] Elisa's Finnish example and Fingrid's agreement requirements support this bounded route. Retained continuity responsibility and benefit allocation remain prerequisites; continuity-only procurement is preferable when the additional rights cannot be secured.

Sources & Evidence

1. Reserve Markets | Fingrid
   · Fingrid requires a valid reserve-market agreement and permits service providers to perform commercial functions; aggregation is an available participation arrangement. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))

2. Virtual Power Plant | Elisa
   · Elisa reports receiving Fingrid permission to use its base-station backup batteries in Finland's balancing market; the statement does not authorize another operator. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

4.4.3.5. Buyer-specific customer-premises fulfillment

Institutional network-backup bids and provider-mediated residential offers create distinct premises purchasing routes. ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■■ Suppliers should sell the bounded commitment rather than promise uninterrupted connectivity.

Sources & Evidence

1. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   · Lebanon Community School District's funding-year 2026 solicitation requested internal-network UPS equipment, necessary software and licenses, optional installation, and separately financed noneligible items. ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))
2. How to buy a phone modem battery case for your Xfinity Voice service
   · Xfinity's voice-backup offering has equipment eligibility restrictions, separately purchased batteries, and an explicit upstream-network availability limitation. ([xfinity.com](https://www.xfinity.com/support/articles/getting-a-new-battery))

4.4.4. Key Challenges

4.4.4.1. Retrofit interfaces complicate warranty and service accountability

■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■■■■■ ■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■ Buyers should obtain explicit acceptance and warranty allocation for the proposed combination before award. Separate supply preserves choice, but an unresolved interface can leave no counterparty responsible for the complete continuity outcome.

Sources & Evidence

1. EnerSys 2026 Proxy Statement and Annual Report
   · Warranties vary by application, geography, and product; coverage generally concerns workmanship and material defects within stated limitations. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
2. Telecom Lithium Batteries | Vertiv
   · Controller-linked monitoring supports a bounded inference that retrofit responsibility must include the existing power-system relationship.

4.4.4.2. Delivery and retirement require qualified commercial counterparties

Fulfillment extends beyond delivery to the site. PHMSA identifies transport documentation obligations for lithium batteries and compliance responsibilities for commercial returns.

[redacted]

Sources & Evidence

1. Helios Towers Sustainable Business Addendum 2025
   · Helios Towers reports approving recycling partners and verifying licenses and environmental permissions for hazardous battery waste. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))
2. Transporting Lithium Batteries | PHMSA
   · PHMSA identifies lithium-battery transport documentation obligations and compliance responsibilities for commercial returns and recycling-related transport. ([phmsa.dot.gov](https://www.phmsa.dot.gov/lithiumbatteries))

4.4.4.3. Finished-battery information duties require upstream commercial coordination

For EU industrial batteries above xx.xx kWh, the European Commission identifies February xx.xx 2027 as the passport requirement's start date. Its guidance places creation and maintenance responsibility on the economic operator placing the finished battery on the market, rather than individual component or module suppliers. [redacted]

Sources & Evidence

1. Digital Product Passport for Batteries | European Commission
   · The European Commission places passport creation and maintenance responsibility on the economic operator placing the finished battery on the market, rather than component or module suppliers. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))
2. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   · The Commission identifies February xx.xx 2027 as the passport requirement's start date for industrial batteries above xx.xx kWh placed on the market or put into service. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/news/guidance-support-preparations-digital-batteries-passport-2026-xx.xx-21_en))

4.5. Porter’s Five Forces Analysis

Rivalry occurs at different supply boundaries. [redacted]

■■■■■■■■■ Procurement comparisons should hold the integration boundary and service responsibilities constant instead of treating every storage offering as a direct substitute.

■■■■■ ■■■■■ ■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■ In a different setting, Lebanon Community School District's funding-year 2026 UPS solicitation allowed Eaton or Tripp Lite equivalents. This demonstrates that brand alternatives can be admitted for a customer-premises network purchase, but it does not override a carrier's application-specific qualification requirements.

■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■ ■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■ These capabilities can make continuity of support commercially valuable. Their existence does not establish exclusive supply: buyers can preserve alternatives where another supplier can obtain acceptance and assume the necessary integration and support obligations.

Entry into an approved application is distinct from entry into battery supply. Verizon's September 2015 lithium-ion purchasing requirement documented qualification and compatibility expectations for existing DC power plants. ■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■ ■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■

Substitution is often partial. IHS describes batteries operating alongside generation in its African power-management arrangements, so generation can remain a complement rather than disappear after storage deployment. ■■■■■■ ■■■■ ■■■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■ ■■ ■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■■■ ■■ ■■■■

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys
   · The named telecom battery and racking offering supports a component-boundary comparison, not equivalence with a complete power-service contract.
2. Sales & Services | EnerSys
   · Installation, maintenance, and recycling are identifiable service commitments relevant to supplier differentiation.
3. Telecom Lithium Batteries | Vertiv
   · The named controller connection establishes a compatibility dependency, not exclusive battery supply or universal lock-in.
4. Vertiv Solutions for Efficient Edge Network and 5G Deployment
   · One battery bank serving AC and DC equipment supports the nonadditive interpretation of interface-specific purchasing.
5. Supply Chain | Vodafone
   · Supplier compliance requirements are contractual purchasing conditions and provide a documented buyer-control mechanism.

6. Verizon Technical Purchasing Requirements VZ.TPR.9810 - Lithium-Ion Qualification Requirements, September 2015
   - The document establishes an historical application-acceptance barrier distinct from a supplier's advertised telecom product category.
7. IHS Holding Limited - 2025 Form 20-F
   - Reported battery arrangements retain generation alongside storage, supporting a complement rather than complete-substitution interpretation.
8. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   - Equivalent-brand purchasing was permitted in this solicitation; the record does not establish an award.

4.6. PESTLE Analysis

Trade policy can change sourcing economics without changing an offering's telecommunications classification. ■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■ ■■■ ■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■ ■■ ■■■■■ ■■■■ ■■■■■■■■■■■■■ ■■ ■■■ ■ ■■■■■■■■■ ■■ ■■■ ■■■■■■ ■■■■ ■■■■■■■■■■ ■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■ Importers must establish the offering's customs classification, origin, applicable entry provisions, and contractual responsibility for duties before comparing supply routes.

Inflation protection and energy-cost exposure are contract-dependent. ■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■ ■■■■ ■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■ ■ ■■■■■■■■ ■■■■■■■■■ Under User-Owned Equipment, Equipment Leasing, and Provider-Owned Managed Energy, financing commitments and replacement liabilities should therefore be evaluated separately from the party receiving an electricity bill.

Social dependence on communications makes resilience a service-access issue rather than solely an equipment specification. ■■■■■■■■ ■■■■■ ■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■■ These UK expectations support risk-based purchasing, not a universal global battery-duration requirement or an assurance that local storage resolves every network dependency.

EU lifecycle information obligations have distinct implementation dates. The European Commission identifies February xx.xx 2027 as the battery-passport start date for industrial batteries above xx.xx kWh placed on the market or put into service. ■■■ ■■■■■■■■■ ■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■ ■■■ ■■■■■ ■■ ■■■ ■■■ ■■■■■■■■ ■ ■■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■ ■■■■■■■■

■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■ ■■■■

▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ This company-specific disclosure does not establish freedom to operate for another supplier, yet it cautions against treating patent holdings alone as proof of market foreclosure. For controller-linked offerings, buyers should also establish software-use, support, and transfer rights before committing to a replacement path.

Sources & Evidence

1. EnerSys 2026 Proxy Statement and Annual Report
   · EnerSys reports patents and patent licenses but considers no individual patent material to its business. This is company-specific, not freedom-to-operate evidence. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
2. Helios Towers - Unaudited Results for the Six Months Ended June 30, 2025
   · The disclosed contractual cost protection supports a qualitative exposure-allocation analysis, not a conclusion about storage-specific savings retention.
3. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · The guidance supports a UK risk-based resilience interpretation, not a universal global battery-duration requirement.
4. Statement: Network and Service Resilience Guidance | Ofcom
   · Ofcom's resilience statement describes telecommunications-electricity-sector coordination for major incidents and prolonged disruption. ([ofcom.org.uk](https://www.ofcom.org.uk/internet-based-services/network-security/resilience-guidance))
5. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   · The dated announcement supports the stated passport scope and timing, distinct from battery due-diligence obligations.
6. Simplification: Council Adopts Law to Stop the Clock on Due-Diligence Rules for Batteries
   · On July xx.xx 2025, the Council announced adoption of a law postponing relevant battery due-diligence obligations to August xx.xx 2027; the announcement does not postpone the passport requirement. ([consilium.europa.eu](https://www.consilium.europa.eu/en/press/press-releases/2025/xx.xx/xx.xx/simplification-council-adopts-law-to-stop-the-clock-on-due-diligence-rules-for-batteries/))
7. USTR - Final Section 301 Four-Year Review Modifications, Federal Register, September 18, 2024
   · USTR's September xx.xx 2024 final notice scheduled a Section xx.xx modification for covered Chinese non-electric-vehicle lithium-ion batteries from January xx.xx 2026. It does not establish total transaction-specific duties. ([ustr.gov](https://ustr.gov/sites/default/files/xx.xx%20FR%xx.xx%xx.xx%28September%2018%2C%xx.xx%29_2.pdf))

4.7. Market Outlook

The Global Telecom Energy Storage System outlook is selectively constructive where a defined continuity obligation meets an accessible purchasing relationship. ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ Product Integration, Economic Buyer, and Storage Purpose remain independent views of these relationships, not opportunities to add together.

The decisive turning points are buyer acceptance, awarded sourcing authority, completed fulfillment, and enforceable allocation of support and benefits. These events would support

broader commitment; unresolved obligations favor a narrower equipment purchase, continuity-only arrangement, or deferral. ■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■■ ■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■ ■ ■■■ ■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■

Sources & Evidence

1. Helios Towers Sustainable Business Addendum 2025
   · Helios reports batteries and renewables alongside continued fossil-fuel dependence where grid and renewable infrastructure are limited. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))
2. Reserve Markets | Fingrid
   · Market agreements and primary-use limits distinguish an accessible secondary role from storage ownership alone. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
3. Virtual Power Plant | Elisa
   · Elisa describes a Finnish secondary-use relationship for existing telecom backup batteries, supporting a jurisdiction-specific commercial example. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
4. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · Risk-proportionate purchasing supports differentiated continuity commitments rather than identical storage purchases throughout the UK or globally. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
5. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   · IFC's March xx.xx 2026 announcement supports IPT's solar- and battery-based telecom modernization, operation, and maintenance in Ethiopia, Liberia, and Sierra Leone; it does not establish completion of every commitment. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

4.7.1. Near-Term Market Outlook (0-2 Years)

For 2026-2027, the immediate strategic task is to resolve market-access and information obligations before expanding commitments. Qualifying EU industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service require a passport from February xx.xx 2027. ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■ ■■■■■■■■ ■■■■■■■ ■■■ ■■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■ ■■ ■■ ■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■ ■■■■■■ ■■■■■■ ■■■ ■■■■■■■■■■ ■■ ■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■

UK continuity procurement should follow assessed service exposure and the provider's purchasing approvals. Ofcom's June 2026 guidance supports differentiated commitments and allows justified alternative approaches. ■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■

Sources & Evidence

1. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · The guidance expects ongoing risk assessment and commensurate investment; alternative compliance approaches remain possible. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
2. Digital Product Passport for Batteries | European Commission
   · Finished-battery responsibility and decentralized information maintenance establish an upstream information-rights prerequisite for qualifying EU offerings. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))
3. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   · Industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service require a passport from February xx.xx 2027. The preparation guidance adds no legal requirements. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/news/guidance-support-preparations-digital-batteries-passport-2026-xx.xx-21_en))
4. Simplification: Council Adopts Law to Stop the Clock on Due-Diligence Rules for Batteries
   · The Council's July xx.xx 2025 adoption announcement postponed relevant battery due-diligence obligations until August xx.xx 2027. ([consilium.europa.eu](https://www.consilium.europa.eu/en/press/press-releases/2025/xx.xx/xx.xx/simplification-council-adopts-law-to-stop-the-clock-on-due-diligence-rules-for-batteries/))

4.7.2. Medium-Term Market Outlook (3-5 Years)

For 2028-2029, managed-power attractiveness depends on converting identifiable financed programs into accepted equipment and continuing service relationships. ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ Helios Towers' retained generation dependence cautions against assuming that battery deployment eliminates the broader power package.

Multipurpose proposals should be assessed at agreement renewal rather than extrapolated from functionality. Pixii AS advertises a dual-purpose telecom offering, while Fingrid's arrangements preserve a separate market agreement even when commercial administration is delegated. ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪

Sources & Evidence

1. Helios Towers Sustainable Business Addendum 2025
   · Continued generation dependence challenges treating financed battery deployment as automatic replacement of the wider site-power relationship. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))

2. Reserve Markets | Fingrid
   · Service-provider delegation does not remove the reserve agreement; changes to market terms require the national supervisory authority's approval. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
3. Telecom and TowerCos | Pixii
   · Pixii advertises PowerShaper TC as combined telecom UPS and battery energy storage with potential additional energy-market uses. ([pixii.com](https://www.pixii.com/market/telecom/))
4. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   · The financed country program establishes an identifiable starting relationship, not a published completion schedule for 2028-2029 or unrestricted equipment access. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

4.7.3. Long-Term Market Outlook (5-10 Years)

For 2030-2032, lifecycle purchasing could become as consequential as initial equipment selection, but replacement timing should not be presumed from the horizon. ■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■ ■ ■■■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■ Observable indicators are buyer-approved reuse decisions, revised service agreements, and documented disposition-not a chemistry label or an assumed asset lifetime.

Specialist offerings preserve strategic optionality without establishing an inevitable technology transition. ■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ Keeping an accepted alternative may sacrifice early participation in a new proposition, but protects continuity when the proposed contractual obligations remain unsettled.

Sources & Evidence

1. Helios Towers Sustainable Business Addendum 2025
   · Helios describes repair or refurbishment of returned batteries and other equipment, followed by approved recycling when further use is unsuitable. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))
2. Digital Product Passport for Batteries | European Commission
   · Passport information supports lifecycle transparency, while its creation and maintenance remain with the responsible economic operator. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))
3. Energy Backup | Phinergy
   · Phinergy advertises aluminum-air telecom backup with energy reloading and remote monitoring; this identifies a continuing fulfillment question beyond equipment supply. ([phinergy.com](https://phinergy.com/solutions/energy-backup/))

4. MicroTel - Electrostatic Energy Storage Solution | Emtel Energy
   · Emtel markets MicroTel as supercapacitor-based storage for telecom networks and offers a quotation route; longevity and continuity statements remain supplier assertions. ([emtel.group](https://emtel.group/microtel/))

4.8. Go-to-Market Strategy

[redacted] Direct supply remains preferable where the buyer already controls accepted integration and support. Vodafone's separate approval function should be addressed alongside commercial negotiation, not after a binding commitment.

For managed-power accounts, approach the party holding equipment-selection and replacement authority. IPT PowerTech's documented sourcing and continuing-service role provides a route to investigate where the relevant country agreement grants that authority. [redacted]

For LiNET4835, a channel participant should verify RFI's applicable authority before seeking distribution access. PowerPlus and RFI both document the exclusive product relationship, but its duration, territory, and transaction-specific support remain conditions to confirm. [redacted]

Institutional UPS vendors should respond to applicable published solicitations and preserve funding distinctions in the offer. [redacted] Scope transparency is more defensible than promising a complete continuity service through an equipment-only transaction.

Sources & Evidence

1. Sales & Services | EnerSys
   · The service portfolio separates lifecycle capabilities from equipment supply, supporting expressly scoped equipment-and-service quotations. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))

2. Telecom Lithium Batteries | Vertiv
   · The Polarium listing and NetSure monitoring relationship support requesting an exact integrated proposal; they do not establish channel access for another battery supplier. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
3. Supply Chain | Vodafone
   · Vodafone requires prequalification and contractual supplier-policy commitments and separates high-risk approval specialists from commercial relationship staff. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
4. Helios Towers - Unaudited Results for the Six Months Ended June 30, 2025
   · Helios' first-half 2025 results disclose CPI and power-price escalators in customer contracts; these do not establish storage-specific benefit allocation. ([heliostowers.com](https://www.heliostowers.com/media/0hibxjme/helios-towers-rns-vfinal.pdf))
5. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
   · The documented service role supports conditional engagement with IPT's sourcing function, but the holding-level record does not settle a country seller or guarantor. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
6. PowerPlus Energy Launches LiNET4835: A New Battery in Exclusive Partnership with RFI Technologies
   · PowerPlus Energy's June xx.xx 2025 LiNET4835 launch identifies exclusive availability through RFI; contractual duration and territorial terms are not disclosed. ([powerplus-energy.com.au](https://www.powerplus-energy.com.au/linet4835-telecom-battery/))
7. Introducing the PowerPlus LiNET4835: Exclusive to RFI
   · RFI separately describes the PowerPlus collaboration and exclusive sale of LiNET4835, corroborating the product-specific channel relationship. ([news.rfi.com.au](https://news.rfi.com.au/listing/powerplus-linet4835-exclusive-to-rfi))
8. Step 2: Respond to Applicant Bid Requests - USAC
   · USAC requires open and fair competitive bidding, compliance with applicable procurement rules, and identification of ineligible or partly eligible commitments in bids and contracts. ([usac.org](https://www.usac.org/e-rate/service-providers/step-xx.xx-responding-to-bids/))

5. Market Insights

5.1. Consumer Insights & End-User Perspective

[redacted] For a storage vendor, commercial agreement therefore does not establish supplier acceptance, and supplier-policy approval should not be assumed to include acceptance of the exact offering. The relevant purchasing contacts and approval conditions should be established before a binding commitment.

Customer-Premises Owners can have a separate budget and approval boundary. Lebanon Community School District's funding-year 2026 solicitation requested internal-network UPS backup, necessary software and licenses, optional installation, and clearly separated non-E-Rate-eligible items funded by the district. [redacted]

Residential continuity needs are narrower than a promise of uninterrupted connectivity. Xfinity describes voice backup for certain rental modems, excludes customer-owned equipment from its backup offerings, and warns that network failures can still prevent calls. [redacted]

Sources & Evidence

1. Supply Chain | Vodafone
   · Vodafone Procure & Connect leads purchasing and supplier management. High-risk supplier approval specialists operate separately from commercial relationship staff; supplier-policy commitments form non-negotiable contractual conditions.
2. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   · Lebanon Community School District's funding-year 2026 solicitation requested internal-network UPS backup and necessary software and licenses, allowed optional installation, and separated non-E-Rate-eligible items funded by the district.
3. How to buy a phone modem battery case for your Xfinity Voice service
   · Xfinity describes a customer-purchased voice-backup offering for certain rental modems, excludes customer-owned equipment from its backup offerings, and warns that network failures can still prevent calls.

5.2. Consumer Experience Benchmarking

Telecom storage should be benchmarked at the same application and integration boundary using observable commitments rather than assumed customer satisfaction. EnerSys' PowerSafe mSeries combines batteries with integral racking; Vertiv's Telecom Lithium

Batteries advertises remote monitoring through the NetSure Control Unit. ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪

Service remedies provide another comparison dimension. EnerSys separately advertises installation, maintenance, and recycling, while its fiscal 2026 filing describes warranties that vary by application, geography, and product and generally cover workmanship and material defects. ▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪

Neither branding nor intellectual-property ownership establishes universal lock-in. ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪ ▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ The relevant benchmark is the proposed offering's accepted replacement path and contractual rights, not a presumed supplier hierarchy.

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys
   · EnerSys advertises PowerSafe mSeries for telecommunications applications with an integral racking system. This establishes an advertised battery-and-racking offering, not a complete continuity-service commitment.
2. Sales & Services | EnerSys
   · EnerSys advertises installation, maintenance, and recycling services and identifies Communications Networks as a service category.
3. EnerSys 2026 Proxy Statement and Annual Report
   · EnerSys reports application-, geography-, and product-dependent warranties generally covering workmanship and material defects. It holds patents and patent licenses but considers no individual patent material.
4. Telecom Lithium Batteries | Vertiv
   · Vertiv advertises remote monitoring of its Telecom Lithium Batteries through the NetSure Control Unit. The documented controller relationship supports a compatibility and support comparison, not a universal exclusivity claim.
5. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   · The solicitation permitted Eaton or Tripp Lite equivalents. This establishes buyer-specific permission to propose alternatives, not an award or carrier-wide interchangeability.

5.3. Opportunity Mapping

Accountable Replacement and Retrofit is a defensible starting proposition where a buyer has identified continuity exposure and an accepted installed-system relationship. ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪

[redacted] An incumbent with accepted support can defend the account; an alternative becomes credible when it assumes comparable obligations.

Local lifecycle packaging is particularly relevant to buyers lacking their own replacement and retirement counterparties. [redacted] Consolidation is qualitatively preferable when it closes a documented service gap; equipment-only purchasing remains appropriate where accepted local support already exists.

Managed-power sourcing offers a different buyer relationship. [redacted] The retained IPT naming overlap does not establish independent alternative counterparties.

[redacted] Capture depends on retained benefits, an accountable market counterparty, and protection of the primary telecom commitment. Continuity-only procurement is preferable when those conditions remain unsettled.

Customer-Premises Network Equipment has two distinct accessible routes. [redacted] The supplier must identify who purchases, funds replacements, and administers support in each route.

[redacted]

[redacted] This is an access prerequisite, not proof of incremental service demand or a new stand-alone business. A coordinated supply agreement is useful where information responsibilities are fragmented; an already compliant, accountable finished offering remains the alternative.

Sources & Evidence

1. Sales & Services | EnerSys
   · Installation, maintenance, and recycling are advertised commitments relevant to comparing equipment-only and consolidated replacement routes. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))
2. Telecom Lithium Batteries | Vertiv
   · Controller-linked monitoring makes interface acceptance and monitoring rights relevant to replacement procurement.
   ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
3. Supply Chain | Vodafone
   · Commercial negotiation does not itself establish supplier approval under Vodafone's documented framework, supporting account-specific access conditions.
   ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
4. Reserve Markets | Fingrid
   · A valid agreement, applicable participation requirements, and the commercial-service relationship are separate prerequisites for a Finnish reserve route.
   ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
5. Virtual Power Plant | Elisa
   · Company-reported Finnish permission establishes an example, not portable eligibility or another buyer's retained benefits. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
6. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   · The solicitation admitted equivalent brands and specified March xx.xx 2026 as its bid deadline; it is an historical procurement example, not an open opportunity or award.
   ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))
7. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · Assessed service exposure provides a documented UK purchasing trigger, but does not establish supplier acceptance or a uniform replacement requirement.
   ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
8. Digital Product Passport for Batteries | European Commission
   · The finished-battery information boundary supports contractual coordination with upstream suppliers, not an independently established new service business.
   ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))
9. How to buy a phone modem battery case for your Xfinity Voice service
   · The provider's local backup offer does not assure completion of calls during network failures, supporting a bounded residential proposition.
   ([xfinity.com](https://www.xfinity.com/support/articles/getting-a-new-battery))
10. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
    · IPT's sourcing and continuing-service roles establish a commercial counterparty distinct from the operator receiving connectivity; country-specific purchasing authority remains contractual.
    ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))

11. Baterias Estacionárias | Moura
    - Moura's stationary portfolio expressly identifies telecom and telephone-exchange applications, connecting its service comparison to the studied offering. ([moura.com.br](https://www.moura.com.br/produtos/estacionarias?type=moura-vrla))
12. Serviços Estacionários | Baterias Moura
    - Moura advertises Brazilian stationary-battery installation, replacement-support resources, reverse logistics, and destination documentation. ([moura.com.br](https://www.moura.com.br/servicos-estacionarios))
13. Li-36 Micro UPS | Uninterrupted DC Power
    - Precision's Li-xx.xx catalog separately lists a complete premises-backup unit, a battery-pack-only item, and a power-supply-only item. ([goprecisiongroup.com](https://goprecisiongroup.com/product/li-xx.xx-micro-ups-12v-36w-indoor-pp36l/))
14. Soluciones para Telecomunicaciones | Respaldo de Red
    - Tempel's Argentine telecom portfolio advertises batteries, local provision, site replacement coordination, and maintenance; it does not establish a reserved customer delivery commitment. ([ar.tempelgrouplatam.com](https://ar.tempelgrouplatam.com/corporativo/telecomunicaciones/))
15. Telecom and TowerCos | Pixii
    - The named dual-purpose offering establishes functionality to evaluate, not a buyer's market-participation rights or realized commercial outcome. ([pixii.com](https://www.pixii.com/market/telecom/))
16. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
    - The announced investment concerns defined telecom power-service activity in Ethiopia, Liberia, and Sierra Leone rather than an open award to all storage suppliers. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
17. Step 2: Respond to Applicant Bid Requests - USAC
    - Providers can respond to published Form xx.xx requests, but must not prepare the request or influence its RFP; post-publication outreach is limited to responsive-bid information. ([usac.org](https://www.usac.org/e-rate/service-providers/step-xx.xx-responding-to-bids/))

5.4. Distribution Channel Analysis

Direct Supply and Distributor and Reseller Supply coexist in EnerSys' fiscal 2026 company disclosures, alongside company-owned sales and service facilities and independent representatives. ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ Direct equipment purchasing remains a viable alternative where the buyer can separately secure accepted integration and support.

Managed-power channels require alignment with the downstream service obligation. IHS' 2025 filing describes outsourced power management and contractor performance targets while retaining in-house oversight. ▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪

Customer-premises channels can divide fulfillment even within a provider-branded offer. ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪

[redacted] Providers and customers should distinguish case supply, battery replacement, and the applicable warranty counterparties.

Sources & Evidence

1. Sales & Services | EnerSys
   - The separately advertised service portfolio establishes lifecycle-service capabilities but does not specify inclusion in an equipment transaction or a local reseller agreement.
2. EnerSys 2026 Proxy Statement and Annual Report
   - The fiscal 2026 filing describes direct and distributor routes, company-owned sales and service facilities, and independent representatives at company level.
3. IHS Holding Limited - 2025 Form 20-F
   - IHS' 2025 Form xx.xx-F describes outsourced power-management services, contractor performance targets, retained in-house oversight, and battery replacement within maintenance obligations.
4. How to buy a phone modem battery case for your Xfinity Voice service
   - Xfinity sells the Voice Battery Backup case through its provider channel, while the batteries are purchased separately from retailers.

5.5. Pricing Trend Analysis

[redacted] Indexing transfers input exposure toward the buyer; fixed commitments can leave the supplier exposed. These company-level arrangements do not establish terms for every telecom offering.

[redacted] Contract owners should establish benefit allocation before relying on an energy-cost purchasing rationale. Escalators can protect service delivery while weakening another party's incentive to finance an upgrade.

Trade and currency conditions also affect negotiations. USTR's September 2024 determination scheduled higher Section xx.xx duties for covered Chinese non-electric-vehicle lithium-ion batteries from January xx.xx 2026, while EnerSys identifies foreign-exchange exposure. [redacted]

Sources & Evidence

1. EnerSys 2026 Proxy Statement and Annual Report
   · EnerSys describes lead-indexed customer agreements, delayed customer-pricing adjustments relative to input costs, and foreign-exchange exposure. These are company disclosures, not universal telecom-storage contract terms.
2. Helios Towers - Unaudited Results for the Six Months Ended June 30, 2025
   · Helios Towers' first-half 2025 results disclose CPI and power-price escalators in customer contracts. These service-contract provisions do not establish storage-specific savings allocation.
3. USTR - Final Section 301 Four-Year Review Modifications, Federal Register, September 18, 2024
   · USTR's September xx.xx 2024 determination scheduled a Section xx.xx duty modification for covered Chinese non-electric-vehicle lithium-ion batteries effective January xx.xx 2026. It does not establish complete transaction-specific duty treatment.

5.6. Regulatory Compliance & Standards Framework

[redacted] It expressly permits other compliance approaches, so its guidance is neither a universal storage prescription nor a global purchasing rule. UK providers should connect procurement approval to the relevant service exposure and supplier commitments rather than treat an advertised product certification as complete resilience compliance.

EU battery obligations operate at a different commercial boundary. Industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service require a battery passport from February xx.xx 2027. [redacted]

US lithium-battery fulfillment is subject to transport requirements identified by PHMSA, including documentation and obligations affecting return and retirement shipments. Suppliers should allocate these responsibilities with the applicable shipping and service counterparties; transport compliance does not establish telecom-buyer approval. [redacted]

Sources & Evidence

1. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · Ofcom's June xx.xx 2026 guidance addresses UK resilience-related security duties, expects risk-proportionate investment, and permits compliance approaches other than those described in the guidance.

2. Transporting Lithium Batteries | PHMSA
   - PHMSA identifies Hazardous Materials Regulations compliance for lithium-battery shipments, documentation responsibilities, and requirements affecting disposal- and recycling-related transport.
3. Digital Product Passport for Batteries | European Commission
   - The European Commission places battery-passport creation and maintenance responsibility on the economic operator placing the finished battery on the market, rather than individual component or module suppliers.
4. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   - The Commission's August xx.xx 2026 announcement states that industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service require a battery passport from February xx.xx 2027. Its guidance does not introduce additional legal requirements.
5. Simplification: Council Adopts Law to Stop the Clock on Due-Diligence Rules for Batteries
   - The Council's July xx.xx 2025 adoption announcement postponed relevant battery due-diligence obligations until August xx.xx 2027; this is distinct from the battery-passport obligation.
6. 47 CFR § 9.20 - Backup power obligations, 2025 Edition
   - The 2025 CFR edition reproduces the former residential voice backup-power requirements and expressly states that the section's requirements cease to be effective on September xx.xx 2025.
7. 47 CFR § 9.20 - 911 Reliability certifications; interoperability reporting; cessation notifications
   - The revised xx.xx CFR § xx.xx addresses xx.xx reliability certifications, interoperability reporting, and cessation notifications, rather than reproducing the former residential backup-purchase requirement.

5.7. ESG & Sustainability Analysis

ESG affects access to telecom procurement through documented supplier obligations, not merely environmental positioning. Vodafone evaluates environmental and social commitments in tenders, and its purchasing code extends relevant obligations to suppliers and subcontractors and permits breaches to be treated as material contractual breaches. ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■ ■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■

Lifecycle governance also affects replacement demand and service differentiation. Helios Towers' 2025 disclosures combine battery and renewable-energy initiatives with continued fossil-fuel dependence, strengthened site-return traceability, refurbishment, and approved recycling counterparties. ■■■■ ■■■■■■■■ ■ ■■■■■■■■■■■ ■■■■■■■■ ■ ■■■■■■■■■■■■■ ■■■■ ■■■ ■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■ ■■■ ■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■ ■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■■■■■ ■■■■■■■■

Sources & Evidence

1. Supply Chain | Vodafone
   · Vodafone evaluates environmental, diversity, inclusion, and safety commitments in supplier selection and requests lifecycle assessment, circularity, and supply-chain accountability.
2. Helios Towers Sustainable Business Addendum 2025
   · Helios Towers reports using batteries and renewables while retaining fossil-fuel dependence at many sites. Its 2025 disclosures describe strengthened asset returns, refurbishment, approved recycling partners, and verification of relevant environmental permissions.
3. Vodafone Supplier Policy A2 - Code of Ethical Purchasing, Version 4.0
   · Vodafone's Code of Ethical Purchasing covers procurement agreements, requires relevant supplier and subcontractor compliance, permits access to supporting information, and allows breaches to be treated as material contractual breaches.

5.8. Disruption & Risk Scenarios

A documentation-related access disruption is plausible if a qualifying EU battery reaches its applicable market event without the required passport information or an accountable economic operator. The scheduled obligation is observed; delayed orders or exclusion of a particular offering are conditional scenarios. ■■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■ ■■■ ■■■■■■■ ■■■■ ■■■■■■■■■■ ■ ■■■■■■■ ■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■

A multipurpose agreement could become unattractive if participation rights, asset authority, or retained benefits change. ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■ ■ ■■■■■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■ ■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ Monitoring should focus on agreement changes, permission decisions, and service breaches, rather than assume hardware functionality protects market access.

Improved grid service could reduce the rationale for part of a hybrid power package, while persistent outages could preserve broader power-service obligations. ■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■ Staged contractual commitments preserve flexibility; promising that storage replaces every existing supply dependency would be unsuitable.

Corporate transitions can create a contractual disruption even when branding continues. Stryten's acquisition of C&D Technologies completed on October xx.xx 2026, with product brands preserved. ■■■ ■■■■■■■■■ ■■■■■ ■■■■ ■■■ ■■■■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■ ■■■■■ ■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■■■■ ■■

[redacted]

Sources & Evidence

1. Helios Towers Sustainable Business Addendum 2025
   · The documented coexistence of storage, renewables, and fossil fuels supports conditional grid-improvement and persistent-dependency scenarios, not complete generation displacement. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))
2. Reserve Markets | Fingrid
   · Reserve participation carries continuing market obligations and nationally governed terms, grounding a hypothetical access-loss scenario rather than an observed termination. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
3. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · Ofcom warns that automation software failures and integration complexity can cause outages; providers retain resilience responsibility. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
4. Digital Product Passport for Batteries | European Commission
   · Information maintained by the responsible economic operator creates an accountability premise for a conditional documentation-related access disruption. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))
5. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   · The announced scope concerns qualifying batteries, supporting a bounded access-risk scenario rather than an obligation for all nonbattery telecom storage. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/news/guidance-support-preparations-digital-batteries-passport-2026-xx.xx-21_en))
6. Atlas Announces Stryten's Completed Acquisition of C&D Trojan
   · Atlas states that Stryten completed its C&D Technologies and Trojan acquisition on October xx.xx 2026 and would preserve the product brands; individual warranty succession is not established. ([atlasholdingsllc.com](https://www.atlasholdingsllc.com/news/atlas-holdings-announces-stryten-energys-acquisition-of-cd-trojan/))

5.9. Return on Investment & Cost-Benefit Analysis

For a telecom operator, the investment case begins with the protected service and the obligations retained after purchase. [redacted] Direct supply is preferable when existing accepted support can carry the obligations without duplicating services.

For an infrastructure owner or energy-service provider, the critical sensitivity is benefit retention. Helios Towers' disclosed service escalators protect contractual cost exposure but do not identify who receives storage-related benefits. [illegible] Ownership, permitted use, replacement, and end-of-term schedules are necessary before comparing leasing with ownership. Suppliers should decline extended customer guarantees that lack enforceable upstream remedies or explicitly funded local support.

Sources & Evidence

1. Sales & Services | EnerSys
   · The separately offered services support comparing retained buyer coordination with purchased lifecycle accountability, without establishing realized savings. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))
2. EnerSys 2026 Proxy Statement and Annual Report
   · EnerSys' fiscal 2026 filing states that warranties vary by application, geography, and product and generally cover workmanship and material defects within specified usage parameters. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
3. Helios Towers - Unaudited Results for the Six Months Ended June 30, 2025
   · The disclosed service-contract protections support checking which party retains an upgrade's benefits, rather than assuming the storage financier receives them. ([heliostowers.com](https://www.heliostowers.com/media/0hibxjme/helios-towers-rns-vfinal.pdf))
4. Reserve Markets | Fingrid
   · Compensation depends on the applicable reserve commitment, while trading and billing can be delegated to service providers. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
5. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   · Risk-proportionate investment and retained provider accountability support assessing continuity expenditure against the protected service, not hardware features alone. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
6. Transporting Lithium Batteries | PHMSA
   · PHMSA identifies regulatory responsibilities for lithium-battery shipments and disposal- or recycling-related transport, supporting separately allocated fulfillment obligations. ([phmsa.dot.gov](https://www.phmsa.dot.gov/lithiumbatteries))

7. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
   · The disclosed service model connects equipment sourcing with operation and maintenance, supporting separate analysis of financing, replacement, and service obligations. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
8. EnerSys Financial Solutions
   · EnerSys advertises capital and operating lease structures; the page does not establish an executed telecom-storage lease or transferred maintenance responsibility. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
9. Serviços Estacionários | Baterias Moura
   · The advertised collection and disposition services support a conditional comparison with separately contracted retirement, not automatic inclusion in every sale. ([moura.com.br](https://www.moura.com.br/servicos-estacionarios))
10. Service - HORIEN Salt Battery Solutions
   · HORIEN advertises lifecycle services and expressly makes maintenance and repair dependent on the type of signed contract. ([saltbattery.horien.com](https://saltbattery.horien.com/service/))

6. Cumulative Impact of Artificial Intelligence 2026

AI has a documented commercial role in telecom storage, rather than only hypothetical applications. ■■ ■■■ ■■■ ■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■ ■■■■■■■ ■■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■ ■ ■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ The purchasing implication is an additional software and service relationship alongside the physical storage commitment.

■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■ ■■■■■■■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■ ■ ■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■ ■■■■■■■■ ■■■ ■■■■■■■■■ For Multipurpose Operation, the telecom buyer should establish local participation rights, authority over the storage assets, and retained continuity accountability before contracting for AI-enabled energy services. Delegated administration can reduce commercial coordination work while introducing another counterparty; continuity-only purchasing remains an alternative when additional rights are not established.

Governance and integration can constrain adoption. Ofcom warns that AI/ML failures and integration complexity can cause service outages. ■■■■■■ ■■■■■■■■■ ■■ ■■■ ■■■ ■■■■■■■■■ ■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■ ■■ ■■ ■■■ ■ ■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■ ■■■■■■■■ ■■■■■■■■

Sources & Evidence

1. Reserve Markets | Fingrid
   - Fingrid requires a valid reserve-market agreement for reserve providers and permits service providers to undertake commercial functions, including trading and billing.
2. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
   - Ofcom warns that AI/ML software failures and integration complexity can cause service outages and expects competent, appropriately resourced personnel, including service partners.
3. Elisa Estonia deploys Elisa Industriq's Gridle optimization to support grid balancing and strengthen network resilience
   - On May xx.xx 2026, Elisa reported deploying Gridle's AI-powered optimization across its Estonian mobile network to manage base-station backup batteries and support electricity-system balancing. This is company-reported adoption, not independent verification of claimed commercial outcomes.
4. Artificial Intelligence Risk Management Framework (AI RMF 1.0)
   - NIST's voluntary AI RMF xx.xx addresses documented responsibilities, personnel and partner training, human oversight, ongoing review, and risks associated with third-party software, data, and intellectual-property rights.

7. Telecom Energy Storage System Market, by Product Integration

[illegible] Storage Modules and Packs provide a larger supplied assembly, but they do not necessarily remove dependencies on the installed power system: Vertiv advertises monitoring of its Telecom Lithium Batteries through the NetSure Control Unit. Buyers retaining an existing power plant should obtain acceptance of the proposed storage offering and explicit interface-support responsibilities before treating an independently supplied replacement as interchangeable.

Storage Banks and Racks add responsibility for the assembled storage package; EnerSys' PowerSafe mSeries combines batteries with integral racking. [illegible] These offerings should be compared at the same supplied assembly and contractual boundary, rather than assumed to provide equivalent continuity accountability.

Separate supply preserves purchasing flexibility when the buyer already has accepted integration and support counterparties. [illegible] Before award or a change of storage supplier, the buyer should distinguish equipment acceptance, power-system support, field service, and replacement responsibility.

Figure 8. Global Telecom Energy Storage System Market Size, by Product Integration, 2025 (%)

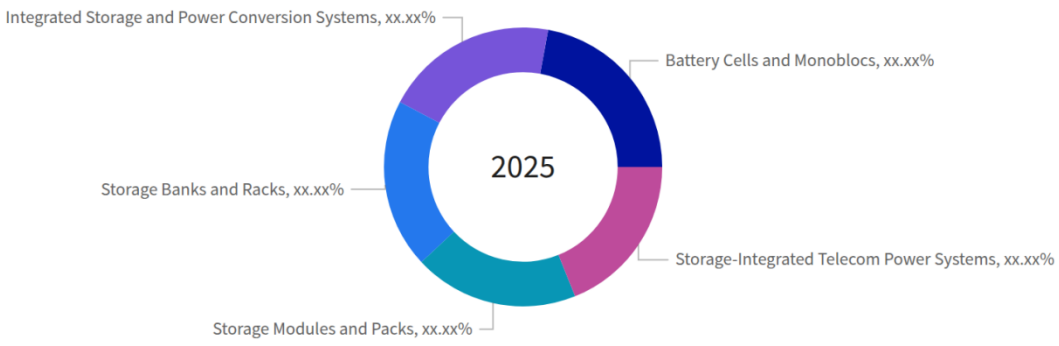


Figure 9. Global Telecom Energy Storage System Market, by Product Integration, 2032 (USD Million)

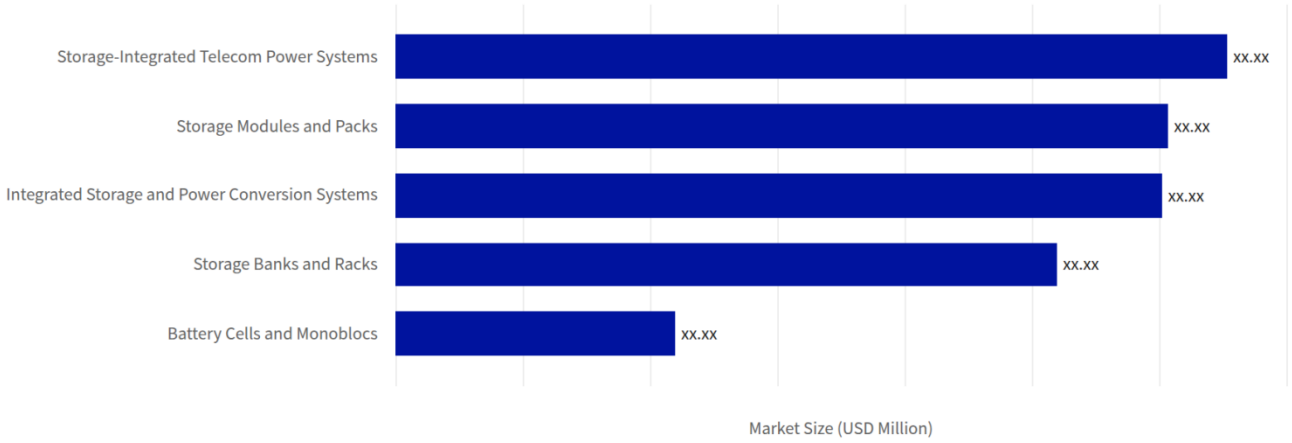


Table 4. Global Telecom Energy Storage System Market, by Product Integration growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 5. Global Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys
   - PowerSafe mSeries is advertised for telecommunications with integral racking, supporting an assembled storage purchasing boundary. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
2. Vertiv NetSure IPE Series
   - Vertiv describes NetSure IPE as telecom power equipment incorporating battery backup, supporting the broader integrated equipment boundary. ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))
3. Sales & Services | EnerSys
   - EnerSys separately advertises installation, maintenance, and recycling services. This establishes service capabilities rather than their inclusion in a particular equipment purchase. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))
4. Telecom Lithium Batteries | Vertiv
   - Vertiv advertises remote monitoring of Telecom Lithium Batteries through the NetSure Control Unit, establishing a named power-system relationship relevant to separate procurement. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
5. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026
   - The funding-year 2026 solicitation distinguished UPS equipment and necessary software from optional installation. ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))

6. PowerSafe D Batteries | EnerSys

· EnerSys markets PowerSafe D for telecommunications and identifies its chemistry as flooded lead acid, establishing a named component-level telecom offering.
([enersys.com](https://www.enersys.com/en-gb/products/batteries/powersafe/powersafe-d/))

7. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery

· Taxonomy evidence: The stationary telecom/ICT specification distinguishes cells, modules, packs, strings and battery systems; these terminology distinctions support assembly-level analysis, not a prescribed revenue segmentation.
([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

8. NSW Government - Operational Telecommunications Equipment, Infrastructure and Services Scheme

· Taxonomy evidence: The scheme's power category separately lists backup battery banks, lithium-ion storage, rectifiers, inverters, and generators. Its broader power-equipment scope is not equivalent to storage-only revenue or proof that every listed item forms one purchased integrated package.
([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))

9. Shuangdeng Group Co., Ltd. - Interim Report 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation.
([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation.
([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales.
([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales.
([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

10. Shuangdeng Group Co., Ltd. - Annual Report 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation.
([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation.
([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand.
([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand.
([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))

11. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
12. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

7.1. Battery Cells and Monoblocs

Table 6. Global Telecom Energy Storage System Market Size, by Battery Cells and Monoblocs, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 7. Global Telecom Energy Storage System Market Size, by Battery Cells and Monoblocs, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 8. Global Telecom Energy Storage System Market Size, by Battery Cells and Monoblocs, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IEC 60896-21:2004 - Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test
   - Taxonomy evidence: The international standard expressly covers stationary lead-acid cells and monobloc batteries used in telecom and related applications, establishing deployment-level product terminology. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))
2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Shuangdeng Group Co., Ltd. - Interim Report 2025
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales.
([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales.
([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
15. Shuangdeng Group Co., Ltd. - Annual Report 2025
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand.
([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand.
([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))

7.2. Integrated Storage and Power Conversion Systems

Table 9. Global Telecom Energy Storage System Market Size, by Integrated Storage and Power Conversion Systems, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 10. Global Telecom Energy Storage System Market Size, by Integrated Storage and Power Conversion Systems, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 11. Global Telecom Energy Storage System Market Size, by Integrated Storage and Power Conversion Systems, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 102 121 V1.4.1 (2025-02) - Power distribution to telecommunications and datacom (ICT) equipment

   · Taxonomy evidence: The ICT power-distribution classification addresses UPS equipment and battery-backed power-conversion arrangements. It supports the architecture distinction, but not the proposed commercial package-allocation rule by itself. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

2. Los Alamos National Laboratory Engineering Standards Manual - Chapter 7, Section D5090 - Revision 2, October 27, 2006

   · Taxonomy evidence: The manual distinguishes UPS equipment from storage delivered in a separate cabinet or rack, supporting the commercial distinction between storage assemblies and storage-conversion equipment. ([lanl.gov](https://www.lanl.gov/orgs/eng/engstandards/esm/electrical/Ch7_D5090-R2.pdf))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

7.3. Storage Banks and Racks

Table 12. Global Telecom Energy Storage System Market Size, by Storage Banks and Racks, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 13. Global Telecom Energy Storage System Market Size, by Storage Banks and Racks, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 14. Global Telecom Energy Storage System Market Size, by Storage Banks and Racks, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI ES 202 336-11 V1.2.1 (2025-09) - Battery system with integrated control and monitoring information model
   - Taxonomy evidence: An integrated battery system can contain several battery units and optional master management, supporting a separately purchased assembled-storage level without equating management electronics to a complete power plant.
   ([etsi.org](https://www.etsi.org/deliver/etsi_es/202300_202399/xx.xx/xx.xx.01_60/es_20233611v010201p.pdf))
2. ITU-T Recommendation L.1222 (05/2018) - Innovative energy storage technology for stationary use - Part 3: Supercapacitor technology
   - Taxonomy evidence: A supercapacitor bank is identified separately from individual modules.
   ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. EnerSys - PowerSafe mSeries Batteries
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))

7.4. Storage Modules and Packs

Table 15. Global Telecom Energy Storage System Market Size, by Storage Modules and Packs, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 16. Global Telecom Energy Storage System Market Size, by Storage Modules and Packs, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 17. Global Telecom Energy Storage System Market Size, by Storage Modules and Packs, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery
   · Taxonomy evidence: Modules and packs are separately defined storage assemblies; packs may include protective housing and associated electronics.
   ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
2. ETSI ES 202 336-11 V1.2.1 (2025-09) - Battery system with integrated control and monitoring information model
   · Taxonomy evidence: The telecom battery classification distinguishes a managed integrated battery unit from an integrated battery system containing connected units.
   ([etsi.org](https://www.etsi.org/deliver/etsi_es/202300_202399/xx.xx/xx.xx.01_60/es_20233611v010201p.pdf))
3. ITU-T Recommendation L.1222 (05/2018) - Innovative energy storage technology for stationary use - Part 3: Supercapacitor technology
   · Taxonomy evidence: Its application discussion identifies telecom supercapacitor modules, supporting technology-neutral module terminology.
   ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

4. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
5. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
6. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
7. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

8. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
9. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

10. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
11. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
12. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
13. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
14. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
15. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

16. Shuangdeng Group Co., Ltd. - Interim Report 2025
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
17. Shuangdeng Group Co., Ltd. - Annual Report 2025
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))

7.5. Storage-Integrated Telecom Power Systems

Table 18. Global Telecom Energy Storage System Market Size, by Storage-Integrated Telecom Power Systems, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 19. Global Telecom Energy Storage System Market Size, by Storage-Integrated Telecom Power Systems, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 20. Global Telecom Energy Storage System Market Size, by Storage-Integrated Telecom Power Systems, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 102 121 V1.4.1 (2025-02) - Power distribution to telecommunications and datacom (ICT) equipment

   · Taxonomy evidence: The specification separately describes telecom supply arrangements combining rectifiers, batteries and load supply, supporting the distinction between storage equipment and a broader telecom power system.
   ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

8. Telecom Energy Storage System Market, by Storage Technology

Lead-Acid Batteries require comparison of the supplied assembly and maintenance commitment, not a chemistry-wide purchasing assumption. EnerSys markets PowerSafe D as Flooded Lead-Acid Batteries for telecommunications, identifies PowerSafe mSeries as Absorbent Glass Mat Batteries with integral racking, and offers PowerSafe OPzV using gel technology. [redacted]

Lithium-Ion Batteries also require exact-offering documentation. Shuangdeng Group's 2025 prospectus describes its lithium-ion portfolio as mainly lithium iron phosphate and identifies telecom base-station products. [redacted]

Nickel-Based Batteries have different documented purchasing boundaries across their descendants. [redacted] These categories remain included, but their specific telecom supply and service relationships require confirmation before substitution.

Sodium-Based Batteries should not be treated as a single commercialization case. Shuangdeng reports launching a Sodium-Ion Batteries system for telecom base stations in 2023 and adoption in named Chinese provinces. [redacted]

[redacted] Phinergy advertises aluminum-air telecom backup with energy replenishment, making equipment support and replenishment responsibility separate commercial commitments. Buyers should establish both before treating the offering as a continuity alternative; advertised functionality does not establish local acceptance or a complete service agreement.

[redacted] For Flow Batteries and Flywheel Storage, a present offering-specific supply, warranty, and telecom acceptance commitment remains necessary before procurement. Across these retained categories, the relevant trigger for commercial commitment is documented acceptance and accountable fulfillment, not taxonomy membership or a historical technical reference.

Figure 10. Global Telecom Energy Storage System Market Size, by Storage Technology, 2025 (%)

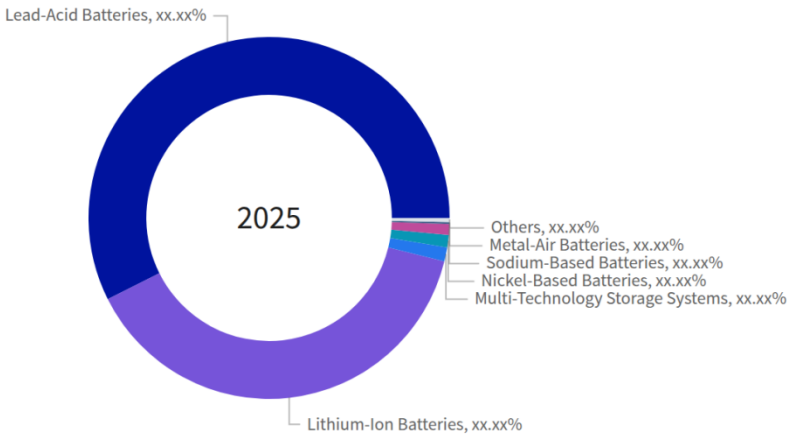


Figure 11. Global Telecom Energy Storage System Market, by Storage Technology, 2032 (USD Million)

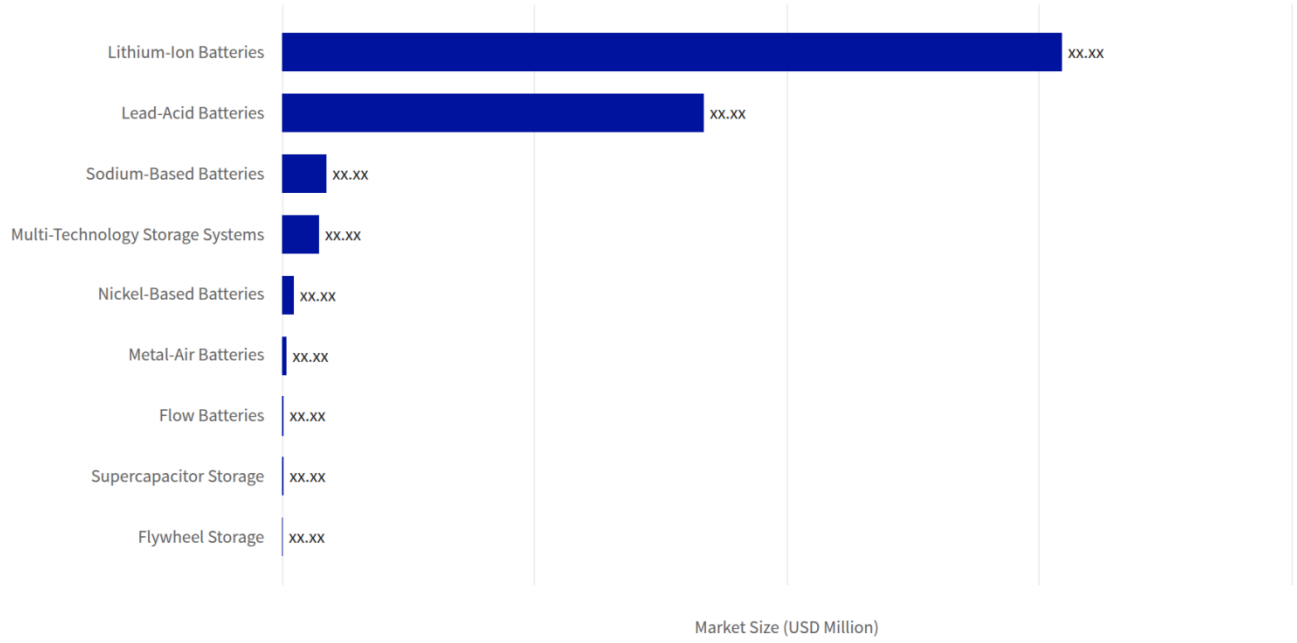


Table 21. Global Telecom Energy Storage System Market, by Storage Technology growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 22. Global Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys

   · EnerSys advertises PowerSafe mSeries for telecommunications, identifies AGM technology within a VRLA offering, and includes integral racking. The advertised assembly does not establish a complete continuity-service agreement. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))

2. Telecom Lithium Batteries | Vertiv

   · Vertiv advertises remote monitoring of Telecom Lithium Batteries through the NetSure Control Unit. This identifies a commercial integration relationship relevant to replacement acceptance and support allocation, not universal exclusivity or chemistry-wide interchangeability. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))

3. PowerSafe D Batteries | EnerSys

   · EnerSys identifies PowerSafe D as flooded lead-acid batteries for telecommunications and describes maintenance-related distinctions within the range. These are advertised product characteristics, not contracted maintenance coverage. ([enersys.com](https://www.enersys.com/en-gb/products/batteries/powersafe/powersafe-d/))

4. Products | FZ Energy Storage Systems Sdn Bhd

   · FZ Energy identifies salt batteries as sodium-nickel chloride, markets HORIEN by FZSoNick, and lists the TL Range for telecommunications. The listing establishes an advertised channel offering, not completed procurement, buyer approval, or transferable availability. ([fz.energy](https://www.fz.energy/products/))

5. Energy Backup | Phinergy

   · Phinergy markets aluminum-air backup to telecom operators and tower companies and advertises energy reloading and remote monitoring. The need to allocate replenishment responsibility separately from equipment support is a bounded commercial inference, not an established local service agreement. ([phinergy.com](https://phinergy.com/solutions/energy-backup/))

6. Shuangdeng Group Co., Ltd. - Prospectus

· Shuangdeng's prospectus describes its lithium-ion portfolio as mainly lithium iron phosphate and identifies telecom base-station applications. This portfolio-level statement does not classify every proposed model. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· The issuer's own business disclosure reports a sodium-ion telecom battery-system launch in 2023 and use in Anhui, Qinghai, Tibet, and Gansu. These are company-reported commercialization facts, not independent approval or performance findings. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.

7. High-durability Nickel-Metal Hydride Batteries | FDK

· FDK's high-durability nickel-metal-hydride portfolio identifies communication base stations among its applications and lists individual battery models. This establishes an advertised telecom-oriented component category, not a complete site-backup or field-service commitment. ([fdk.co.jp](https://www.fdk.co.jp/product/nimh/high_durability/))

8. PowerSafe OPzV Battery Range Summary | EnerSys

· EnerSys' PowerSafe OPzV literature identifies telecommunications applications, valve-regulated lead-acid gel technology, and a low-maintenance proposition. It does not establish buyer-specific service obligations or comparative lifecycle outcomes. ([enersys.com](https://www.enersys.com/4ab960/globalassets/documents/product-documentation/powersafe/opzv/amer/en-rs-amer-ps-opzv-xx.xx.pdf))

9. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery

· ETSI distinguishes named lithium-ion families and recognizes nickel-cadmium, nickel-metal hydride, nickel-zinc, and nickel-iron technologies in its stationary-storage classification. Its classification does not identify a supplier's current commercial commitments or endorse a particular offering. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

10. PowerSafe NiCd | EnerSys

· EnerSys advertises PowerSafe NiCd batteries for telecommunications, establishing a named nickel-cadmium offering rather than standards recognition alone. The portfolio does not establish transaction-specific availability or complete site-service coverage. ([enersys.com](https://www.enersys.com/en-gb/products/batteries/powersafe/powersafe-nicd/))

11. ITU-T Recommendation L.1222 (05/2018) - Innovative Energy Storage Technology for Stationary Use; Part 3: Supercapacitor Technology

· ITU's May 2018 recommendation recognizes supercapacitor use in telecommunications access networks and combinations with batteries. That recognition does not establish an extended-outage service commitment or local commercial availability.
([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.

12. EESAT 2007 Conference | DOE Office of Electricity Energy Storage Program

· Sandia's 2007 archive lists a vanadium-redox storage case study at a telecommunications point-of-presence site. The listing establishes a historical application reference, not present supplier availability, a procurement outcome, or an enforceable support commitment.
([sandia.gov](https://www.sandia.gov/ess/events/conference-archive/eesat-2007))

13. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview

· Taxonomy evidence: The stationary ICT overview identifies battery and supercapacitor families and presents a broader electrical-storage classification. Recognition does not establish market shares or current purchases.
([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

14. Shuangdeng Group Co., Ltd. - Annual Report 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

15. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.

16. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
17. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
18. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.

8.1. Lead-Acid Batteries

Table 23. Global Telecom Energy Storage System Market, by Lead-Acid Batteries growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	N/A	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	N/A	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**N/A**	**xx.xx**

Table 24. Global Telecom Energy Storage System Market Size, by Lead-Acid Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 25. Global Telecom Energy Storage System Market Size, by Lead-Acid Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 26. Global Telecom Energy Storage System Market Size, by Lead-Acid Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IEC 60896-21:2004 - Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test
   · Taxonomy evidence: The standard identifies stationary lead-acid equipment as a battery family used in telecommunications. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))
2. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: Its electrochemical classification identifies flooded, AGM and gel lead-acid types. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.

14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Shuangdeng Group Co., Ltd. - Annual Report 2025
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.

16. EnerSys - PowerSafe mSeries Batteries
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.

17. PowerSafe D | EnerSys
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.

8.1.1. Valve-Regulated Lead-Acid Batteries

Table 27. Global Telecom Energy Storage System Market, by Valve-Regulated Lead-Acid Batteries growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	N/A	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	N/A	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**N/A**	**xx.xx**

Table 28. Global Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 29. Global Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 30. Global Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IEC 60896-21:2004 - Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test

   · Taxonomy evidence: Its scope specifically addresses valve-regulated stationary lead-acid cells and monobloc batteries, including telecom use. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. EnerSys - PowerSafe mSeries Batteries
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
15. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.

8.1.1.1. Absorbent Glass Mat Batteries

Table 31. Global Telecom Energy Storage System Market Size, by Absorbent Glass Mat Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 32. Global Telecom Energy Storage System Market Size, by Absorbent Glass Mat Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 33. Global Telecom Energy Storage System Market Size, by Absorbent Glass Mat Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   - Taxonomy evidence: AGM is explicitly identified within the lead-acid classification. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. EnerSys - PowerSafe mSeries Batteries
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8.1.1.2. Gel Batteries

Table 34. Global Telecom Energy Storage System Market Size, by Gel Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 35. Global Telecom Energy Storage System Market Size, by Gel Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 36. Global Telecom Energy Storage System Market Size, by Gel Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: Gel is explicitly identified within the lead-acid classification. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.

8.1.2. Flooded Lead-Acid Batteries

Table 37. Global Telecom Energy Storage System Market Size, by Flooded Lead-Acid Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 38. Global Telecom Energy Storage System Market Size, by Flooded Lead-Acid Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 39. Global Telecom Energy Storage System Market Size, by Flooded Lead-Acid Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IEC 60896-11:2002 - Stationary lead-acid batteries - Part 11: Vented types - General requirements and methods of tests

   · Taxonomy evidence: This international publication separately identifies vented stationary lead-acid batteries, supporting the flooded/vented branch rather than combining it with valve-regulated equipment. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.

8.2. Lithium-Ion Batteries

Table 40. Global Telecom Energy Storage System Market, by Lithium-Ion Batteries growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 41. Global Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 42. Global Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 43. Global Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery

   · Taxonomy evidence: The specification distinguishes lithium-ion cathode labels from anode types, explicitly identifying LTO as an anode type. This supports avoiding overlapping cathode/anode siblings. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

2. IEC 62620:2014 - Secondary lithium cells and batteries for use in industrial applications

   · Taxonomy evidence: The international industrial lithium-battery standard expressly includes stationary telecom applications within its scope. ([webstore.iec.ch](https://webstore.iec.ch/en/publication/xx.xx))

3. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.

13. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
15. Shuangdeng Group Co., Ltd. - Annual Report 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
16. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.

8.2.1. Phosphate-Cathode Lithium-Ion Batteries

Table 44. Global Telecom Energy Storage System Market Size, by Phosphate-Cathode Lithium-Ion Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 45. Global Telecom Energy Storage System Market Size, by Phosphate-Cathode Lithium-Ion Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 46. Global Telecom Energy Storage System Market Size, by Phosphate-Cathode Lithium-Ion Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery
   · Taxonomy evidence: An informative telecom-site example identifies an LFP storage module, strengthening telecom-specific recognition of the phosphate branch without establishing phosphate variants beyond LFP. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

2. ITU-T Recommendation L.1221 (11/2018) - Innovative energy storage technology for stationary use - Part 2: Battery

· Taxonomy evidence: The stationary telecom/ICT battery classification names LFP; its placement within a broader phosphate-cathode category is analytical. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

3. China Tower - Chairman's Statement, 2025 operating results

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.

6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.

11. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

8.2.2. Metal-Oxide-Cathode Lithium-Ion Batteries

Table 47. Global Telecom Energy Storage System Market Size, by Metal-Oxide-Cathode Lithium-Ion Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 48. Global Telecom Energy Storage System Market Size, by Metal-Oxide-Cathode Lithium-Ion Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 49. Global Telecom Energy Storage System Market Size, by Metal-Oxide-Cathode Lithium-Ion Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU-T Recommendation L.1221 (11/2018) - Innovative energy storage technology for stationary use - Part 2: Battery

   · Taxonomy evidence: LCO, LMO, NCA and NMC are named lithium-ion families; their consolidation into a conventional oxide-cathode category is analytical. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Focusing Stored Energy Where It Matters Most | EnerSys
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.

8.3. Multi-Technology Storage Systems

Table 50. Global Telecom Energy Storage System Market Size, by Multi-Technology Storage Systems, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 51. Global Telecom Energy Storage System Market Size, by Multi-Technology Storage Systems, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 52. Global Telecom Energy Storage System Market Size, by Multi-Technology Storage Systems, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU-T Recommendation L.1222 (05/2018) - Innovative energy storage technology for stationary use - Part 3: Supercapacitor technology

   · Taxonomy evidence: The recommendation discusses supercapacitors integrated with batteries, independently establishing a combined-storage configuration without proving current package sales. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025

- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.

8.4. Nickel-Based Batteries

Table 53. Global Telecom Energy Storage System Market, by Nickel-Based Batteries growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 54. Global Telecom Energy Storage System Market Size, by Nickel-Based Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 55. Global Telecom Energy Storage System Market Size, by Nickel-Based Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 56. Global Telecom Energy Storage System Market Size, by Nickel-Based Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery
   · Taxonomy evidence: The stationary telecom/ICT battery specification defines aqueous nickel-based batteries separately from lithium-ion cathode and anode labels, supporting the retained nickel parent without combining nickel-containing lithium-ion products into it. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

2. ANSI Standards Action - May 16, 2025 - BSR/IEEE 1657 stationary-battery project notice
   - Taxonomy evidence: The May xx.xx 2025 project notice identifies telecom stakeholders and four stationary nickel battery families. It is a standards-development notice, not evidence of completed product purchases. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.

6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.

12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
15. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
16. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
17. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
18. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

8.4.1. Nickel-Cadmium Batteries

Table 57. Global Telecom Energy Storage System Market Size, by Nickel-Cadmium Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 58. Global Telecom Energy Storage System Market Size, by Nickel-Cadmium Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 59. Global Telecom Energy Storage System Market Size, by Nickel-Cadmium Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery

   · Taxonomy evidence: Nickel-cadmium is explicitly recognized in the stationary telecom/ICT battery classification and illustrated in a telecom-site example; recognition is not current purchasing volume. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

2. ANSI Standards Action - May 16, 2025 - BSR/IEEE 1657 stationary-battery project notice

   · Taxonomy evidence: Nickel-cadmium is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))

3. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.

8.4.2. Nickel-Metal Hydride Batteries

Table 60. Global Telecom Energy Storage System Market Size, by Nickel-Metal Hydride Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 61. Global Telecom Energy Storage System Market Size, by Nickel-Metal Hydride Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 62. Global Telecom Energy Storage System Market Size, by Nickel-Metal Hydride Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery

   · Taxonomy evidence: Nickel-metal hydride is explicitly included within the aqueous nickel-based stationary classification; the document does not establish current telecom equipment transactions. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))

2. ANSI Standards Action - May 16, 2025 - BSR/IEEE 1657 stationary-battery project notice

   · Taxonomy evidence: Nickel-metal hydride is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))

3. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.

8.4.3. Nickel-Zinc Batteries

Table 63. Global Telecom Energy Storage System Market Size, by Nickel-Zinc Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 64. Global Telecom Energy Storage System Market Size, by Nickel-Zinc Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 65. Global Telecom Energy Storage System Market Size, by Nickel-Zinc Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery
   · Taxonomy evidence: Nickel-zinc is explicitly included within the aqueous nickel-based stationary classification, supporting identity but not current telecom commercial materiality. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
2. ANSI Standards Action - May 16, 2025 - BSR/IEEE 1657 stationary-battery project notice
   · Taxonomy evidence: Nickel-zinc is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
3. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.

8.4.4. Nickel-Iron Batteries

Table 66. Global Telecom Energy Storage System Market Size, by Nickel-Iron Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 67. Global Telecom Energy Storage System Market Size, by Nickel-Iron Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 68. Global Telecom Energy Storage System Market Size, by Nickel-Iron Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-2 V1.1.1 - Innovative Energy Storage Technology for Stationary Use; Part 2: Battery
   · Taxonomy evidence: Nickel-iron is explicitly included within the aqueous nickel-based stationary classification; this does not establish a currently purchased telecom package. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355302v010101p.pdf))
2. ANSI Standards Action - May 16, 2025 - BSR/IEEE 1657 stationary-battery project notice
   · Taxonomy evidence: Nickel-iron is explicitly included among stationary battery families. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
3. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

8.5. Sodium-Based Batteries

Table 69. Global Telecom Energy Storage System Market, by Sodium-Based Batteries growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 70. Global Telecom Energy Storage System Market Size, by Sodium-Based Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 71. Global Telecom Energy Storage System Market Size, by Sodium-Based Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 72. Global Telecom Energy Storage System Market Size, by Sodium-Based Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: The classification distinguishes sodium-ion and high-temperature sodium battery names within sodium-based storage.
   ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.

13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
14. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
15. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
16. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.

8.5.1. Sodium-Ion Batteries

Table 73. Global Telecom Energy Storage System Market Size, by Sodium-Ion Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 74. Global Telecom Energy Storage System Market Size, by Sodium-Ion Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 75. Global Telecom Energy Storage System Market Size, by Sodium-Ion Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: Sodium-ion is explicitly named, without establishing current telecom sales. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.

13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
14. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.

8.5.2. Sodium-Nickel Chloride Batteries

Table 76. Global Telecom Energy Storage System Market Size, by Sodium-Nickel Chloride Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 77. Global Telecom Energy Storage System Market Size, by Sodium-Nickel Chloride Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 78. Global Telecom Energy Storage System Market Size, by Sodium-Nickel Chloride Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: Sodium-nickel chloride is separately named within sodium-based batteries. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
2. ANSI Standards Action - May 16, 2025 - BSR/IEEE 1657 stationary-battery project notice
   · Taxonomy evidence: The notice also separately recognizes sodium-nickel chloride stationary batteries. ([share.ansi.org](https://share.ansi.org/Shared%20Documents/Standards%20Action/2025-PDFs/SAV5620.pdf))
3. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.

8.5.3. Sodium-Sulfur Batteries

Table 79. Global Telecom Energy Storage System Market Size, by Sodium-Sulfur Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 80. Global Telecom Energy Storage System Market Size, by Sodium-Sulfur Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 81. Global Telecom Energy Storage System Market Size, by Sodium-Sulfur Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: Sodium-sulfur is separately named; direct telecom commercial relevance is not established by this classification. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.

8.6. Metal-Air Batteries

Table 82. Global Telecom Energy Storage System Market Size, by Metal-Air Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 83. Global Telecom Energy Storage System Market Size, by Metal-Air Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 84. Global Telecom Energy Storage System Market Size, by Metal-Air Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU-T Recommendation L.1221 (11/2018) - Innovative energy storage technology for stationary use - Part 2: Battery

   · Taxonomy evidence: Metal-air batteries are recognized separately within the stationary battery overview; this does not resolve consumable-revenue treatment. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.

8.7. Flow Batteries

Table 85. Global Telecom Energy Storage System Market Size, by Flow Batteries, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 86. Global Telecom Energy Storage System Market Size, by Flow Batteries, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 87. Global Telecom Energy Storage System Market Size, by Flow Batteries, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU-T Recommendation L.1221 (11/2018) - Innovative energy storage technology for stationary use - Part 2: Battery

   · Taxonomy evidence: Flow batteries are recognized as a distinct stationary battery family. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

2. Sandia National Laboratories - EESAT 2007 Conference Archive

   · Taxonomy evidence: The official conference archive lists a case-study presentation on vanadium-redox storage at a telecommunications point-of-presence. The agenda corroborates historical telecom relevance but does not independently establish deployment results or current availability. ([sandia.gov](https://www.sandia.gov/ess/events/conference-archive/eesat-2007))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.

8.8. Flywheel Storage

Table 88. Global Telecom Energy Storage System Market Size, by Flywheel Storage, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 89. Global Telecom Energy Storage System Market Size, by Flywheel Storage, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 90. Global Telecom Energy Storage System Market Size, by Flywheel Storage, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Los Alamos National Laboratory Engineering Standards Manual - Chapter 7, Section D5090 - Revision 2, October 27, 2006

   · Taxonomy evidence: The October xx.xx 2006 infrastructure manual addresses critical telecommunications UPS loads and identifies batteries or flywheels as associated energy storage. This is historical infrastructure recognition, not current sales evidence. ([lanl.gov](https://www.lanl.gov/orgs/eng/engstandards/esm/electrical/Ch7_D5090-R2.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

8.9. Supercapacitor Storage

Table 91. Global Telecom Energy Storage System Market Size, by Supercapacitor Storage, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 92. Global Telecom Energy Storage System Market Size, by Supercapacitor Storage, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 93. Global Telecom Energy Storage System Market Size, by Supercapacitor Storage, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU-T Recommendation L.1222 (05/2018) - Innovative energy storage technology for stationary use - Part 3: Supercapacitor technology

   · Taxonomy evidence: The international recommendation explicitly addresses supercapacitor storage for stationary telecommunications and access-network applications. ([itu.int](https://www.itu.int/rec/dologin_pub.asp?id=T-REC-L.xx.xx-xx.xx-I%xx.xx%21PDF-E&lang=e&type=items))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

9. Telecom Energy Storage System Market, by Network Application

[illegible] This distinguishes a risk-based mobile purchasing rationale from a specific fixed-network deployment expectation; it does not establish identical global requirements. Suppliers should identify the protected network function and the applicable operator commitment before selecting an equipment or service package.

Transport Networks and Core and Switching Facilities require function-based purchasing interpretation. The NSW telecommunications procurement scheme distinguishes transmission from core equipment while placing IP-MPLS within a core purchasing category. [illegible]

Telecom Edge Computing and Shared Network Facilities can alter the storage contracting boundary. Vertiv advertises edge arrangements serving AC and DC equipment from a common battery bank. [illegible]

Customer-Premises Network Equipment has distinct institutional and residential routes. Lebanon Community School District's 2026 UPS solicitation admitted equivalent brands and separated funding eligibility. [illegible]

Figure 12. Global Telecom Energy Storage System Market Size, by Network Application, 2025 (%)

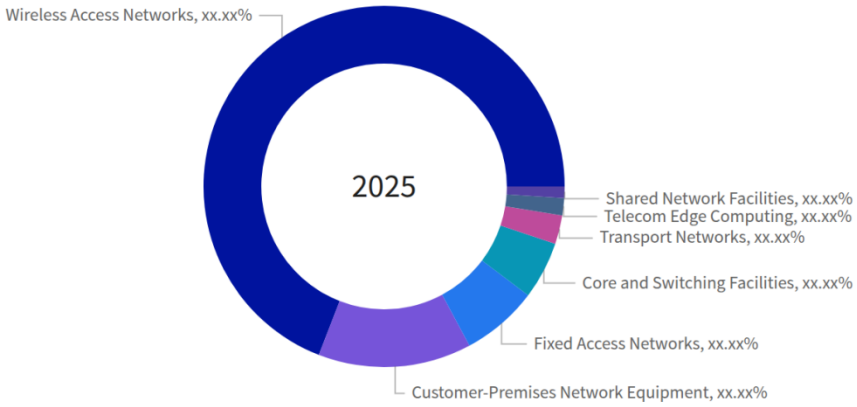


Figure 13. Global Telecom Energy Storage System Market, by Network Application, 2032 (USD Million)

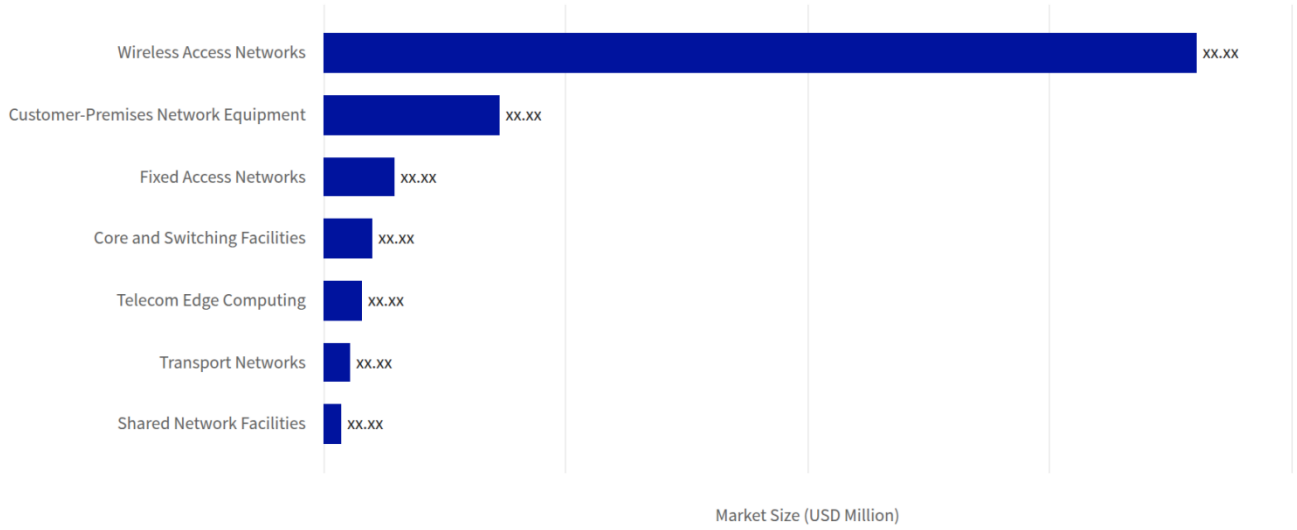


Table 94. Global Telecom Energy Storage System Market, by Network Application growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 95. Global Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

RESEARCH SAMPLE REPORT

Sources & Evidence

1. Vertiv Solutions for Efficient Edge Network and 5G Deployment

   · Vertiv advertises telecom edge arrangements backing AC and DC equipment from a common battery bank. This supports a shared-storage offering boundary, not tenant-specific contractual rights. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

2. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026

   · Lebanon Community School District sought internal-network backup, permitted equivalent brands, and separated non-E-Rate-eligible items. The record is a solicitation, not an award. ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))

3. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

   · Ofcom's June 2026 guidance links mobile investment to assessed risks and expects powered active components in new fixed-access street cabinets to have backup. These are UK application-specific expectations. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

4. How to buy a phone modem battery case for your Xfinity Voice service

   · Xfinity describes voice backup for certain rental modems and warns that upstream network failures can prevent calls. ([xfinity.com](https://www.xfinity.com/support/articles/getting-a-new-battery))

5. Operational Telecommunications Equipment, Infrastructure and Services Scheme | NSW Government
   · The NSW scheme separates transmission and core purchasing categories while listing IP-MPLS within core equipment, supporting caution about function attribution from procurement labels. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
   · Taxonomy evidence: The NSW procurement scheme places IP-MPLS items within a core-network purchasing label while separately listing transmission equipment. Consequently, national purchasing labels cannot alone determine the retained function-based access, transport, and core partition. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
   · Taxonomy evidence: The government purchasing scheme separates core, transmission, stationary terminal, and power-system equipment. Its power category expressly includes backup battery banks and lithium-ion storage. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
6. ETSI ES 203 228 V1.4.1 - Assessment of Mobile Network Energy Efficiency
   · Taxonomy evidence: The April 2022 framework identifies base stations, backhaul, edge equipment, and site batteries within mobile-network assessment; these are network functions, not separate battery-sales totals. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))
7. China Tower Corporation Limited - Interim Report 2026
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
8. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
9. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

9.1. Wireless Access Networks

Table 96. Global Telecom Energy Storage System Market Size, by Wireless Access Networks, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 97. Global Telecom Energy Storage System Market Size, by Wireless Access Networks, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 98. Global Telecom Energy Storage System Market Size, by Wireless Access Networks, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Elisa Estonia Deploys Elisa Industriq's Gridle Optimization to Support Grid Balancing and Strengthen Network Resilience

   · Taxonomy evidence: The May xx.xx 2026 announcement reports deployment of battery management across Elisa Estonia's mobile base stations, establishing a dated wireless-access storage operating setting rather than 2025 equipment sales.
   ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

2. ETSI ES 203 228 V1.4.1 - Assessment of Mobile Network Energy Efficiency

   · Taxonomy evidence: The framework recognizes multiple base-station asset classes and associated site batteries, supporting wireless access as an application independent of radio generation.
   ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

3. Elisa - Virtual Power Plant (DES)

   · Taxonomy evidence: The operator describes using its own mobile base-station backup batteries, directly establishing an operator-deployed wireless-access storage setting.
   ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

4. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
5. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
6. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
7. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

8. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
9. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

10. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
11. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
12. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
13. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
14. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
15. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

16. China Tower Corporation Limited - Interim Report 2026
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

9.2. Customer-Premises Network Equipment

Table 99. Global Telecom Energy Storage System Market Size, by Customer-Premises Network Equipment, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 100. Global Telecom Energy Storage System Market Size, by Customer-Premises Network Equipment, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 101. Global Telecom Energy Storage System Market Size, by Customer-Premises Network Equipment, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule

   · Taxonomy evidence: The operator's customer agreement separately offers backup-source purchases for VoIP and fiber-terminal continuity, and its schedule identifies battery-backed micro-UPS packages. This is a dedicated premises telecom application, not generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

2. ETSI EN 302 099 V2.2.1 - Powering of Equipment in Access Network

   · Taxonomy evidence: The standard separately identifies customer-premises equipment within access-network power protection, supporting its distinction from network-side access assets. ([etsi.org](https://www.etsi.org/deliver/etsi_en/302000_302099/xx.xx/xx.xx.01_60/en_302099v020201p.pdf))

3. Federal Communications Commission - Ensuring Continuity of 911 Communications, Final Rule
   · Taxonomy evidence: The October xx.xx 2015 final rule addresses backup for non-line-powered fixed residential voice service, establishing dedicated subscriber-premises telecom backup as a commercial application. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2015-xx.xx-xx.xx/pdf/2015-xx.xx.pdf))
4. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
5. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
6. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.

7. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
8. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

9. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
10. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
11. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
12. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.

13. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
14. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
15. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

9.3. Fixed Access Networks

Table 102. Global Telecom Energy Storage System Market Size, by Fixed Access Networks, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 103. Global Telecom Energy Storage System Market Size, by Fixed Access Networks, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 104. Global Telecom Energy Storage System Market Size, by Fixed Access Networks, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI EN 302 099 V2.2.1 - Powering of Equipment in Access Network

   · Taxonomy evidence: The February 2021 standard addresses access-network powering and backup across network-side equipment, local exchanges, and customer premises, including copper and fiber access. ([etsi.org](https://www.etsi.org/deliver/etsi_en/302000_302099/xx.xx/xx.xx.01_60/en_302099v020201p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

9.4. Core and Switching Facilities

Table 105. Global Telecom Energy Storage System Market Size, by Core and Switching Facilities, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 106. Global Telecom Energy Storage System Market Size, by Core and Switching Facilities, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 107. Global Telecom Energy Storage System Market Size, by Core and Switching Facilities, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. NSW Government - Operational Telecommunications Equipment, Infrastructure and Services Scheme

   · Taxonomy evidence: The scheme identifies narrowband switching and broadband packet-core equipment as core-network categories. This is a purchasing classification, not storage-specific expenditure. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))

2. Federal Communications Commission - Improving 9-1-1 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies

   · Taxonomy evidence: The January xx.xx 2014 final rule includes central-office backup power for facilities serving emergency-call functions, including selective routing, and recognizes batteries among eligible backup sources. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2014-xx.xx-xx.xx/pdf/2014-xx.xx.pdf))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

9.5. Transport Networks

Table 108. Global Telecom Energy Storage System Market Size, by Transport Networks, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 109. Global Telecom Energy Storage System Market Size, by Transport Networks, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 110. Global Telecom Energy Storage System Market Size, by Transport Networks, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. NSW Government - Operational Telecommunications Equipment, Infrastructure and Services Scheme
   · Taxonomy evidence: Transmission and satellite-backhaul categories cover network transit and stationary gateway infrastructure, supporting function-based treatment rather than a separate geographic or satellite-platform axis.
   ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
2. ETSI ES 203 228 V1.4.1 - Assessment of Mobile Network Energy Efficiency
   · Taxonomy evidence: Backhaul is identified as equipment interconnecting base stations with the core network, supporting a transport-function distinction from subscriber radio access.
   ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation.
([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

9.6. Telecom Edge Computing

Table 111. Global Telecom Energy Storage System Market Size, by Telecom Edge Computing, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 112. Global Telecom Energy Storage System Market Size, by Telecom Edge Computing, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 113. Global Telecom Energy Storage System Market Size, by Telecom Edge Computing, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI ES 203 228 V1.4.1 - Assessment of Mobile Network Energy Efficiency
   - Taxonomy evidence: Multi-access edge equipment is explicitly recognized; its inclusion does not independently identify a telecom-only storage-equipment allocation. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

9.7. Shared Network Facilities

Table 114. Global Telecom Energy Storage System Market Size, by Shared Network Facilities, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 115. Global Telecom Energy Storage System Market Size, by Shared Network Facilities, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 116. Global Telecom Energy Storage System Market Size, by Shared Network Facilities, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI ES 203 228 V1.4.1 - Assessment of Mobile Network Energy Efficiency

   · Taxonomy evidence: The assessment includes batteries alongside fixed-network, backhaul, and edge equipment. This establishes coexistence, not proof that one purchased storage bank serves all functions inseparably.
   ([etsi.org](https://www.etsi.org/deliver/etsi_es/203200_203299/xx.xx/xx.xx.01_60/es_203228v010401p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

10. Telecom Energy Storage System Market, by Storage Purpose

Service Continuity Backup and On-Site Generation Integration create different purchasing duties, even when the same storage assets contribute to both. IHS reports battery arrangements alongside generation in its African power-management activities, excluding South Africa from the cited managed-power context. ■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■ ■■ ■ ■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■ ■ ■■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■ ■ ■■■■■■■■■■■ ■■■■■■■■■

Electricity Cost Management and Peak Power Support should not be conflated. Elisa describes shifting electricity purchases using base-station batteries. ■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■■■■■ ■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■ ■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■■ ■■ ■■■■ ■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■

Grid Services introduce a separate commercial access relationship. ■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■ ■ ■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■ Delegated administration can reduce coordination work but adds a counterparty; continuity-only procurement remains an alternative where secondary-use rights are not established.

Combined operating uses do not establish co-primary purchase duties or separate equipment opportunities. ■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ Without that allocation, an observed multipurpose deployment cannot establish the economics or accessibility of another buyer's proposed purchase.

Figure 14. Global Telecom Energy Storage System Market Size, by Storage Purpose, 2025 (%)

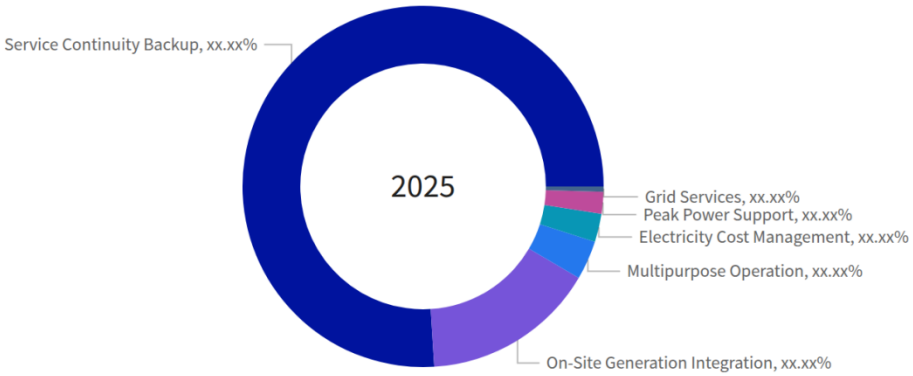


Figure 15. Global Telecom Energy Storage System Market, by Storage Purpose, 2032 (USD Million)

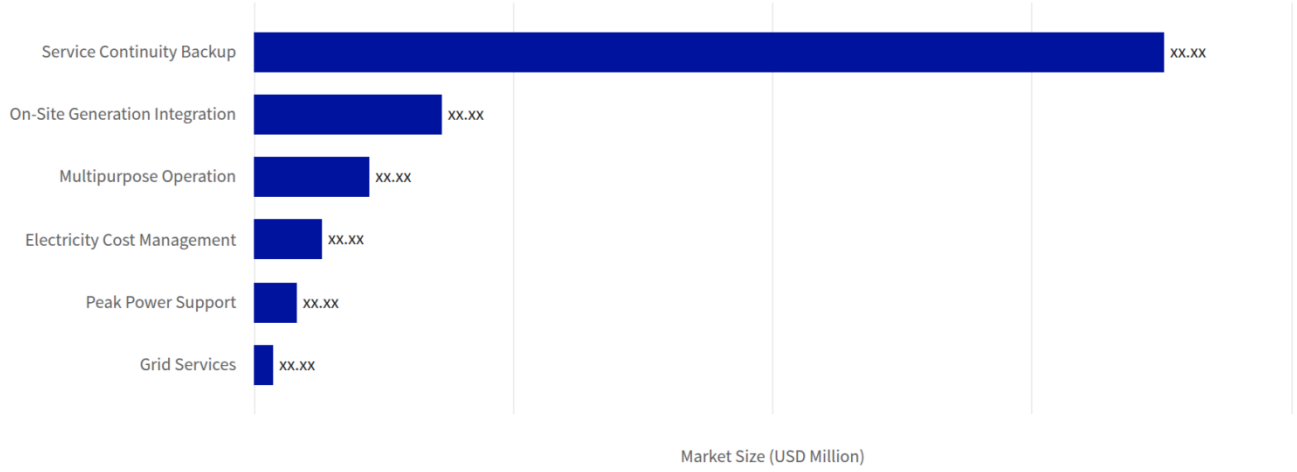


Table 117. Global Telecom Energy Storage System Market, by Storage Purpose growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 118. Global Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IHS Holding Limited - 2025 Form 20-F

   · IHS reports batteries alongside generation in its African managed-power context, excluding South Africa from the cited arrangements. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

2. Reserve Markets | Fingrid

   · Fingrid requires a valid reserve-market agreement and describes service-provider commercial roles. These requirements establish a separate participation relationship beyond storage ownership. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))

3. Virtual Power Plant | Elisa

   · Elisa describes electricity-purchasing shifts using base-station batteries and reports Finnish permission for balancing-market use. These establish company-reported combined uses, not another contract's principal purchase duty or rights. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

4. ETSI EN 302 099 V2.2.1 - Powering of Equipment in Access Network

   · ETSI's access-network standard recognizes local batteries supplying additional power when traffic increases. This is application recognition, not proof of a particular procurement or electricity-cost benefit. ([etsi.org](https://www.etsi.org/deliver/etsi_en/302000_302099/xx.xx/xx.xx.01_60/en_302099v020201p.pdf))

5. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview

   · Taxonomy evidence: The August 2019 specification distinguishes interruption resilience, renewable self-consumption, and smart-grid uses of stationary telecom storage. It establishes use-case recognition, not purchasing shares. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

6. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales.
   ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

10.1. Service Continuity Backup

Table 119. Global Telecom Energy Storage System Market Size, by Service Continuity Backup, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 120. Global Telecom Energy Storage System Market Size, by Service Continuity Backup, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 121. Global Telecom Energy Storage System Market Size, by Service Continuity Backup, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Elisa Estonia Deploys Elisa Industriq's Gridle Optimization to Support Grid Balancing and Strengthen Network Resilience

   · Taxonomy evidence: The announced deployment maintains mobile-network operation during power disruptions, supporting continuity duty without verifying a particular backup-duration tier. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

2. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview

   · Taxonomy evidence: Sections xx.xx and xx.xx describe storage supporting short supply disturbances and longer outages, supporting a continuity category without imposing duration tiers. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

3. Federal Communications Commission - Ensuring Continuity of 911 Communications, Final Rule

   · Taxonomy evidence: The rule's stated purpose is continued access to emergency calling during commercial power outages, supporting continuity as an economic storage duty. This is U.S.-specific evidence, not a universal regulation. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2015-xx.xx-xx.xx/pdf/2015-xx.xx.pdf))

4. Federal Communications Commission - Improving 9-1-1 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies
   · Taxonomy evidence: The historical reliability framework links central-office backup to maintaining service functionality during loss of primary power; it does not require every backup arrangement to use battery storage. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2014-xx.xx-xx.xx/pdf/2014-xx.xx.pdf))
5. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
6. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
7. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.

8. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
9. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

10. ITU - The ICT Development Index 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
11. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
12. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
13. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.

14. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
15. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
16. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

10.2. On-Site Generation Integration

Table 122. Global Telecom Energy Storage System Market Size, by On-Site Generation Integration, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 123. Global Telecom Energy Storage System Market Size, by On-Site Generation Integration, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 124. Global Telecom Energy Storage System Market Size, by On-Site Generation Integration, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: Section xx.xx identifies storage of excess renewable generation for subsequent telecom consumption in both grid-connected and off-grid settings.
   ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
2. IFC - IPT PowerTech, Project 49095
   · Taxonomy evidence: The disclosure identifies telecom energy solutions combining grid supply, diesel generation, solar, and sourced batteries, corroborating a generation-storage integration setting without allocating equipment revenue.
   ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
3. ETSI TR 102 532 V1.1.1 - The Use of Alternative Energy Solutions in Telecommunications Installations
   · Taxonomy evidence: The June 2009 report recognizes telecom energy storage alongside alternative generation and hybrid power systems. It supports integration as an established application concept, not current purchasing volume or equipment-value allocation.
   ([etsi.org](https://www.etsi.org/deliver/etsi_tr/102500_102599/xx.xx/xx.xx.01_60/tr_102532v010101p.pdf))

4. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
5. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
6. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
7. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

8. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
9. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

10. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
11. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
12. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
13. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.

14. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
15. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
16. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

10.3. Multipurpose Operation

Table 125. Global Telecom Energy Storage System Market Size, by Multipurpose Operation, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 126. Global Telecom Energy Storage System Market Size, by Multipurpose Operation, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 127. Global Telecom Energy Storage System Market Size, by Multipurpose Operation, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Elisa Estonia Deploys Elisa Industriq's Gridle Optimization to Support Grid Balancing and Strengthen Network Resilience

   · Taxonomy evidence: Continuity, electricity-cost management, and grid balancing coexist in the deployment; the announcement does not establish co-primary purchase-contract duties or inseparable equipment values. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

2. Elisa - Virtual Power Plant (DES)

   · Taxonomy evidence: The described assets combine telecom backup, cost management, and grid balancing. This establishes combined uses but not co-primary purchase-contract duties or separate equipment values. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

10.4. Electricity Cost Management

Table 128. Global Telecom Energy Storage System Market Size, by Electricity Cost Management, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 129. Global Telecom Energy Storage System Market Size, by Electricity Cost Management, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 130. Global Telecom Energy Storage System Market Size, by Electricity Cost Management, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Elisa Estonia Deploys Elisa Industriq's Gridle Optimization to Support Grid Balancing and Strengthen Network Resilience

   · Taxonomy evidence: The operator identifies electricity-cost reduction as an economic use of its base-station battery assets; no savings percentage or equipment allocation is adopted. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

2. Elisa - Virtual Power Plant (DES)

   · Taxonomy evidence: The operator describes using batteries to shift electricity purchases between lower- and higher-cost periods, establishing electricity-cost management as a distinct use. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

10.5. Peak Power Support

Table 131. Global Telecom Energy Storage System Market Size, by Peak Power Support, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 132. Global Telecom Energy Storage System Market Size, by Peak Power Support, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 133. Global Telecom Energy Storage System Market Size, by Peak Power Support, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI EN 302 099 V2.2.1 - Powering of Equipment in Access Network
   - Taxonomy evidence: Section xx.xx identifies local batteries providing additional power when access traffic increases, establishing capacity supplementation distinct from outage backup or tariff savings. ([etsi.org](https://www.etsi.org/deliver/etsi_en/302000_302099/xx.xx/xx.xx.01_60/en_302099v020201p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

10.6. Grid Services

Table 134. Global Telecom Energy Storage System Market Size, by Grid Services, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 135. Global Telecom Energy Storage System Market Size, by Grid Services, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 136. Global Telecom Energy Storage System Market Size, by Grid Services, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Elisa Estonia Deploys Elisa Industriq's Gridle Optimization to Support Grid Balancing and Strengthen Network Resilience

   · Taxonomy evidence: The announcement identifies wholesale and balancing-market participation associated with telecom batteries in Estonia, supporting an observed grid-services setting rather than universal market eligibility.
   ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

2. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview

   · Taxonomy evidence: Section xx.xx recognizes telecom-site storage providing grid power and frequency support. Recognition does not establish participation in every electricity market.
   ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

3. Elisa - Virtual Power Plant (DES)
   - Taxonomy evidence: The account identifies participation of base-station battery reserves in the electricity-grid balancing market. This is an observed operator setting, not a global participation estimate. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
4. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
5. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
6. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.

7. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
8. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

9. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
10. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
11. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
12. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.

13. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
14. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
15. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

11. Telecom Energy Storage System Market, by Economic Buyer

Telecommunications Network Operators can separate purchasing authority from supplier approval. ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■ A storage seller therefore needs both an accessible commercial relationship and the applicable approval route; agreement with purchasing personnel does not establish acceptance of the exact equipment.

■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■ ■■■ ■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■■■ ■ ■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■■■ Selling through the power-service counterparty can align fulfillment with its customer obligations, but operator acceptance and interface responsibilities may remain. Outsourced management does not establish battery ownership.

■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■ ■■■ ■■■■■■■ ■■■■■■■ For government-operated networks, NSW agencies must use the applicable telecommunications scheme; international suppliers can participate subject to membership and an Australian Business Number. This public-network example does not establish enterprise-wide procurement rules, but it shows why carrier approval alone may not provide access to a captive-network contract.

Customer-Premises Owners can make equipment commitments outside central network procurement. Xfinity sells an eligible voice-backup case while batteries are purchased separately from retailers. ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■ ■■■■■■■■■ ■■■■■■

Equipment Leasing Companies represent a financing role, not automatic control of telecom acceptance or continuity. ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■ ■ ■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■■■ ■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■ ■ ■■■■■ ■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ Financing can preserve the user's capital flexibility while introducing another approval and ownership relationship; the actual lessor purchase remains unverified without the relevant contract.

Figure 16. Global Telecom Energy Storage System Market Size, by Economic Buyer, 2025 (%)

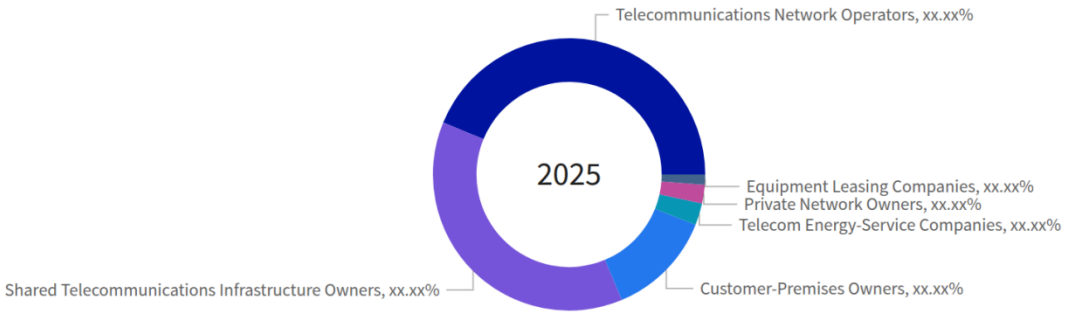


Figure 17. Global Telecom Energy Storage System Market, by Economic Buyer, 2032 (USD Million)

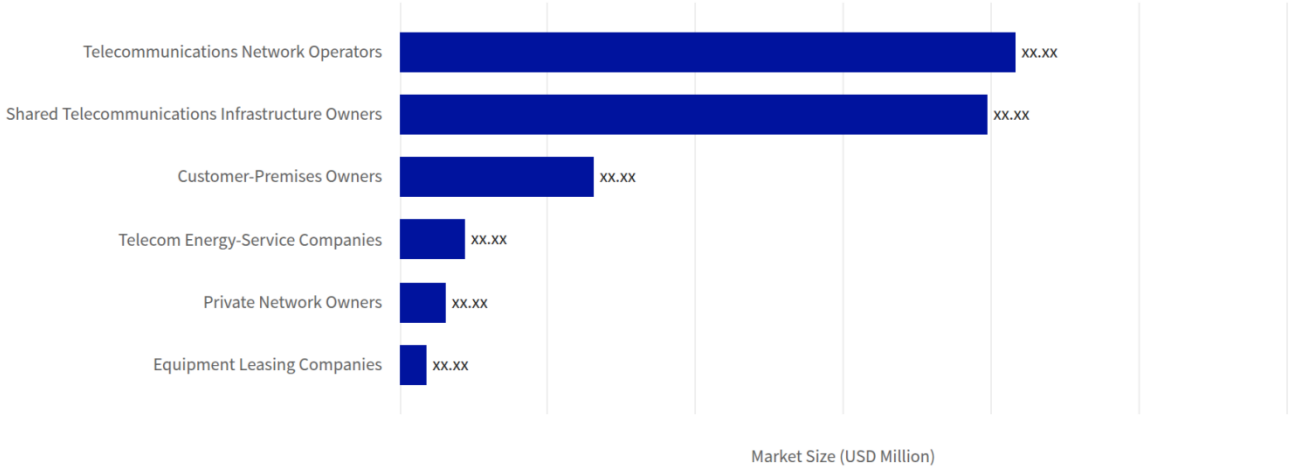


Table 137. Global Telecom Energy Storage System Market, by Economic Buyer growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 138. Global Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

RESEARCH SAMPLE REPORT

Sources & Evidence

1. Supply Chain | Vodafone

   · Vodafone conducts supplier prequalification and separates high-risk approval specialists from commercial relationship staff. Supplier approval does not itself establish equipment acceptance. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))

2. IHS Holding Limited - 2025 Form 20-F

   · IHS describes shared-infrastructure power responsibilities, outsourced services, and contractor obligations with retained oversight. These disclosures do not establish battery title under every contract. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

3. How to buy a phone modem battery case for your Xfinity Voice service

   · Xfinity sells the eligible backup case while batteries are purchased separately from retailers. Rental-modem eligibility does not establish lessor ownership of the backup items. ([xfinity.com](https://www.xfinity.com/support/articles/getting-a-new-battery))

4. Operational Telecommunications Equipment, Infrastructure and Services Scheme | NSW Government

   · Applicable NSW agencies must use the scheme. Australian and international suppliers can participate subject to membership conditions, including an Australian Business Number. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))

5. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC

   · IFC describes IPT PowerTech sourcing, operating, and maintaining energy solutions for telecom operators and tower companies, with lithium-ion and lead-acid batteries among sourced components. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))

   · Taxonomy evidence: The project distinguishes telecom energy-service businesses from their mobile-operator and tower-company customers, supporting transaction-role classification rather than a supplier-customer list. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))

6. EnerSys Financial Solutions
   - EnerSys advertises capital and operating lease structures and invites equipment lease proposals. The offering does not identify a completed telecom-storage acquisition by a named lessor. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
7. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
   - Taxonomy evidence: The institutional study distinguishes standalone telecom power-asset businesses from connectivity operators and tower companies providing bundled power. This supports role-based buyer precedence, not current buyer shares. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
8. U.S. Census Bureau - 2022 NAICS Manual
   - Taxonomy evidence: The 2022 manual distinguishes telecommunications carriers, service resellers, agents, and equipment-leasing establishments. These roles support separating asset-demand buyers from intermediaries. ([census.gov](https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf))
9. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
10. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
11. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

12. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue.
    ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11.1. Telecommunications Network Operators

Table 139. Global Telecom Energy Storage System Market Size, by Telecommunications Network Operators, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 140. Global Telecom Energy Storage System Market Size, by Telecommunications Network Operators, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 141. Global Telecom Energy Storage System Market Size, by Telecommunications Network Operators, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Elisa Estonia Deploys Elisa Industriq's Gridle Optimization to Support Grid Balancing and Strengthen Network Resilience

   · Taxonomy evidence: The described assets belong to the operator's mobile-network activity, supporting the operator asset-demand role rather than relying on a supplier portfolio. ([elisa.com](https://elisa.com/corporate/news-room/press-releases/elisa-estonia-deploys-elisa-industriq%E2%xx.xx%99s-gridle-optimization-to-support-grid-balancing-and-strengthen-network-resilience/F5CDFB9ADAA5423F/))

2. U.S. Census Bureau - 2022 NAICS Manual

   · Taxonomy evidence: Wired, wireless, and satellite carrier classifications recognize network-service provision; resale-only classifications separately recognize firms that do not operate transmission infrastructure. The global buyer category adapts these role distinctions rather than copying national codes. ([census.gov](https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf))

3. Elisa - Virtual Power Plant (DES)

   · Taxonomy evidence: The account concerns storage in the operator's own network, not only a supplier portfolio, supporting the operator asset-demand buyer role. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

4. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
5. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
6. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
7. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

8. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
9. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

10. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
11. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
12. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
13. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
14. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
15. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))

11.2. Shared Telecommunications Infrastructure Owners

Table 142. Global Telecom Energy Storage System Market Size, by Shared Telecommunications Infrastructure Owners, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 143. Global Telecom Energy Storage System Market Size, by Shared Telecommunications Infrastructure Owners, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 144. Global Telecom Energy Storage System Market Size, by Shared Telecommunications Infrastructure Owners, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies

   · Taxonomy evidence: Tower companies offering Power-as-a-Service are explicitly separated from standalone telecom energy-service companies, supporting the infrastructure-role distinction without establishing battery title under every contract.
   ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

2. Proparco Supports IHS Holding Limited in Successful Issuance of Dual Tranche Senior Notes Transaction

   · Taxonomy evidence: The financing record distinguishes a shared communications-infrastructure owner that builds, leases, and operates towers from mobile-network customers using those assets. It does not independently establish who owns batteries under each tenancy or power contract.
   ([proparco.fr](https://proparco.fr/en/actualites/proparco-supports-ihs-holding-limited-successful-issuance-dual-tranche-senior-notes))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.

13. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
15. China Tower Corporation Limited - Interim Report 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

11.3. Customer-Premises Owners

Table 145. Global Telecom Energy Storage System Market Size, by Customer-Premises Owners, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 146. Global Telecom Energy Storage System Market Size, by Customer-Premises Owners, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 147. Global Telecom Energy Storage System Market Size, by Customer-Premises Owners, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule

   · Taxonomy evidence: Customers may purchase backup sources from the operator or a third-party retailer separately from monthly networking-equipment lease charges, supporting a subscriber purchasing role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

2. Federal Communications Commission - Ensuring Continuity of 911 Communications, Final Rule

   · Taxonomy evidence: The historical rule expressly distinguishes providers offering backup solutions from subscribers choosing to purchase them. An offer requirement does not establish purchasing volume. ([govinfo.gov](https://www.govinfo.gov/content/pkg/FR-2015-xx.xx-xx.xx/pdf/2015-xx.xx.pdf))

3. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

11.4. Telecom Energy-Service Companies

Table 148. Global Telecom Energy Storage System Market Size, by Telecom Energy-Service Companies, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 149. Global Telecom Energy Storage System Market Size, by Telecom Energy-Service Companies, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 150. Global Telecom Energy Storage System Market Size, by Telecom Energy-Service Companies, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
   · Taxonomy evidence: Its definition requires owning power assets and supplying contracted power to telecom sites, excluding equipment-only, installation-only, and maintenance-only businesses. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))
2. IFC - IPT PowerTech, Project 49095
   · Taxonomy evidence: The disclosed energy-service role sources, operates, and maintains telecom energy assets; lithium-ion and lead-acid batteries are identified project components. Equipment integration alone is not the same buyer role. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
16. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11.5. Private Network Owners

Table 151. Global Telecom Energy Storage System Market Size, by Private Network Owners, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 152. Global Telecom Energy Storage System Market Size, by Private Network Owners, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 153. Global Telecom Energy Storage System Market Size, by Private Network Owners, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. NSW Government - Operational Telecommunications Equipment, Infrastructure and Services Scheme
   - Taxonomy evidence: The scheme serves government-operated telecommunications networks and government-agency buyers, establishing a captive public-network purchasing setting distinct from public subscriber operators. ([info.buy.nsw.gov.au](https://www.info.buy.nsw.gov.au/schemes/operational-telecommunications-equipment-infrastructure-and-services-scheme))
2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

11.6. Equipment Leasing Companies

Table 154. Global Telecom Energy Storage System Market Size, by Equipment Leasing Companies, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 155. Global Telecom Energy Storage System Market Size, by Equipment Leasing Companies, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 156. Global Telecom Energy Storage System Market Size, by Equipment Leasing Companies, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. U.S. Census Bureau - 2022 NAICS Manual

   · Taxonomy evidence: The machinery-and-equipment leasing classification expressly includes telecommunications equipment. It establishes a lessor business role, not a telecom-storage purchase or battery-ownership record. ([census.gov](https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. EnerSys - Financial Solutions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

12. Telecom Energy Storage System Market, by Installation Environment

Climate-Controlled Enclosures and Uncontrolled Enclosures differ in the environmental assumptions attached to commercial acceptance. ETSI's May 2026 classification distinguishes temperature-controlled enclosed locations without necessarily controlled humidity from enclosed locations without temperature or humidity control. ▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪

▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ These distinctions require an offering-specific agreement about the supplied assembly and its accepted environment; the location terminology does not certify exposed cells or establish a universal telecom purchasing requirement. The captured categories remain distinct commercial contexts rather than automatic one-to-one equivalents of every standards class.

▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ Separately supplied storage remains an alternative within an accepted enclosure and support arrangement, preserving supplier choice but requiring clear responsibility allocation. A change in enclosure provider, exposure classification, or supplied assembly should trigger commercial reacceptance before replacement or expansion commitments.

Figure 18. Global Telecom Energy Storage System Market Size, by Installation Environment, 2025 (%)

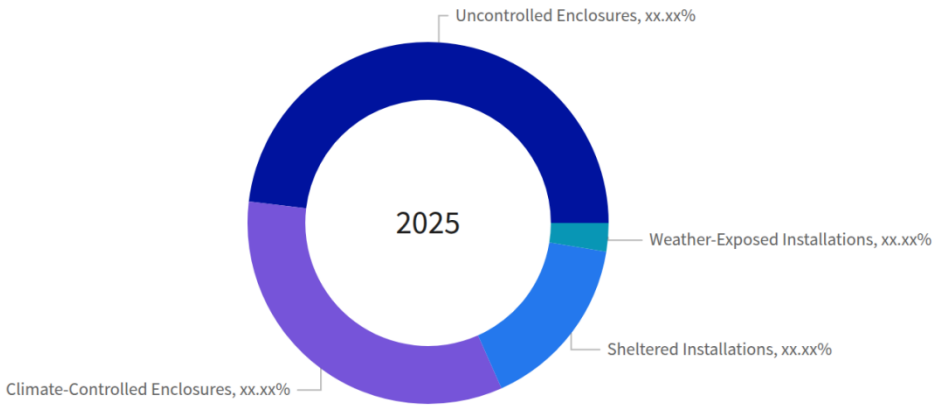


Figure 19. Global Telecom Energy Storage System Market, by Installation Environment, 2032 (USD Million)

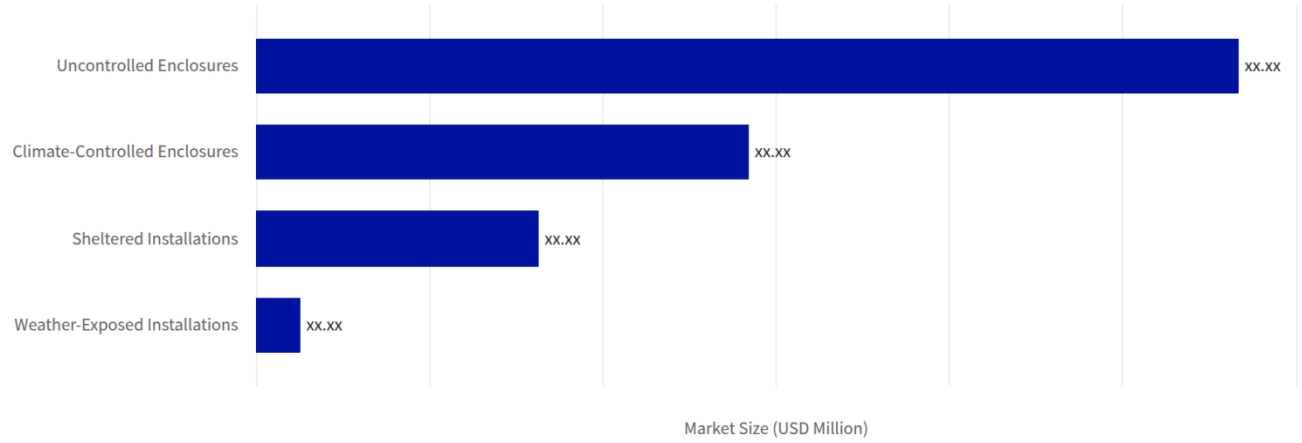


Table 157. Global Telecom Energy Storage System Market, by Installation Environment growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 158. Global Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Vertiv NetSure IPE Series

   · NetSure IPE is advertised for outdoor telecom applications with protected modules. The portfolio does not establish complete-installation acceptance or contractual environmental coverage. ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

2. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations

   · ETSI's May 2026 classification distinguishes temperature-controlled enclosures without necessarily controlled humidity from uncontrolled enclosures, and defines partial weather protection. These are location classifications, not product approvals. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

   · Taxonomy evidence: The May 2026 telecom environmental classification distinguishes weatherprotected locations by enclosure and climate control, supporting installation environment as a separate classification attribute. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.

3. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
   - ETSI's May 2026 non-weatherprotected classification distinguishes sheltered and open-air locations. Shelter therefore does not automatically establish complete weather exclusion or a specific offering's suitability. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190104v030101p.pdf))
   - Taxonomy evidence: The May 2026 classification separately addresses stationary telecom equipment at non-weatherprotected locations, complementing the protected-location partition. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190104v030101p.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.

12.1. Uncontrolled Enclosures

Table 159. Global Telecom Energy Storage System Market Size, by Uncontrolled Enclosures, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 160. Global Telecom Energy Storage System Market Size, by Uncontrolled Enclosures, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 161. Global Telecom Energy Storage System Market Size, by Uncontrolled Enclosures, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI EN 300 019-1-3 V3.1.1 (2026-05) - Stationary Use at Weatherprotected Locations

   · Taxonomy evidence: Class xx.xx recognizes enclosed telecom locations without temperature or humidity control. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.

12.2. Climate-Controlled Enclosures

Table 162. Global Telecom Energy Storage System Market Size, by Climate-Controlled Enclosures, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 163. Global Telecom Energy Storage System Market Size, by Climate-Controlled Enclosures, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 164. Global Telecom Energy Storage System Market Size, by Climate-Controlled Enclosures, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI EN 300 019-1-3 V3.1.1 (2026-05) - Stationary Use at Weatherprotected Locations

   · Taxonomy evidence: Class xx.xx recognizes temperature-controlled enclosed telecom locations without requiring humidity control, supporting the controlled-enclosure distinction. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

12.3. Sheltered Installations

Table 165. Global Telecom Energy Storage System Market Size, by Sheltered Installations, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 166. Global Telecom Energy Storage System Market Size, by Sheltered Installations, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 167. Global Telecom Energy Storage System Market Size, by Sheltered Installations, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI EN 300 019-1-3 V3.1.1 (2026-05) - Stationary Use at Weatherprotected Locations

   · Taxonomy evidence: The weatherprotected-location definition distinguishes enclosed locations from sheltered locations where direct weather influences are not completely excluded. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190103v030101p.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

12.4. Weather-Exposed Installations

Table 168. Global Telecom Energy Storage System Market Size, by Weather-Exposed Installations, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 169. Global Telecom Energy Storage System Market Size, by Weather-Exposed Installations, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 170. Global Telecom Energy Storage System Market Size, by Weather-Exposed Installations, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI EN 300 019-1-4 V3.1.1 (2026-05) - Stationary Use at Non-Weatherprotected Locations

   · Taxonomy evidence: Non-weatherprotected locations are defined by direct exposure to weather; the classification covers open-air influences including precipitation and solar radiation. This concerns the deployment environment, not a claim that bare batteries are suitable for exposure. ([etsi.org](https://www.etsi.org/deliver/etsi_en/300001_300099/xx.xx/xx.xx.01_60/en_3000190104v030101p.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

13. Telecom Energy Storage System Market, by Ownership Model

[illegible] Operators should compare replacement funding, asset control, supplier-change rights, and continuity remedies. Outsourcing can shift capital responsibility but introduces dependence on the provider's fulfillment.

Equipment Leasing introduces an asset-use relationship distinct from a power-service commitment. [illegible] The leasing company and user should establish the battery asset schedule, title, permitted use, maintenance, replacement, and end-of-term obligations before treating financing as transferred lifecycle accountability.

[illegible] User ownership can preserve a separately chosen purchasing route; Provider-Owned Managed Energy consolidates power delivery only where the contract includes that commitment. The defensible comparison is the storage-specific allocation of rights and obligations, not the label attached to the broader communications agreement.

Figure 20. Global Telecom Energy Storage System Market Size, by Ownership Model, 2025 (%)

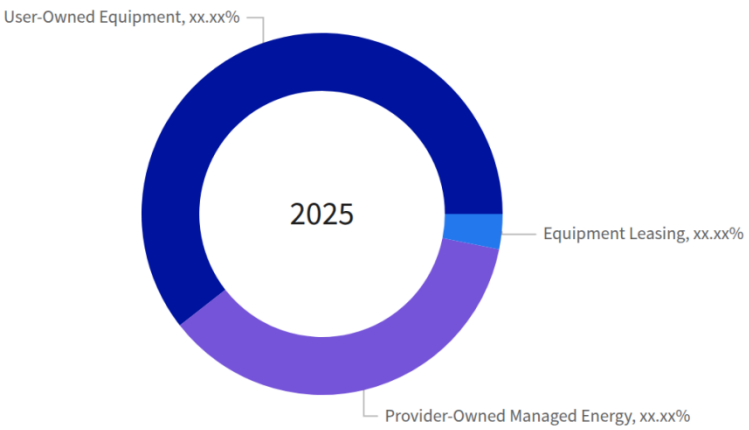


Figure 21. Global Telecom Energy Storage System Market, by Ownership Model, 2032 (USD Million)

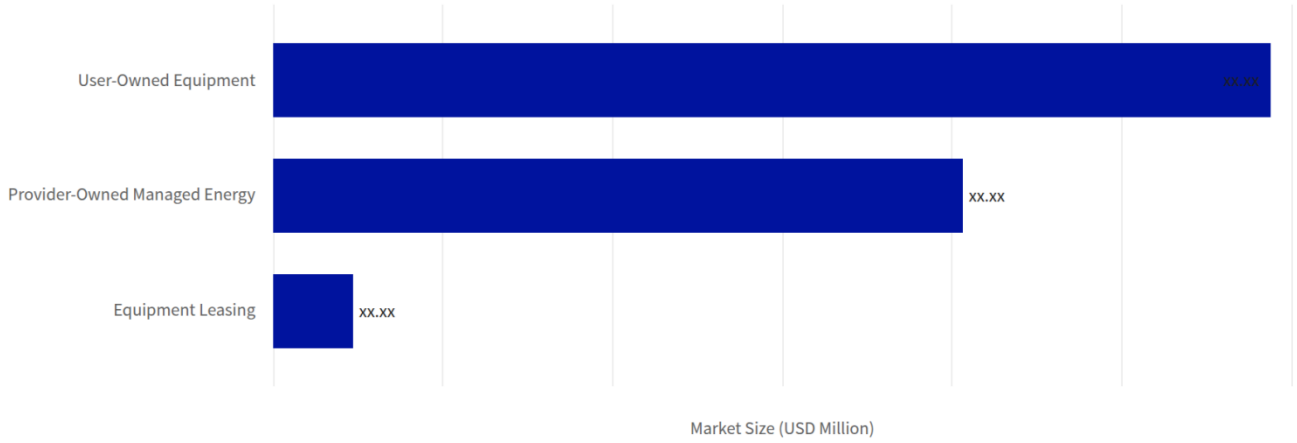


Table 171. Global Telecom Energy Storage System Market, by Ownership Model growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 172. Global Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies

   · IFC's September 2021 study distinguishes operator-owned power assets with outsourced management from provider-financed Power-as-a-Service arrangements carrying service-level obligations. These are commercial-model observations, not universal contract terms. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

   · Taxonomy evidence: The qualitative commercial discussion distinguishes operator-owned site power assets from Power-as-a-Service arrangements that shift capital responsibility to energy providers. Quantitative estimates and externally attributed research claims were not used. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.

2. Whidbey Telecom - Equipment Lease Agreement

   · Whidbey Telecom's published equipment-lease form permits a separate backup-power purchase from the provider or a third-party retailer, in addition to equipment lease charges. It is not an executed storage-specific lease. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

3. UPS Hire Services | Vertiv
   - Vertiv lists Telecom among UPS Hire Services applications and advertises temporary hire, delivery and removal services, and an option to purchase during hire. The offering does not disclose an executed battery lease's asset schedule. ([vertiv.com](https://www.vertiv.com/en-us/services-catalog/services/performance-optimization-services/ups-hire-services-da9d4a20/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
4. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
5. China Tower Announces 2025 Annual Results - March 18, 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.

13.1. User-Owned Equipment

Table 173. Global Telecom Energy Storage System Market Size, by User-Owned Equipment, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 174. Global Telecom Energy Storage System Market Size, by User-Owned Equipment, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 175. Global Telecom Energy Storage System Market Size, by User-Owned Equipment, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies

   · Taxonomy evidence: The report describes telecom operators owning power assets while sometimes outsourcing their management, supporting separation of equipment ownership from maintenance responsibility. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.

2. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule

   · Taxonomy evidence: Scheduled backup equipment is presented as a separate customer purchase rather than automatically included in the networking-equipment lease, supporting the user-purchase distinction without disclosing underlying operator acquisition values. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.

3. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

13.2. Provider-Owned Managed Energy

Table 176. Global Telecom Energy Storage System Market Size, by Provider-Owned Managed Energy, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 177. Global Telecom Energy Storage System Market Size, by Provider-Owned Managed Energy, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 178. Global Telecom Energy Storage System Market Size, by Provider-Owned Managed Energy, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies

   · Taxonomy evidence: The report describes tower-company and specialist-provider Power-as-a-Service models in which providers bear capital requirements and supply contracted power. Its discussion connects these models with battery energy storage. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.

13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
14. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.

13.3. Equipment Leasing

Table 179. Global Telecom Energy Storage System Market Size, by Equipment Leasing, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 180. Global Telecom Energy Storage System Market Size, by Equipment Leasing, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 181. Global Telecom Energy Storage System Market Size, by Equipment Leasing, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule

   · Taxonomy evidence: Although the lease's equipment definition mentions UPS equipment, scheduled backup sources are separately purchased. This document therefore does not establish a storage-specific lease of identified battery assets. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.

14. Telecom Energy Storage System Market, by Sales Channel

Sales Channel changes the contracting relationship, not necessarily the physical storage product. EnerSys' fiscal 2026 filing describes direct and distributor routes. [redacted]

OEM and Project-Integrator Supply adds an integration boundary. Vertiv distinguishes contractors supplying equipment and labor from integrators providing equipment, services, and solution expertise. [redacted]

Figure 22. Global Telecom Energy Storage System Market Size, by Sales Channel, 2025 (%)

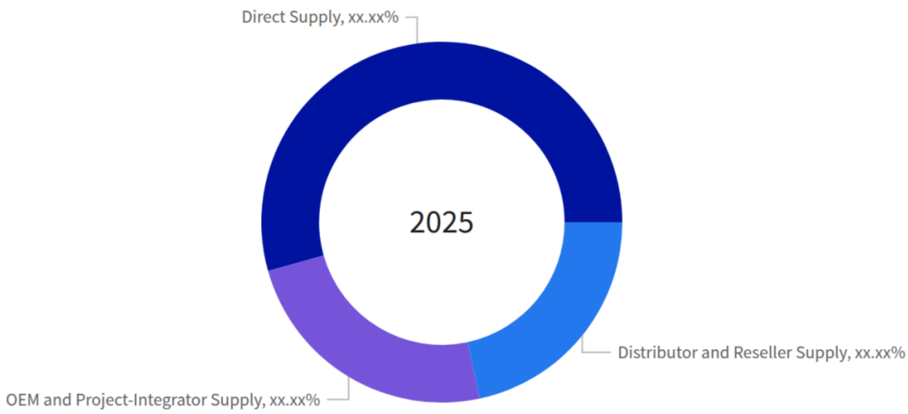


Figure 23. Global Telecom Energy Storage System Market, by Sales Channel, 2032 (USD Million)

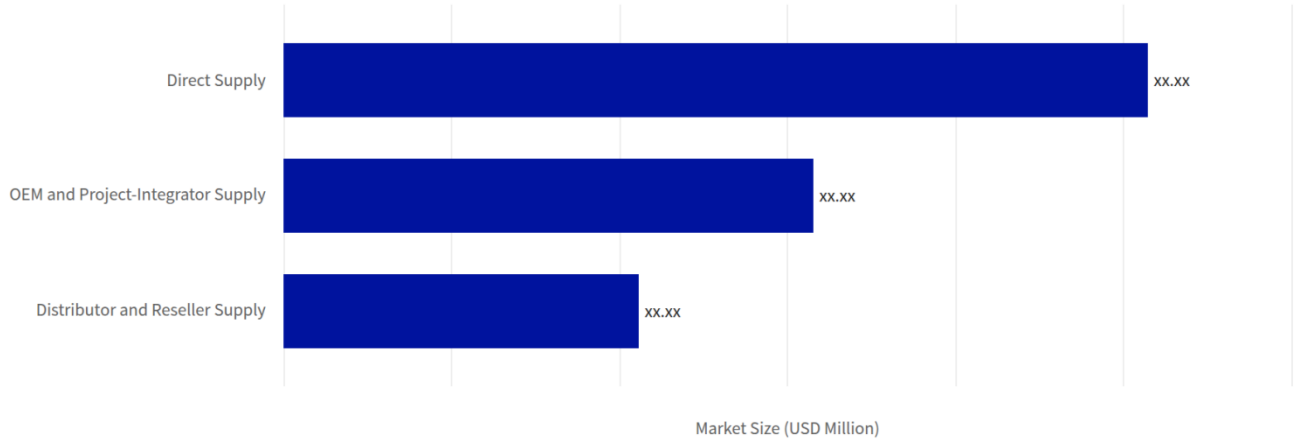


Table 182. Global Telecom Energy Storage System Market, by Sales Channel growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 183. Global Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Sales & Services | EnerSys

   · EnerSys separately advertises installation, maintenance, and recycling services and includes Communications Networks as a service category. This establishes an offering, not automatic inclusion in an equipment sale. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))

2. EnerSys 2026 Proxy Statement and Annual Report
   - EnerSys' fiscal 2026 filing describes company-level direct and distributor routes and company-owned sales and service facilities. These disclosures do not establish a particular telecom transaction or included local service. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
3. Commonwealth of Pennsylvania - Two-Way Radio Equipment & Services, Contract 4400016331, Change Notice 1
   - Pennsylvania's contract change effective April xx.xx 2021 includes communications-site DC backup batteries and a Tessco letter authorizing Communications Electronics as reseller, with standard commercial-warranty support if the reseller fails to provide it. The listed contract period ended December xx.xx 2021. ([emarketplace.state.pa.us](https://www.emarketplace.state.pa.us/FileDownload.aspx?file=xx.xx%5CChangeNotice.pdf))
   - Taxonomy evidence: The April xx.xx 2021 public contract change notice documents an authorized commercial resale path for network infrastructure and remote communications-site power equipment. ([emarketplace.state.pa.us](https://www.emarketplace.state.pa.us/FileDownload.aspx?file=xx.xx%5CChangeNotice.pdf))
4. Sales Contacts | Vertiv
   - Vertiv distinguishes distributors and resellers from contractors supplying equipment and labor and solution providers or integrators supplying expertise, products, and services. These are advertised channel roles, not completed telecom awards. ([vertiv.com](https://www.vertiv.com/SearchContactsPage/HowToBuyMobile))
5. BSNL Tender MM/BNO&M/BN-III/T-851/2025 - Development of the Middle Mile Network of BharatNet on a DBOM Model
   - Taxonomy evidence: The June xx.xx 2025 BharatNet procurement places network equipment and power-backup supply within a Design Build Operate and Maintain project contract, establishing a project-packaging supply path. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))
6. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

7. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

14.1. Direct Supply

Table 184. Global Telecom Energy Storage System Market Size, by Direct Supply, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 185. Global Telecom Energy Storage System Market Size, by Direct Supply, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 186. Global Telecom Energy Storage System Market Size, by Direct Supply, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower - Chairman's Statement, 2025 operating results

- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

2. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
3. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
4. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

5. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
6. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

7. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
8. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
9. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
10. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
11. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
12. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

13. China Tower Corporation Limited - Interim Report 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
14. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
15. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

14.2. OEM and Project-Integrator Supply

Table 187. Global Telecom Energy Storage System Market Size, by OEM and Project-Integrator Supply, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 188. Global Telecom Energy Storage System Market Size, by OEM and Project-Integrator Supply, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 189. Global Telecom Energy Storage System Market Size, by OEM and Project-Integrator Supply, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. BSNL Tender MM/BNO&M/BN-III/T-851/2025 - Development of the Middle Mile Network of BharatNet on a DBOM Model

   · Taxonomy evidence: The project implementation agency supplies network electronics and power-backup infrastructure; the package includes a lithium-battery-equipped hybrid UPS for network nodes. Only identifiable storage-equipment value belongs within this market.
   ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

14.3. Distributor and Reseller Supply

Table 190. Global Telecom Energy Storage System Market Size, by Distributor and Reseller Supply, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 191. Global Telecom Energy Storage System Market Size, by Distributor and Reseller Supply, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 192. Global Telecom Energy Storage System Market Size, by Distributor and Reseller Supply, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule
   · Taxonomy evidence: The explicit third-party retailer purchase option establishes a retail resale route for dedicated telecom premises backup, not a completed producer-direct sale. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
2. Commonwealth of Pennsylvania - Two-Way Radio Equipment & Services, Contract 4400016331, Change Notice 1
   · Taxonomy evidence: Contract schedules include communications-site backup batteries for DC power supplies through distributor product lines. Authorization letters identify the contract seller as an authorized reseller. This establishes a documented channel offering, not current shipment totals. ([emarketplace.state.pa.us](https://www.emarketplace.state.pa.us/FileDownload.aspx?file=xx.xx%5CChangeNotice.pdf))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
13. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
16. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. Telecom Energy Storage System Market, by Grid Availability

[illegible] An Off-Grid buyer must secure accountable power provision alongside storage; a Weak Grid buyer should connect the purchase to the site's documented continuity exposure and existing supply relationship. These are commercial distinctions, not a universal outage threshold or a country-wide classification.

[illegible] Infrastructure owners should establish responsibility for continuity, replacement, and interrupted fulfillment before choosing an equipment-only alternative. A change in the site's grid connection or demonstrated service reliability is a reason to reassess that package; nationality alone is not.

Reliable Grid does not eliminate continuity purchasing and can support a separately permitted secondary role. Elisa reports permission for Finnish base-station batteries to participate in balancing, while Fingrid requires a reserve-market agreement even when a service provider handles commercial functions. [illegible]

Figure 24. Global Telecom Energy Storage System Market Size, by Grid Availability, 2025 (%)

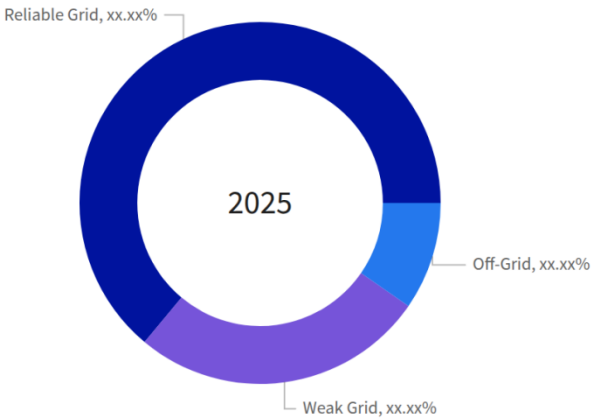


Figure 25. Global Telecom Energy Storage System Market, by Grid Availability, 2032 (USD Million)

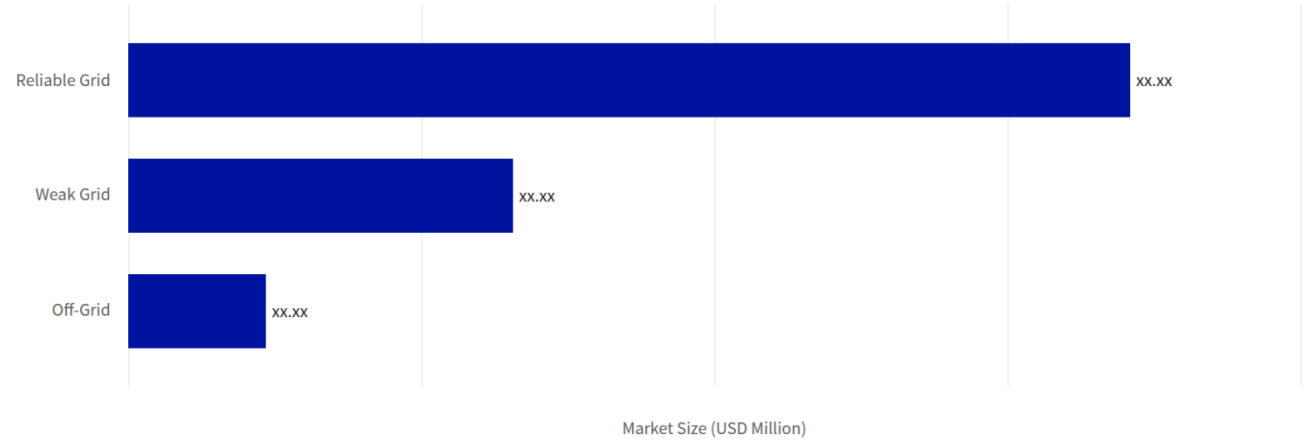


Table 193. Global Telecom Energy Storage System Market, by Grid Availability growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 194. Global Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Helios Towers Sustainable Business Addendum 2025
   - Helios Towers reports continued fossil-fuel dependence where grid and renewable infrastructure are limited, alongside use of batteries and renewables. This challenges complete-generation-displacement assumptions. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))
2. Reserve Markets | Fingrid
   - Fingrid requires reserve providers to hold a valid reserve-market agreement and permits service providers to undertake commercial functions such as trading and billing. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))

3. Virtual Power Plant | Elisa

· Elisa reports a Fingrid permit to use Finnish base-station backup batteries in the balancing market. This is company-reported permission, not permission for another operator or jurisdiction. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

4. ETSI TS 103 553-1 V1.1.1 - Innovative Energy Storage Technology for Stationary Use - Part 1: Overview

· ETSI's August 2019 overview recognizes storage for off-grid telecom networks, poor-quality utility supply, and good-quality grids. It does not establish a harmonized global site-classification threshold. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

· Taxonomy evidence: The stationary ICT-storage overview distinguishes off-grid systems, unreliable or poor-quality grids, and good-quality utility supply. It does not establish the proposed global site-adequacy threshold. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

5. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies

· Taxonomy evidence: The study uses its own outage-based definitions for connected-grid classes and distinguishes sites without national-grid connection. Those study boundaries are not a universal site-adequacy rule and are not adopted as global allocation thresholds. ([documents1.worldbank.org](https://documents1.worldbank.org/curated/en/xx.xx/pdf/IDU0dbf2eb85047ff0404809e8f02fce4d6248bc.pdf))

6. IHS Holding Limited - 2025 Form 20-F

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

7. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

15.1. Reliable Grid

Table 195. Global Telecom Energy Storage System Market Size, by Reliable Grid, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 196. Global Telecom Energy Storage System Market Size, by Reliable Grid, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 197. Global Telecom Energy Storage System Market Size, by Reliable Grid, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview

   · Taxonomy evidence: Good-quality grids with minimal outages remain eligible for telecom storage; reliable grid service does not eliminate storage demand. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

15.2. Weak Grid

Table 198. Global Telecom Energy Storage System Market Size, by Weak Grid, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 199. Global Telecom Energy Storage System Market Size, by Weak Grid, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 200. Global Telecom Energy Storage System Market Size, by Weak Grid, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: The overview identifies poor grid reliability or quality and frequent or long outages as distinct telecom-storage demand conditions. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.

12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
14. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight.
      ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

15.3. Off-Grid

Table 201. Global Telecom Energy Storage System Market Size, by Off-Grid, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 202. Global Telecom Energy Storage System Market Size, by Off-Grid, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 203. Global Telecom Energy Storage System Market Size, by Off-Grid, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 103 553-1 V1.1.1 (2019-08) - Innovative energy storage technology for stationary use - Part 1: Overview
   · Taxonomy evidence: The overview explicitly recognizes energy storage in off-grid telecom networks. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/103500_103599/xx.xx/xx.xx.01_60/ts_10355301v010101p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

16. Telecom Energy Storage System Market, by Power Interface

DC Interface and AC Interface identify different equipment-acceptance boundaries rather than different storage chemistries. ■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■ ■■■ ■■ ■■■ ■■■■■■■■■■■■■ ■ ■■ ■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■ ■■ ■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■ ■■■ ■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■ Procurement should remain tied to the defined network function and accepted offering.

■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■ ■■■ ■■ ■■■■■■■■■■ ■■■■ ■ ■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■ ■■■ ■ ■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■ ■■■■■■■■■■■ Buyers should compare consolidated support with separately contracted AC and DC arrangements and name the counterparty responsible when the issue crosses storage and power-conversion boundaries. Consolidation reduces handoffs only where remedies cover both relationships; separate purchasing can preserve supplier choice but requires explicit coordination.

Figure 26. Global Telecom Energy Storage System Market Size, by Power Interface, 2025 (%)

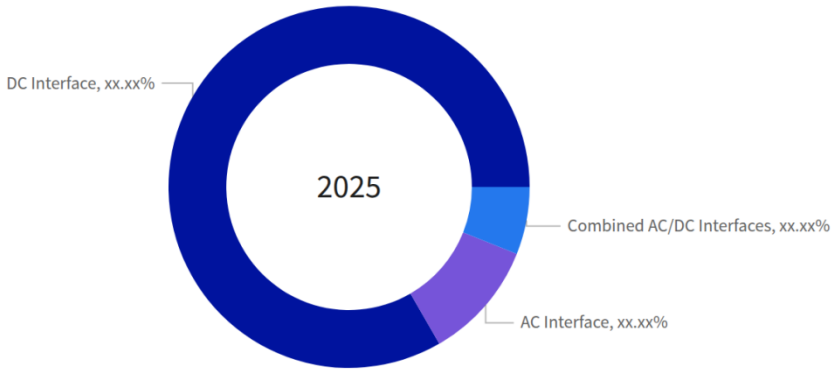


Figure 27. Global Telecom Energy Storage System Market, by Power Interface, 2032 (USD Million)

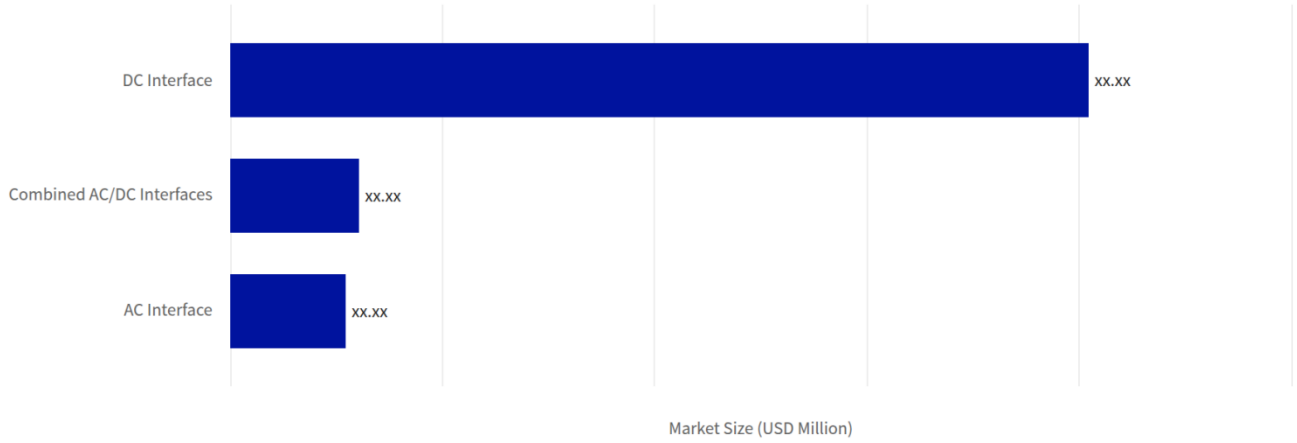


Table 204. Global Telecom Energy Storage System Market, by Power Interface growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 205. Global Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Vertiv Solutions for Efficient Edge Network and 5G Deployment

- Vertiv advertises NetSure inverter arrangements supporting AC and DC equipment from a common battery bank, including additions to an existing system. This establishes an advertised combined-interface offering, not installation-specific acceptance. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

2. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment
   - ETSI's February 2025 telecommunications and datacom power-distribution framework separately recognizes DC supply and AC UPS arrangements. Its ICT scope is broader than the defined telecom-storage application boundary. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Taxonomy evidence: The February 2025 telecom power-distribution framework separately recognizes AC and DC equipment interfaces and battery-supported configurations, supporting interface classification independently of storage chemistry. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
3. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

16.1. DC Interface

Table 206. Global Telecom Energy Storage System Market Size, by DC Interface, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 207. Global Telecom Energy Storage System Market Size, by DC Interface, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 208. Global Telecom Energy Storage System Market Size, by DC Interface, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 102 121 V1.4.1 (2025-02) - Power distribution to telecommunications and datacom (ICT) equipment
   - Taxonomy evidence: The framework recognizes conventional telecom DC distribution and higher-voltage DC interfaces. These are load-interface families rather than individual battery-cell voltages. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.

5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.

11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
14. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))

16.2. AC Interface

Table 209. Global Telecom Energy Storage System Market Size, by AC Interface, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 210. Global Telecom Energy Storage System Market Size, by AC Interface, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 211. Global Telecom Energy Storage System Market Size, by AC Interface, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI TS 102 121 V1.4.1 (2025-02) - Power distribution to telecommunications and datacom (ICT) equipment
   - Taxonomy evidence: The framework recognizes AC-powered telecom/ICT equipment and AC UPS arrangements with battery support. Telecom attribution remains necessary because its broader ICT scope includes adjacent computing demand. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

16.3. Combined AC/DC Interfaces

Table 212. Global Telecom Energy Storage System Market Size, by Combined AC/DC Interfaces, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 213. Global Telecom Energy Storage System Market Size, by Combined AC/DC Interfaces, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 214. Global Telecom Energy Storage System Market Size, by Combined AC/DC Interfaces, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI ES 203 700 V1.1.1 - Sustainable Power Feeding Solutions for 5G Network

   · Taxonomy evidence: The aggregation and core-room discussion recognizes battery-bearing power solutions with both AC and DC load outputs, establishing a combined-interface configuration without proving present sales or market share.
   ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

14. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))

17. Telecom Energy Storage System Market, by Procurement Lifecycle

First Deployment, Capacity Expansion, and Replacement and Retrofit require different purchasing evidence. ETSI's February 2021 5G power-feeding document distinguishes battery expansion from battery substitution as investment concepts. ■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■

Replacement routes differ by the installed relationship. nbn directs owners of existing backup units to their communications provider or compatible retail suppliers for replacement batteries. ■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■ ■ ■■■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■ ■■ ■■■■■■■■■■■■ ■■ ■ ■■■■■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■■ ■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■

Figure 28. Global Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2025 (%)

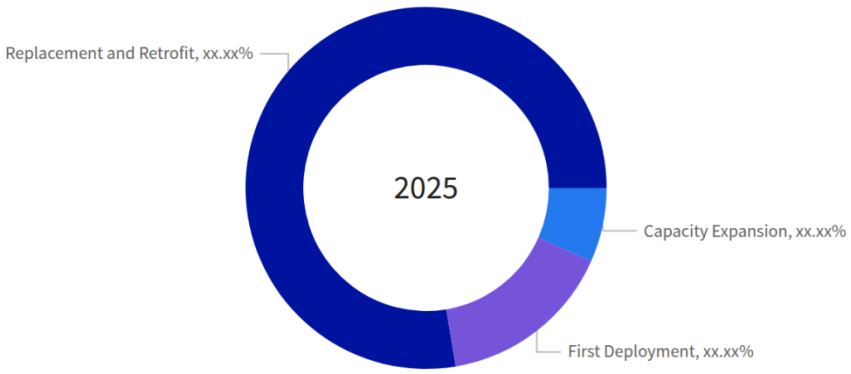


Figure 29. Global Telecom Energy Storage System Market, by Procurement Lifecycle, 2032 (USD Million)

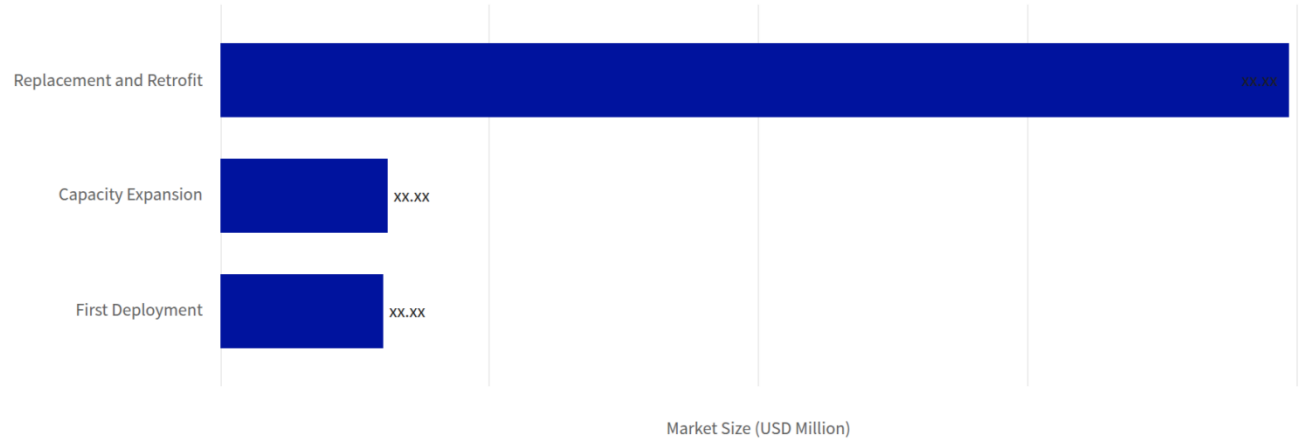


Table 215. Global Telecom Energy Storage System Market, by Procurement Lifecycle growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 216. Global Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Sales & Services | EnerSys

   · The advertised maintenance and recycling services support separating replacement and retirement commitments from the replacement-equipment transaction. Local coverage remains transaction-specific. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))

2. Telecom Lithium Batteries | Vertiv

   · Vertiv advertises telecom-battery remote monitoring through the NetSure Control Unit. The controller relationship supports a retrofit-accountability comparison, not universal supplier exclusivity. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

3. ETSI ES 203 700 V1.1.1 - Sustainable Power Feeding Solutions for 5G Network

   · ETSI's February 2021 document separately discusses battery expansion and lithium batteries replacing lead-acid batteries as investment concepts. It does not establish completed order-level lifecycle classifications. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))

   · Taxonomy evidence: The distinction between battery substitution and separately discussed battery expansion supports retaining replacement and additive expansion as different lifecycle concepts. Allocation still requires prior-asset and order-line evidence. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))

4. Battery Back-Up Information | nbn

   · nbn directs existing backup-unit owners to their communications provider or compatible battery retailers for replacements, supporting a customer-premises replacement route rather than a carrier-wide route. ([nbnco.com.au](https://www.nbnco.com.au/learn/network-technology/fibre-to-the-premises-explained-fttp/battery-back-up-information))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.

5. BSNL Tender MM/BNO&M/BN-III/T-851/2025 - Development of the Middle Mile Network of BharatNet on a DBOM Model

   · Taxonomy evidence: The contract distinguishes network creation and upgrading from subsequent capacity augmentation and end-of-life equipment replacement. These are procurement lifecycle distinctions, not disclosed storage-only allocations. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

6. IHS Holding Limited - 2025 Form 20-F

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

7. China Tower Announces 2025 Annual Results - March 18, 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.

17.1. Replacement and Retrofit

Table 217. Global Telecom Energy Storage System Market Size, by Replacement and Retrofit, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 218. Global Telecom Energy Storage System Market Size, by Replacement and Retrofit, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 219. Global Telecom Energy Storage System Market Size, by Replacement and Retrofit, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI ES 203 700 V1.1.1 - Sustainable Power Feeding Solutions for 5G Network

   · Taxonomy evidence: The core-room modernization discussion explicitly considers lithium batteries replacing lead-acid batteries. This establishes battery substitution as a recognized telecom investment concept, but not a completed replacement order, retirement record, or current expenditure. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))

2. BSNL Tender MM/BNO&M/BN-III/T-851/2025 - Development of the Middle Mile Network of BharatNet on a DBOM Model

   · Taxonomy evidence: End-of-life solutions or equipment must be replaced with equivalent or higher specifications. Applicability to storage hardware is an inference from the contract's inclusion of battery-backed UPS equipment, not a verified storage-only replacement award. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

3. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
4. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
5. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
6. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

7. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
8. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
10. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
11. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
12. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.

13. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
14. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
15. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
16. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

17.2. First Deployment

Table 220. Global Telecom Energy Storage System Market Size, by First Deployment, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 221. Global Telecom Energy Storage System Market Size, by First Deployment, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 222. Global Telecom Energy Storage System Market Size, by First Deployment, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. BSNL Tender MM/BNO&M/BN-III/T-851/2025 - Development of the Middle Mile Network of BharatNet on a DBOM Model

   · Taxonomy evidence: Network development includes new electronics and power-backup supply. Establishing first storage deployment still requires a storage-specific prior-asset baseline. ([tcil.net.in](https://www.tcil.net.in/tender/pdf/25F2562_1.pdf))

2. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.

13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
14. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.

17.3. Capacity Expansion

Table 223. Global Telecom Energy Storage System Market Size, by Capacity Expansion, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 224. Global Telecom Energy Storage System Market Size, by Capacity Expansion, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 225. Global Telecom Energy Storage System Market Size, by Capacity Expansion, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ETSI ES 203 700 V1.1.1 - Sustainable Power Feeding Solutions for 5G Network

   · Taxonomy evidence: The network-modernization discussion identifies battery expansion as an investment requirement when site demand increases. Its numerical cost and deployment estimates were not used. ([etsi.org](https://www.etsi.org/deliver/etsi_es/203700_203799/xx.xx/xx.xx.01_60/es_203700v010101p.pdf))

2. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.

3. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
4. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
5. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.

6. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
7. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
9. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
10. Zain Sustainability Report 2025 - Sustainability Agenda
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
11. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
12. nbn - Battery Back-Up Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
13. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

18. Telecom Energy Storage System Market, by Region

Asia-Pacific contains distinct documented procurement routes. [redacted] Suppliers should distinguish infrastructure-owner procurement from provider-mediated customer-premises offers rather than assume one regional channel or approval regime.

North America also contains different purchasing boundaries. [redacted] Neither example establishes requirements throughout North America.

Latin America requires separation of the power purchaser from the infrastructure owner. [redacted] The company example is not a regional rule, and Chile's obligations should not be generalized to other constituents.

Europe combines EU product-access obligations with national telecommunications requirements. The European Commission identifies February xx.xx 2027 as the battery-passport start date for industrial batteries above xx.xx kWh placed on the market or put into service; detailed information is maintained by the responsible economic operator. [redacted]

[redacted]

Finland adds a distinct electricity-market relationship within Europe. [redacted] Continuity-only procurement remains an alternative where asset-use rights, market access, or benefit allocation are not established.

Middle East purchasing can involve different infrastructure and energy counterparties even within one operator group. Zain's 2025 disclosures report battery-hybrid deployments with TASC Towers in Iraq and battery-hybrid and grid-connection initiatives with Latis in Saudi Arabia. [redacted]

Africa should not be treated as a uniform Off-Grid purchasing environment. [redacted] Equipment-only supply is an alternative where the buyer retains the relevant integration and service commitments.

Figure 30. Global Telecom Energy Storage System Market, by Region: Market share evolution, 2025-2032

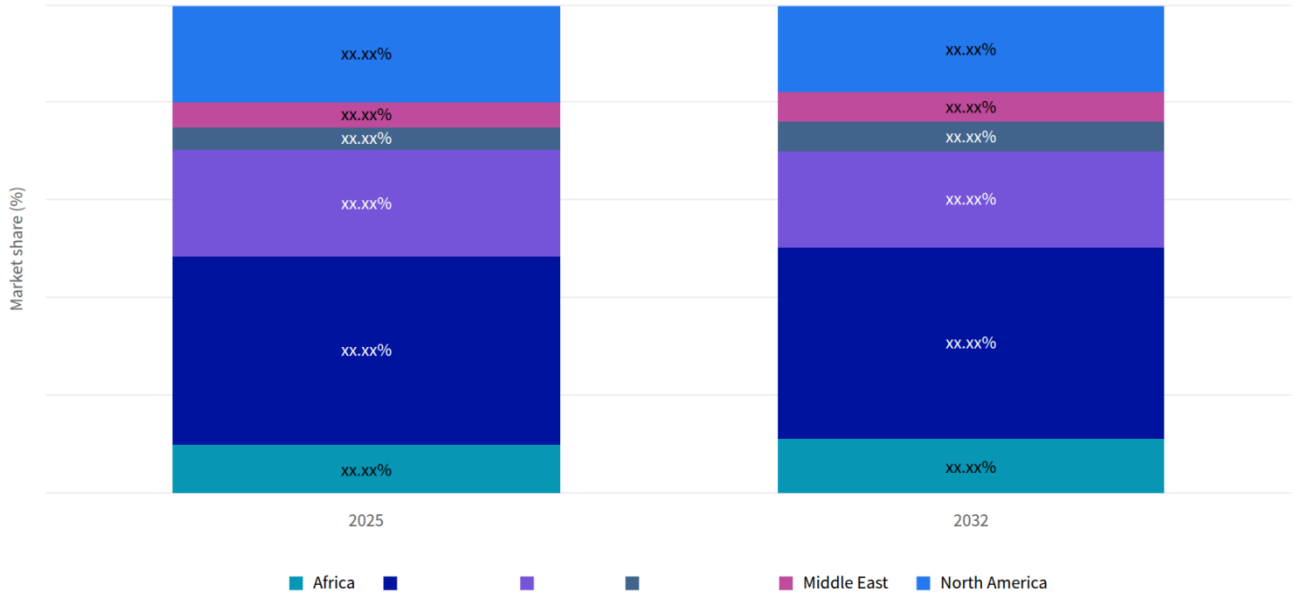


Figure 31. Global Telecom Energy Storage System Market, by Region: Market size by category, 2025

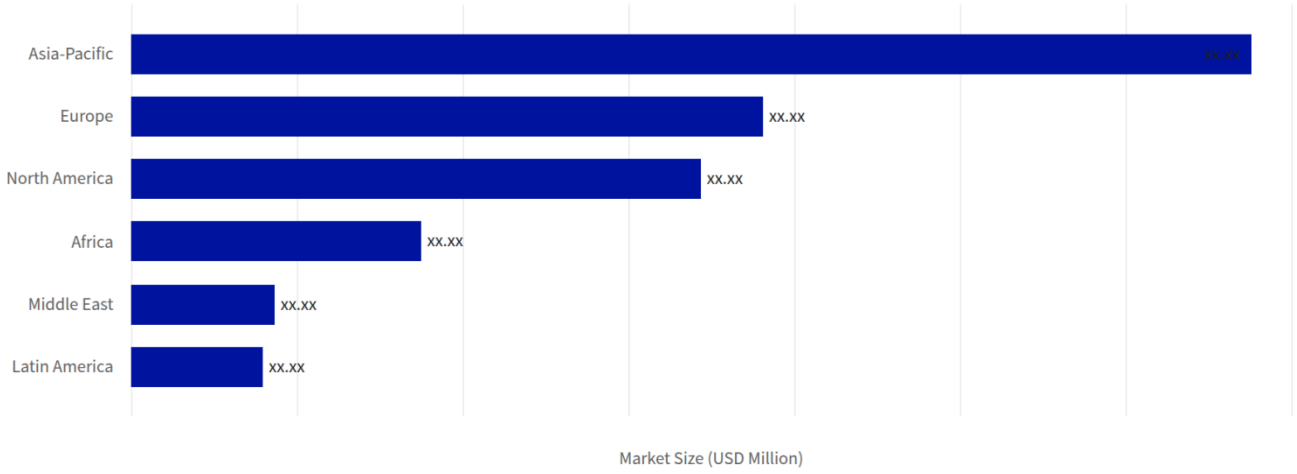


Figure 32. Global Telecom Energy Storage System Market, Regional growth by Network Application, 2025-2032 (CAGR %)

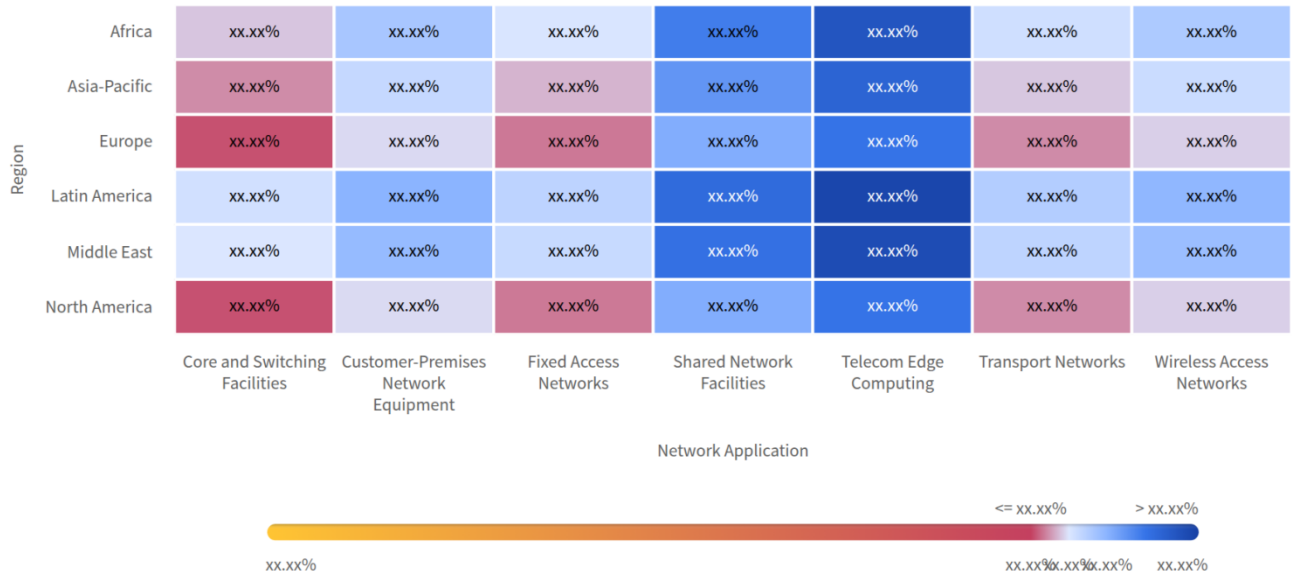


Table 226. Global Telecom Energy Storage System Market, by Region growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 227. Global Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Asia-Pacific	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Europe	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latin America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Middle East	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North America	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IHS Holding Limited - 2025 Form 20-F

   · IHS' 2025 filing describes customer responsibility for power provision in its Latin American model, including Brazil and Colombia, and Nigerian hybrid-power arrangements while excluding South Africa from the African hybrid deployment discussion. These are company-specific observations. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.

2. Helios Towers Sustainable Business Addendum 2025

   · The company's 2025 disclosure supports a bounded African power-service comparison, not a uniform classification of African sites. ([heliostowers.com](https://www.heliostowers.com/media/xejmdrgh/helios-towers-sustainable-business-addendum-2025.pdf))

3. Reserve Markets | Fingrid

   · The Finnish reserve agreement is a market relationship distinct from telecom purchasing and does not establish access elsewhere in Europe. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))

4. Virtual Power Plant | Elisa

   · Elisa's Finnish permission provides a constituent-specific European secondary-use example. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

5. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026

   · Lebanon Community School District's funding-year 2026 solicitation sought internal-network UPS equipment and necessary software or licenses, admitted equivalent brands, allowed optional installation, and separated noneligible items funded by the district. It is not an award record. ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))

6. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

   · Ofcom's June xx.xx 2026 UK guidance expects communications providers to maintain risk assessment and make plans and investments commensurate with identified risks. It does not prescribe identical storage purchases throughout Europe. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

7. Digital Product Passport for Batteries | European Commission

   · The European Commission describes detailed battery-passport information as maintained by the responsible economic operator, supporting a jurisdiction-specific information-accountability comparison. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))

8. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   - The European Commission's August xx.xx 2026 announcement identifies February xx.xx 2027 as the passport start date for industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service. The guidance introduces no additional legal requirements. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/news/guidance-support-preparations-digital-batteries-passport-2026-xx.xx-21_en))
9. Battery Back-Up Information | nbn
   - nbn states that it stopped offering its FTTP battery-backup power supply unit from June 2024 and directs customers needing alternatives to their communications provider. ([nbnco.com.au](https://www.nbnco.com.au/learn/network-technology/fibre-to-the-premises-explained-fttp/battery-back-up-information))
10. Partners | Indus Towers
    - Indus Towers' supplier form lists batteries, UPS equipment, and turnkey services; requests principal authorization from traders or agents; and asks about after-sales coverage. The form establishes requested supplier information, not approval or an award. ([industowers.com](https://www.industowers.com/partners/))
11. CRTC - Staff Letter: Request for Information on Telecommunications Resiliency, May 12, 2026
    - The CRTC's May xx.xx 2026 information request asked providers whether they advise premises customers to purchase or rent battery backup. The letter establishes an inquiry, not a purchasing mandate. ([crtc.gc.ca](https://crtc.gc.ca/eng/archive/2026/lt260512.htm))
12. Subtel - Nuevo Reglamento para la Operación de las Telecomunicaciones en Situaciones de Emergencia
    - Subtel's January xx.xx 2026 announcement states that the emergency regulation published January xx.xx 2026 increases energy-backup expectations for critical telecommunications infrastructure and provides phased implementation. Asset-specific timing must be confirmed separately. ([subtel.gob.cl](https://www.subtel.gob.cl/reglamento-emergencias/))
13. Sustainability Agenda - Zain Sustainability Report 2025
    - Zain's 2025 disclosures report battery-hybrid deployment with TASC Towers in Iraq and battery-hybrid and grid-connection initiatives with Latis in Saudi Arabia. These establish company-reported partner activity, not individual supplier access or transferable outcomes. ([zain.com](https://zain.com/SR2025/xx.xx-sustainability-agenda/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
14. China Tower - Chairman's Statement, 2025 operating results
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
15. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.

16. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
17. CTIA - Summary of the 2025 Annual Wireless Industry Survey
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
18. ITU - Facts and Figures 2025: Subscriptions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

19. ITU - The ICT Development Index 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
20. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.

18.1. Asia-Pacific

Table 228. Asia-Pacific Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Indonesia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Malaysia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Philippines	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Singapore	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Taiwan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Thailand	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Unallocated / remaining scope	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 229. Asia-Pacific Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Indonesia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Malaysia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Philippines	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Singapore	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Taiwan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Thailand	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 230. Asia-Pacific Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 231. Asia-Pacific Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 232. Asia-Pacific Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 233. Asia-Pacific Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 234. Asia-Pacific Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 235. Asia-Pacific Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 236. Asia-Pacific Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 237. Asia-Pacific Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 238. Asia-Pacific Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 239. Asia-Pacific Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 240. Asia-Pacific Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 241. Asia-Pacific Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 242. Asia-Pacific Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 243. Asia-Pacific Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 244. Asia-Pacific Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 245. Asia-Pacific Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower - Chairman's Statement, 2025 operating results
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The large observed Chinese site inventory constrains the Asia-Pacific share of the common global powered-site pool; unrelated energy-business revenue is not added.
2. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: China's observed fixed-broadband scale constrains the regional other-network and premises allocation; future attachment and growth remain modeled.
3. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The Indian infrastructure stock provides a second major regional footprint constraint; tower stock is not treated as realized storage spending.
4. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional subscription scale constrains the addressable network pool; future dedicated storage attachment remains an explicit assumption.

5. Shuangdeng Group - Global Offering Prospectus: historical telecom sales and prices
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer's own telecom sales table reports historical volumes and RMB xx.xx/kWh average selling price for 2024, supplying a bulk-equipment valuation constraint; syndicated industry estimates are excluded.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
6. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
7. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.

8. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
9. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

10. Shuangdeng Group Co., Ltd. - Interim Report 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
11. Shuangdeng Group Co., Ltd. - Annual Report 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

12. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

13. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
14. EnerSys - PowerSafe mSeries Batteries
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

15. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

16. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
17. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
18. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

19. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

20. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

21. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

22. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

23. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
24. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
25. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
26. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
27. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.

28. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
29. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
30. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
31. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
32. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
33. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
34. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.

35. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
36. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
37. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
38. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.

39. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
40. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
41. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
42. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.

43. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
44. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
45. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

18.2. Europe

Table 246. Europe Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Austria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Belgium	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Denmark	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Finland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Netherlands	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Norway	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Poland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Portugal	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sweden	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Switzerland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Unallocated / remaining scope	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 247. Europe Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Austria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Belgium	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Denmark	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Finland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Netherlands	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Norway	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Poland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Portugal	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sweden	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Switzerland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 248. Europe Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 249. Europe Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 250. Europe Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 251. Europe Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 252. Europe Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 253. Europe Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 254. Europe Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 255. Europe Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 256. Europe Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 257. Europe Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 258. Europe Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 259. Europe Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 260. Europe Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 261. Europe Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 262. Europe Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 263. Europe Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity maturity provides a check on fixed-network weighting and more moderate footprint expansion.

2. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The national indicator annex supplies dated connectivity-maturity and coverage comparisons; its principally 2023 reference period does not verify the modeled 2025 national equipment pools.
3. Elisa - Virtual Power Plant
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa's company-specific balancing-market permission supports an existing secondary-use relationship; it does not establish incremental equipment purchasing, so no grid-service hardware premium is added.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
4. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

5. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
6. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

7. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

8. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

9. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
10. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

11. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

12. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

13. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise.
([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation.
([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales.
([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales.
([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

16. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
17. EnerSys - Financial Solutions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.

25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.

32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.

36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.

40. China Tower Announces 2025 Annual Results - March 18, 2026
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.

41. Battery Back-up Information | nbn
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.

42. Telecom Lithium Batteries | Vertiv
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

18.3. North America

Table 264. North America Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Unallocated / remaining scope	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 265. North America Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 266. North America Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 267. North America Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 268. North America Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 269. North America Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 270. North America Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 271. North America Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 272. North America Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 273. North America Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 274. North America Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 275. North America Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 276. North America Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 277. North America Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 278. North America Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 279. North America Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 280. North America Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 281. North America Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The U.S. macro/small-cell split constrains the regional wireless footprint and prevents equating every small cell with a macro-site storage purchase.
2. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: ITU regional subscription and adoption differences support heterogeneous wireless, fixed-network and premises opportunity pools, not observed equipment shares.
3. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
4. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

5. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
6. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

7. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

8. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

9. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
10. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

11. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

12. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
13. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
14. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

15. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

16. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

17. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

18. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

19. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
20. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
21. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

22. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
23. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
24. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
25. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
26. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
27. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
28. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

29. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
30. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
31. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
32. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
33. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
34. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

35. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
36. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
37. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
38. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

39. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
40. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
41. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
42. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
43. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

18.4. Africa

Table 282. Africa Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Egypt	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Kenya	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nigeria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Unallocated / remaining scope	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 283. Africa Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Egypt	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Kenya	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nigeria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 284. Africa Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 285. Africa Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 286. Africa Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 287. Africa Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 288. Africa Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 289. Africa Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 290. Africa Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 291. Africa Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 292. Africa Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 293. Africa Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 294. Africa Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 295. Africa Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 296. Africa Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 297. Africa Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 298. Africa Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 299. Africa Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Connectivity gaps and adoption differences qualify uniform regional storage or premises attachment assumptions.

2. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The annex supports checking heterogeneous connectivity conditions while retaining unmeasured storage-purchasing assumptions.

3. IHS Holding Limited - 2025 Form 20-F

- Evidence informing base-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: African maintenance-capital ranges and xx.xx% hybrid penetration in the applicable company portfolio constrain the storage-flow premise but are broader than equipment-only storage demand.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company-reported Nigerian hybrid participation supports existing demand, not a national purchasing rate.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company-reported Nigerian hybrid participation supports existing demand, not a national purchasing rate.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The South African managed-power exclusion and changed company responsibility qualify extrapolation from Nigeria without implying zero national equipment demand.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The South African managed-power exclusion and changed company responsibility qualify extrapolation from Nigeria without implying zero national equipment demand.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes

4. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
5. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

6. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
7. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

8. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

9. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
10. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

11. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

12. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

13. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

16. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

17. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
42. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

18.5. Middle East

Table 300. Middle East Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Israel	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Qatar	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Saudi Arabia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Turkey	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Unallocated / remaining scope	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Arab Emirates	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 301. Middle East Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Israel	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Qatar	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Saudi Arabia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Turkey	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Arab Emirates	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 302. Middle East Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 303. Middle East Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 304. Middle East Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 305. Middle East Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 306. Middle East Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 307. Middle East Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 308. Middle East Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 309. Middle East Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 310. Middle East Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 311. Middle East Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 312. Middle East Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 313. Middle East Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 314. Middle East Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 315. Middle East Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 316. Middle East Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 317. Middle East Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Differentiated connectivity supports separate regional pools; ITU groupings are bridged to the captured geography rather than copied as equipment allocations.
2. Zain Sustainability Report 2025 - Sustainability Agenda
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Zain reports xx.xx Iraqi battery-hybrid deployments with TASC Towers in 2025, establishing bounded regional partner-led activity outside the returned country subtotal; this is not regional penetration.
3. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

4. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
5. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

6. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

7. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

8. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
9. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

10. IHS Holding Limited - 2025 Form 20-F

- Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

11. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
12. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
13. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))
16. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
17. EnerSys - Financial Solutions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
42. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

18.6. Latin America

Table 318. Latin America Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Argentina	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Chile	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Colombia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peru	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Unallocated / remaining scope	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 319. Latin America Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million)

Region	2023	2024	2025	2026	2027	2032	CAGR (%)
Argentina	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Chile	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Colombia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peru	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 320. Latin America Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 321. Latin America Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 322. Latin America Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 323. Latin America Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 324. Latin America Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 325. Latin America Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 326. Latin America Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 327. Latin America Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 328. Latin America Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 329. Latin America Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 330. Latin America Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 331. Latin America Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 332. Latin America Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 333. Latin America Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 334. Latin America Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 335. Latin America Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. ITU - Facts and Figures 2025: Subscriptions
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Regional connectivity evidence constrains addressable telecom infrastructure and the conditional expansion assumptions.
2. ITU - The ICT Development Index 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: National connectivity variation is a comparability check on differentiated addressable pools, not a population- or GDP-based share rule.

3. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The different Latin American maintenance and power-procurement boundary supports a lower wireless intensity and prevents treating tower-owner spending as all customer demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company operating model supports separating Colombian tower ownership from the storage purchasing counterparty.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company operating model supports separating Colombian tower ownership from the storage purchasing counterparty.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

4. Subtel - New Regulation for Telecommunications Operation in Emergency Situations
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The January 2026 emergency-regulation announcement supports a phased resilience purchasing mechanism, but does not disclose storage-only realized spending or justify a mandatory forecast share premium.
5. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
6. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

7. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
8. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

9. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

10. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
11. EnerSys - PowerSafe mSeries Batteries
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

12. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
13. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
14. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

15. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

16. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

17. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

18. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

19. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
20. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
21. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

22. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
23. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
24. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
25. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
26. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
27. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
28. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

29. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
30. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
31. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
32. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
33. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
34. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

35. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
36. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
37. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
38. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

39. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
40. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
41. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
42. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
43. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

19. Telecom Energy Storage System Market, by Group

Within Americas, USMCA provides an origin-based trade framework for the United States, Canada, and Mexico, not a hemisphere-wide purchasing regime. The International Trade Administration requires product-specific origin qualification and supporting claim information. ■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■ ■■■■■■ ■■■■ ■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■■ ■ ■■■■■■ ■■ ■■■ ■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■ ■■■■ ■■■■■■■■■■

Europe, Middle East & Africa supports a corporate procurement comparison, but not a single authorization strategy. Vodafone's supplier framework combines contractual policy commitments with prequalification and separates high-risk approval from commercial negotiations. ■■ ■■■■■ ■■■■■■■■ ■■■■ ■■ ■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■ ■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■■■■

European Union comparisons have a shared finished-battery information boundary. For qualifying industrial batteries above xx.xx kWh placed on the market or put into service, the passport requirement is scheduled to apply from February xx.xx 2027. ■■■■■■■■■■■■■■ ■■■■■■ ■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■ ■■■ ■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■ ■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■ ■ ■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■ ■■ ■■■ ■■■■■■■■■■■■■ ■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■

■■■■■ ■■■■■■ ■ ■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■ ■■■ ■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■ ■■■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ Regional warehousing alone does not establish origin. Direct destination supply remains an alternative when an intermediary cannot substantiate eligibility or assume the required fulfillment commitments.

[illegible] The founding framework is not proof of unrestricted circulation for a particular battery or integrated telecom system. Shared logistics may simplify coordination; direct import is preferable when a destination restriction or unresolved responsibility makes an intermediate route unsuitable.

Australasia has a documented trans-Tasman origin-based route, distinct from a common telecom procurement approval. [illegible] Regional distribution is defensible only when origin evidence and destination support responsibilities can be maintained as the offering changes.

Nordic coordination can support a common commercial-service reference without conferring portable participation rights. The Nordic Balancing Model involves the transmission system operators associated with Sweden, Denmark, Finland, and Norway, provides shared balancing services, and remains dependent on national regulatory approvals. [illegible]

BRICS' 2025-2030 energy-cooperation roadmap supports exchanges of policy experience, investment cooperation, and energy-related trade while explicitly retaining voluntary cooperation and national sovereignty. It is therefore a business-development context, not evidence of a harmonized telecom-storage approval or an accessible award. [illegible]

G7's October xx.xx 2025 critical-minerals roadmap emphasizes traceability, transparency, diversification, and member-specific implementation. [illegible]

[redacted] The commercial trigger is an applicable national measure or tender condition, not the ministerial commitment alone.

NATO's September xx.xx 2026 resilience baseline for civil communications calls for continuity planning under national legislation and visibility into critical-component dependencies, vendor ownership, and service-provider control. Telecom storage suppliers should relate their continuity and replacement commitments to the actual national buyer's requirements; the baseline is not a battery qualification or award. [redacted]

Figure 33. Global Telecom Energy Storage System Market Size, by Group, 2025 vs 2026 vs 2032

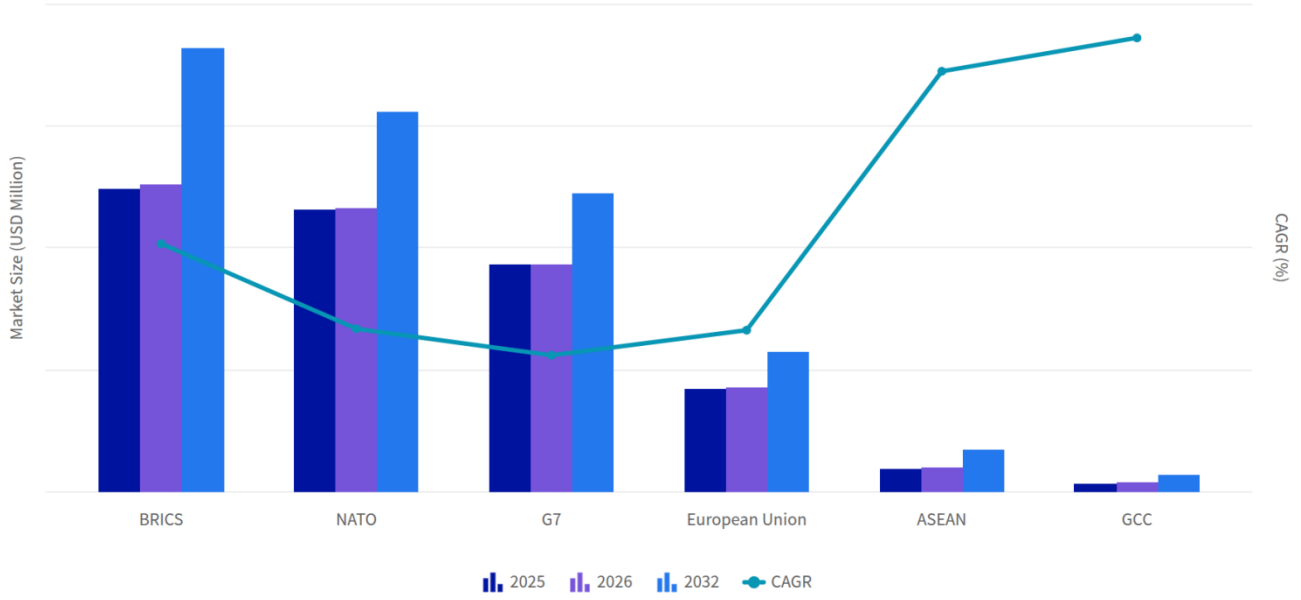


Table 336. Global Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
ASEAN	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
BRICS	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
European Union	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
G7	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
GCC	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
NATO	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Sources & Evidence

1. Supply Chain | Vodafone

· Vodafone requires contractual supplier-policy commitments and prequalification, separates high-risk approval from commercial staff, and profiles risk by country, industry, and activity. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))

2. Digital Product Passport for Batteries | European Commission
   · The economic operator placing the finished battery on the market is responsible for creating and maintaining the passport, rather than individual component or module suppliers. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/single-market/digital-product-passport/batteries_en))
3. Guidance to Support Preparations for the Digital Batteries Passport | European Commission, August 21, 2026
   · From February xx.xx 2027, industrial batteries with capacity greater than xx.xx kWh placed on the market or put into service require a battery passport. The preparation guidance does not introduce additional legal requirements. ([single-market-economy.ec.europa.eu](https://single-market-economy.ec.europa.eu/news/guidance-support-preparations-digital-batteries-passport-2026-xx.xx-21_en))
4. USMCA Overview
   · USMCA preferential claims require the offering to satisfy its applicable product-specific origin rule and supporting origin information; the framework concerns the United States, Mexico, and Canada. ([trade.gov](https://www.trade.gov/usmca-overview))
5. Applying for battery registration | stiftung elektro-altgeräte register
   · Germany requires battery-producer registration separately from the passport information framework. ([stiftung-ear.de](https://www.stiftung-ear.de/en/guides/applying-for-battery-registration/))
6. Rules of Origin | Ministry of Investment, Trade and Industry
   · Malaysia's ministry states that ATIGA tariff concessions require compliance with the applicable rules of origin and directs exporters to product-specific rules. ([miti.gov.my](https://www.miti.gov.my/index.php/pages/view/2071))
7. About - ASEAN Trade Repository
   · The ASEAN Trade Repository links government-maintained national repositories covering tariffs, origin, non-tariff measures, customs laws, documentary requirements, and administrative rulings. ([atr.asean.org](https://atr.asean.org/read/about-asean-trade-repository/xx.xx))
8. Procedures and steps for implementing the GCC Customs Union
   · The GCC's published customs-union implementation framework establishes common customs law and first-entry-point arrangements while recognizing prohibited, restricted, and constituent-specific goods restrictions; it does not determine current offering-specific treatment. ([gcc-sg.org](https://www.gcc-sg.org/ar/JointGulf/Cooperation/GCCCustomsUnion/Pages/default.aspx))
9. Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA)
   · New Zealand importers claiming CER preferential treatment must possess sufficient evidence of compliance with the relevant origin provisions and substantiate the claim when Customs requests it. ([customs.govt.nz](https://www.customs.govt.nz/information-releases-and-legislation/legislation/international-agreements/free-trade-agreements/australia-new-zealand-closer-economic-relations-trade-agreement-anzcerta))
10. Organisation and TSO cooperation - Nordic Balancing Model
    · The Nordic Balancing Model involves Svenska kraftnät, Energinet, Fingrid, and Statnett; shared balancing services and implementation depend on stakeholder cooperation and national regulatory approvals. ([nordicbalancingmodel.net](https://nordicbalancingmodel.net/about/organization-and-governance/))
11. Roadmap for BRICS Energy Cooperation 2025-2030
    · The May xx.xx 2025 roadmap encourages energy-related trade, investment, and policy cooperation for 2025-2030 while stating that cooperation is voluntary and respects national sovereignty. ([gov.br](https://www.gov.br/mme/pt-br/atos-internacionais/organismos-internacionais/brics/RoadmapforBRICSEnergyCooperation20252030Final22.pdf))
12. Roadmap to Promote Standards-based Markets for Critical Minerals
    · The October xx.xx 2025 G7 roadmap emphasizes supply-chain traceability, transparency, diversification, domestic-law implementation, and member-specific initiatives; it does not establish a telecom-storage award. ([canada.ca](https://www.canada.ca/en/natural-resources-canada/news/2025/xx.xx/roadmap-to-promote-standards-based-markets-for-critical-minerals.html))

13. 2026 Resilience Baseline Requirements

· NATO's September xx.xx 2026 civil-communications baseline calls for national-legislation-backed continuity planning and supply-chain visibility covering critical components, dependencies, vendor ownership, and service-provider control.
([nato.int](https://www.nato.int/en/about-us/official-texts-and-resources/official-texts/2026/xx.xx/xx.xx/2026-resilience-baseline-requirements))

19.1. BRICS

Table 337. BRICS Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 338. BRICS Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Africa	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 339. BRICS Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 340. BRICS Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 341. BRICS Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 342. BRICS Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 343. BRICS Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 344. BRICS Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 345. BRICS Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 346. BRICS Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 347. BRICS Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 348. BRICS Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 349. BRICS Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 350. BRICS Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 351. BRICS Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 352. BRICS Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 353. BRICS Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 354. BRICS Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

2. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
3. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.

4. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The South African managed-power exclusion and changed company responsibility qualify extrapolation from Nigeria without implying zero national equipment demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The South African managed-power exclusion and changed company responsibility qualify extrapolation from Nigeria without implying zero national equipment demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

5. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
6. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

7. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
8. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

9. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

10. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
11. EnerSys - PowerSafe mSeries Batteries
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

12. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
13. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
14. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

15. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

16. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

17. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

18. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

19. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
20. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
21. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

22. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
23. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
24. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
25. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
26. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
27. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
28. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

29. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
30. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
31. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
32. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
33. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
34. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

35. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
36. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
37. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
38. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

39. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
40. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
41. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
42. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
43. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

19.2. NATO

Table 355. NATO Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Albania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Belgium	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Bulgaria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Croatia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Czech Republic	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Denmark	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Estonia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Finland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Greece	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Hungary	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Iceland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latvia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithuania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Luxembourg	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Montenegro	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Netherlands	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North Macedonia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Norway	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Poland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Portugal	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Romania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovakia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovenia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sweden	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 355 - continued

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Turkey	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 356. NATO Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
Albania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Belgium	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Bulgaria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Croatia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Czech Republic	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Denmark	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Estonia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Finland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Greece	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Hungary	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Iceland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latvia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithuania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Luxembourg	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Montenegro	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Netherlands	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
North Macedonia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Norway	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Poland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Portugal	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Romania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovakia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovenia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sweden	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Turkey	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 357. NATO Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 358. NATO Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 359. NATO Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 360. NATO Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 361. NATO Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 362. NATO Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 363. NATO Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 364. NATO Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 365. NATO Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 366. NATO Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 367. NATO Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 368. NATO Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 369. NATO Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 370. NATO Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 371. NATO Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 372. NATO Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. CTIA - Summary of the 2025 Annual Wireless Industry Survey

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.

2. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
3. Elisa - Virtual Power Plant
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa's company-specific balancing-market permission supports an existing secondary-use relationship; it does not establish incremental equipment purchasing, so no grid-service hardware premium is added.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
4. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

5. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
6. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

7. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

8. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

9. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
10. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

11. IHS Holding Limited - 2025 Form 20-F

- Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

12. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

13. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise.
([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation.
([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales.
([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales.
([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

16. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
17. EnerSys - Financial Solutions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.

25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.

32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.

36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.

40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
42. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

19.3. G7

Table 373. G7 Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 374. G7 Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 375. G7 Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 376. G7 Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 377. G7 Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 378. G7 Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 379. G7 Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 380. G7 Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 381. G7 Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 382. G7 Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 383. G7 Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 384. G7 Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 385. G7 Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 386. G7 Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 387. G7 Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 388. G7 Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 389. G7 Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 390. G7 Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. CTIA - Summary of the 2025 Annual Wireless Industry Survey

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.

2. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
3. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
4. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

5. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
6. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

7. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

8. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
9. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

10. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

11. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

12. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

13. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

16. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

17. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
42. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

19.4. European Union

Table 391. European Union Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Austria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Belgium	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Bulgaria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Croatia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Cyprus	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Czech Republic	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Denmark	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Estonia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Finland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Greece	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Hungary	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Ireland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latvia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithuania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Luxembourg	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Malta	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Netherlands	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Poland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Portugal	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Romania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovakia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovenia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sweden	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 392. European Union Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
Austria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Belgium	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Bulgaria	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Croatia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Cyprus	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Czech Republic	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Denmark	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Estonia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Finland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Greece	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Hungary	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Ireland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Latvia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithuania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Luxembourg	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Malta	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Netherlands	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Poland	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Portugal	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Romania	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovakia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Slovenia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sweden	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 393. European Union Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 394. European Union Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 395. European Union Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 396. European Union Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 397. European Union Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 398. European Union Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 399. European Union Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 400. European Union Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 401. European Union Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 402. European Union Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 403. European Union Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 404. European Union Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 405. European Union Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 406. European Union Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 407. European Union Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 408. European Union Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. Elisa - Virtual Power Plant

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa's company-specific balancing-market permission supports an existing secondary-use relationship; it does not establish incremental equipment purchasing, so no grid-service hardware premium is added.

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

2. China Tower Corporation Limited - Interim Report 2026

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

3. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

5. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

6. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

7. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
8. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

10. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool.
([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

11. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales.
([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise.
([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation.
([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales.
([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales.
([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
15. EnerSys - Financial Solutions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))

18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.

23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.

30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.

34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.

38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

19.5. ASEAN

Table 409. ASEAN Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Brunei	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Cambodia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Indonesia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lao People's Democratic Republic	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Malaysia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Myanmar	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Philippines	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Singapore	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Thailand	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Vietnam	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 410. ASEAN Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
Brunei	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Cambodia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Indonesia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lao People's Democratic Republic	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Malaysia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Myanmar	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Philippines	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Singapore	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Thailand	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Vietnam	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 411. ASEAN Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 412. ASEAN Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 413. ASEAN Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 414. ASEAN Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 415. ASEAN Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 416. ASEAN Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 417. ASEAN Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 418. ASEAN Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 419. ASEAN Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 420. ASEAN Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 421. ASEAN Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 422. ASEAN Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 423. ASEAN Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 424. ASEAN Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 425. ASEAN Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 426. ASEAN Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
11. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

19.6. GCC

Table 427. GCC Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Bahrain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Kuwait	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Oman	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Qatar	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Saudi Arabia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Arab Emirates	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 428. GCC Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million)

Group	2023	2024	2025	2026	2027	2032	CAGR (%)
Bahrain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Kuwait	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Oman	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Qatar	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Saudi Arabia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Arab Emirates	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx

Table 429. GCC Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 430. GCC Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 431. GCC Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 432. GCC Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 433. GCC Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 434. GCC Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 435. GCC Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 436. GCC Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 437. GCC Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 438. GCC Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 439. GCC Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 440. GCC Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 441. GCC Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 442. GCC Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 443. GCC Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 444. GCC Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20. Telecom Energy Storage System Market, by Country

The United States and Canada illustrate different purchasing and accountability settings. ■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■ ■■■■■■■■ ■■■■ ■■■■■ ■■■ ■■■■■ ■■■■ ■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■ ■■■ ■■ ■■■■■■■ ■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ Canadian providers should secure the supplier information needed for their own reporting obligations, without treating that reporting decision as approval of a storage product.

■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■ ■■ ■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■ ■■ ■■■ ■■■■■ ■■■■■■■■■■ ■■ ■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■ ■■■■ ■■■■ ■■ ■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ The completed transaction does not establish a battery award or transfer of a particular support obligation. Contract notices and new procurement instructions, not ownership change alone, should trigger a revised account strategy.

The United Kingdom and Finland support different propositions for the same backup asset. Ofcom's June xx.xx 2026 guidance expects risk-proportionate resilience plans and investment and permits other justified approaches to meeting the underlying duties. ■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■ ■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■

Germany adds a national producer-access decision to the shared EU information framework. ■■■■■■■■ ■■■ ■■■■■■ ■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■ ■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■ ■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■ ■ ■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■ ■■■■■■ ■■■■■■■■■■ ■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■ ■■■■■ ■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■ ■■ ■■■■■■■■■■■ ■■■■■■■■ A representative provides a compliance route, not telecom-customer approval.

■■■■■ ■■■ ■■■■■ ■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■ ■ ■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■ ■■ ■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■ ■■■■■■■■

[illegible] In India, CPCB's producer guidance requires registration and extended producer responsibility fulfilled through certified waste-battery recyclers. Suppliers should identify the responsible producer and lifecycle counterparties; a distribution agreement does not establish that these obligations or customer acceptance have been satisfied.

[illegible] Vendors should establish the contracted power-service purchaser in Nigeria and the party responsible for alternative power in South Africa. These are company-specific allocations, not country-wide rules.

Oman requires a distinction between an infrastructure relationship and a verified storage purchasing scope. [illegible] The undated portfolio does not settle current contracting scope; direct equipment supply remains an alternative where the buyer retains those obligations.

[illegible] Spark's fiscal 2025 report also identifies power and backhaul loss as separate outage causes, so a storage commitment should not be sold as resolving every network dependency. Subsequent supply awards and completion notices distinguish accessible business from announced work.

Figure 34. Global Telecom Energy Storage System Market Size, by Country, 2025 vs 2032 (%)

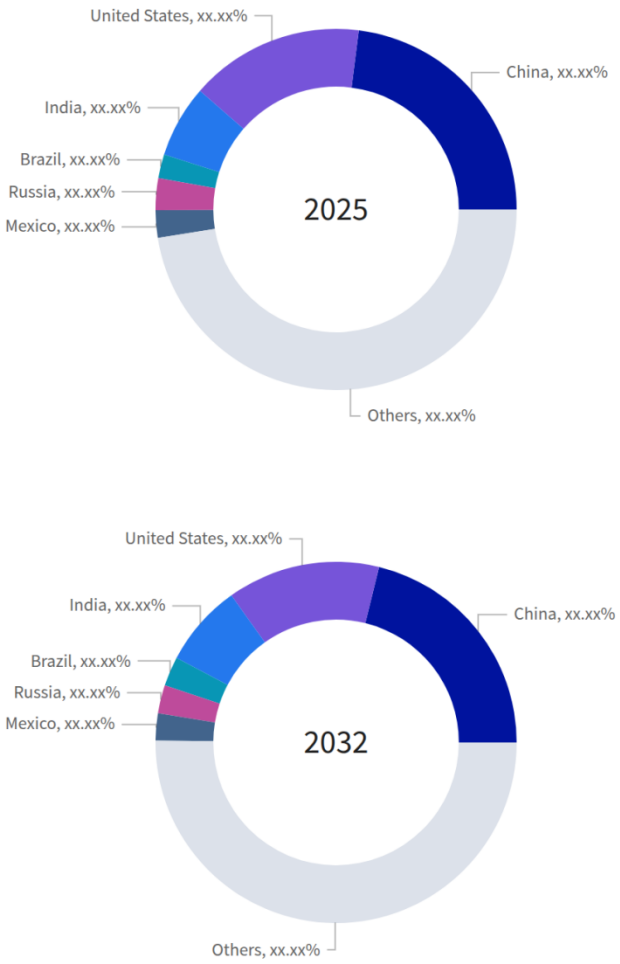


Figure 35. Global Telecom Energy Storage System Market Size, by Country, 2025 vs 2026 vs 2032

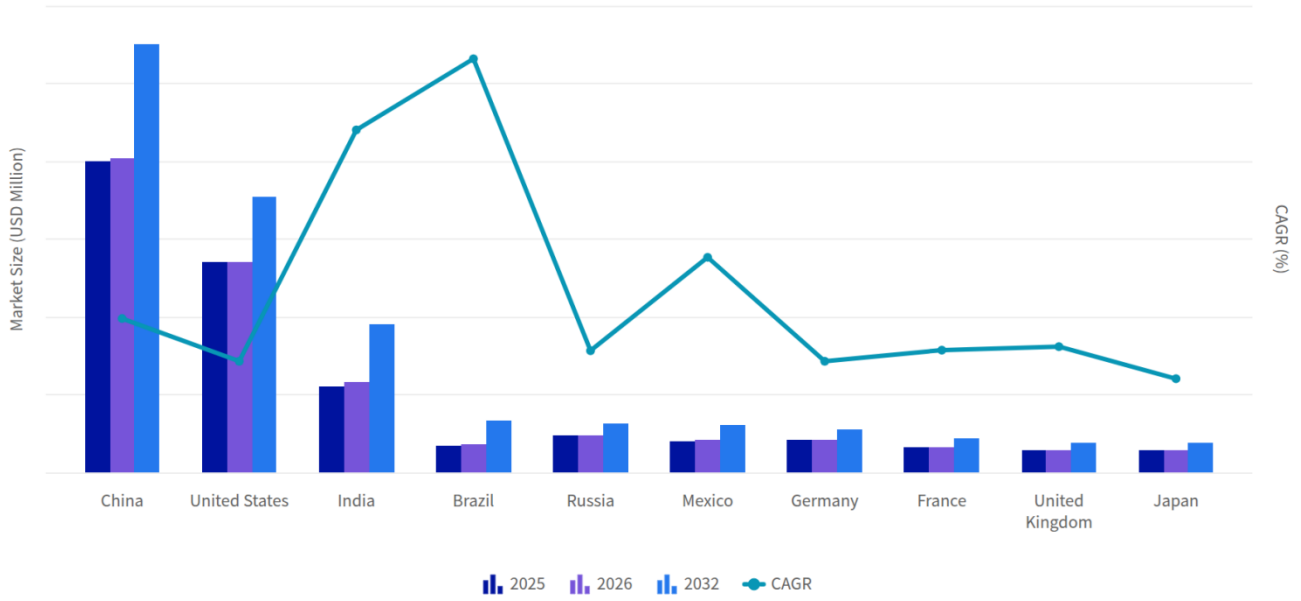


Table 445. Global Telecom Energy Storage System Market, by Country growth contribution, 2025-2032

Category	2025 value (USD Million)	2032 value (USD Million)	Added value (USD Million)	2025 share (%)	2032 share (%)	Change (pp)	Growth share (%)	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Unallocated / remaining scope	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Scope total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 446. Global Telecom Energy Storage System Market Size, by Country, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Brazil	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Canada	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
China	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
France	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Germany	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
India	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Italy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Japan	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Mexico	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Russia	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
South Korea	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Spain	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United Kingdom	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
United States	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Others	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IHS Holding Limited - 2025 Form 20-F

   · IHS reports hybrid battery arrangements in African operations excluding South Africa and records the 2024 unwind of MTN South Africa power management, ending its diesel or alternative-power supply responsibility under that relationship. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.

2. Reserve Markets | Fingrid

   · Fingrid requires reserve providers to hold a valid reserve-market agreement and establish the applicable participation requirements; a telecom-storage asset's ownership alone does not establish that relationship. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))

3. Virtual Power Plant | Elisa

   · Elisa reports receiving permission from Fingrid to use base-station backup batteries in Finland's grid-balancing market. This is company-reported permission, not another operator's authorization. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

4. Lebanon Community School District #9 - FCC Form 470, Funding Year 2026

   · The district's funding-year 2026 solicitation allows equivalent UPS brands, includes necessary software and licenses, makes installation optional, and separates non-E-Rate-eligible items paid by the district; it is not an award.
   ([publicdata.usac.org](https://publicdata.usac.org/EPC/Prd/Form470/xx.xx/xx.xx/xx.xx-USAC_FCC_FORM_470_APPLICATION_260022459_CERTIFIED.pdf))

5. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

   · Ofcom's June xx.xx 2026 guidance expects ongoing risk assessment and commensurate plans and investment, and permits other proportionate approaches to meeting resilience-related security duties.
   ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

6. Applying for battery registration | stiftung elektro-altgeräte register

   · Obligated producers need a registration order before market placement, brand-and-category registrations, and participation in a producer responsibility organization; obligated producers without a German subsidiary require a German authorized representative.
   ([stiftung-ear.de](https://www.stiftung-ear.de/en/guides/applying-for-battery-registration/))

7. Telecom Decision CRTC 2025-225

   · CRTC's September xx.xx 2025 decision requires telecommunications service providers to notify authorities of major outages and submit post-outage information; its scope is reporting and accountability, not storage-product approval. ([crtc.gc.ca](https://crtc.gc.ca/eng/archive/2025/2025-xx.xx.htm))

8. IHS Towers Completes Sale of Latin America Tower Operations to Macquarie Asset Management

   · IHS announced on August xx.xx 2026 that it had completed the sale of its Latin American tower operations, including Brazil and Colombia, to Macquarie Asset Management. The announcement does not identify a battery award or a particular warranty transfer.
   ([ihstowers.com](https://www.ihstowers.com/support-and-info/media/press-releases/2026/ihs-towers-completes-sale-of-latin-america-tower-operations-to-m))

9. Chairman's Statement - China Tower

   · China Tower's account of 2025 reports photovoltaic generation and storage deployment at base stations and separately describes its broader power-backup business.
   ([ir.china-tower.com](https://ir.china-tower.com/en/about/chairman.php))

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

10. CPCB Guidance for Producers

    · CPCB's guidance requires producer registration and extended producer responsibility for batteries introduced into the market, with fulfillment through certified waste-battery recyclers.
    ([eprbattery.cpcb.gov.in](https://eprbattery.cpcb.gov.in/upload/adminDoc/GuidanceManuals/Guidance%20Manual%20Producers.pdf))

11. Our solutions - Helios Towers

    · Helios Towers publishes colocation, build-to-suit, and managed-service offerings and an Omantel customer account about Oman. The undated page does not establish an Oman battery award or replacement-service scope. ([heliostowers.com](https://www.heliostowers.com/our-solutions/))

12. Mobile Network Hardening Program

    · Australia's Mobile Network Hardening Program funds defined mobile-infrastructure resilience upgrades, including battery-backup enhancements alongside other measures.
    ([infrastructure.gov.au](https://www.infrastructure.gov.au/media-communications/phone/mobile-network-hardening-program))

13. Spark and Connexa to boost mobile cell tower resilience across New Zealand
· Connexa's May 2026 announcement reports a funded contract with Spark to extend battery backup at specified New Zealand mobile sites. It establishes a reported award, not completed upgrades or the battery supplier.
([connexa.co.nz](https://connexa.co.nz/news/spark-and-connexa-to-boost-mobile-cell-tower-resilience-across-new-zealand))
14. Spark New Zealand Annual Report FY25
· Spark's fiscal 2025 report identifies power loss and backhaul loss as separate causes of disaster-related outages and describes backup batteries within its own resilience arrangements.
([spark.co.nz](https://www.spark.co.nz/content/dam/spark/documents/pdfs/governance/FY25_Annual_Report.pdf))
15. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
16. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
17. CTIA - Summary of the 2025 Annual Wireless Industry Survey
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
18. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
19. nbn - Battery Back-Up Information
· Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.

20. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.

20.1. China

Table 447. China Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
China	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 448. China Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 449. China Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 450. China Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 451. China Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 452. China Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 453. China Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 454. China Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 455. China Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 456. China Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 457. China Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 458. China Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 459. China Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 460. China Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 461. China Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 462. China Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 463. China Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower - Chairman's Statement, 2025 operating results

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx year-end-2025 tower sites and separately reported TSP tenants anchor the China wireless footprint; the forecast uses the observed stock as a starting point, not as annual purchases.

2. Ministry of Industry and Information Technology - 2025 Communications Industry Statistical Bulletin
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: MIIT's 2025 bulletin reports xx.xx fixed-broadband access users, providing the observed Chinese fixed-network pool; its geographic exclusions prevent folding Taiwan into that observation.
3. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
4. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

5. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
6. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

7. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

8. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
9. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

10. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

11. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

12. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

13. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))
15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))
16. EnerSys - 2026 Proxy Statement and Annual Report
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
17. EnerSys - Financial Solutions
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
42. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.2. United States

Table 464. United States Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
United States	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 465. United States Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 466. United States Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 467. United States Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 468. United States Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 469. United States Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 470. United States Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 471. United States Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 472. United States Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 473. United States Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 474. United States Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 475. United States Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 476. United States Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 477. United States Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 478. United States Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 479. United States Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 480. United States Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. CTIA - Summary of the 2025 Annual Wireless Industry Survey
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The transparent industry survey reports xx.xx U.S. cell sites, including xx.xx small cells, at year-end 2024; the model explicitly adjusts storage equivalence and bridges into 2025.
2. 47 CFR § 9.20 - Backup Power Obligations, 2025 Edition
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The 2025 regulatory text expressly sunsets the former residential voice backup obligation on September xx.xx 2025, providing counterevidence against a continuing mandate-driven premises forecast.
3. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

4. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
5. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

6. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

7. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

8. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
9. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

10. IHS Holding Limited - 2025 Form 20-F

- Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
- Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
- Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

11. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
12. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
13. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

16. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

17. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
42. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.3. India

Table 481. India Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
India	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 482. India Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 483. India Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 484. India Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 485. India Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 486. India Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 487. India Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 488. India Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 489. India Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 490. India Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 491. India Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 492. India Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 493. India Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 494. India Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 495. India Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 496. India Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 497. India Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. PRS Legislative Research - Demand for Grants 2026-27 Analysis: Telecommunications
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The noncommercial parliamentary analysis reports xx.xx Indian towers in January 2026; an explicit adjacent-year bridge anchors the working 2025 pool and conditional forecast.

2. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
3. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

4. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
5. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

6. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

7. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
8. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

9. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

10. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
11. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
12. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

13. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

14. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

15. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

16. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

17. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
18. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
19. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

20. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
21. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
22. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
23. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
24. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
25. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
26. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

27. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
28. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
29. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
30. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
31. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
32. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

33. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
34. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
35. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
36. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

37. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
38. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
39. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
40. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
41. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.4. Russia

Table 498. Russia Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Russia	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 499. Russia Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 500. Russia Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 501. Russia Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 502. Russia Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 503. Russia Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 504. Russia Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 505. Russia Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 506. Russia Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 507. Russia Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 508. Russia Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 509. Russia Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 510. Russia Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 511. Russia Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 512. Russia Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 513. Russia Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 514. Russia Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
11. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.5. Germany

Table 515. Germany Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Germany	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 516. Germany Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 517. Germany Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 518. Germany Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 519. Germany Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 520. Germany Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 521. Germany Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 522. Germany Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 523. Germany Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 524. Germany Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 525. Germany Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 526. Germany Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 527. Germany Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 528. Germany Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 529. Germany Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 530. Germany Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 531. Germany Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.6. Mexico

Table 532. Mexico Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Mexico	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 533. Mexico Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 534. Mexico Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 535. Mexico Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 536. Mexico Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 537. Mexico Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 538. Mexico Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 539. Mexico Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 540. Mexico Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 541. Mexico Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 542. Mexico Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 543. Mexico Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 544. Mexico Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 545. Mexico Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 546. Mexico Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 547. Mexico Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 548. Mexico Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
11. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.7. Brazil

Table 549. Brazil Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Brazil	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 550. Brazil Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 551. Brazil Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 552. Brazil Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 553. Brazil Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 554. Brazil Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 555. Brazil Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 556. Brazil Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 557. Brazil Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 558. Brazil Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 559. Brazil Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 560. Brazil Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 561. Brazil Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 562. Brazil Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 563. Brazil Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 564. Brazil Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 565. Brazil Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Customer-controlled power procurement is a scope adjustment when estimating Brazilian storage demand.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

2. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
3. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

4. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
5. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

6. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

7. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
8. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.8. France

Table 566. France Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
France	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 567. France Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 568. France Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 569. France Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 570. France Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 571. France Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 572. France Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 573. France Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 574. France Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 575. France Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 576. France Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 577. France Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 578. France Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 579. France Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 580. France Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 581. France Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 582. France Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
11. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.9. Japan

Table 583. Japan Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Japan	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 584. Japan Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 585. Japan Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 586. Japan Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 587. Japan Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 588. Japan Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 589. Japan Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 590. Japan Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 591. Japan Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 592. Japan Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 593. Japan Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 594. Japan Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 595. Japan Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 596. Japan Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 597. Japan Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 598. Japan Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 599. Japan Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.10. United Kingdom

Table 600. United Kingdom Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
United Kingdom	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 601. United Kingdom Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 602. United Kingdom Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 603. United Kingdom Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 604. United Kingdom Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 605. United Kingdom Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 606. United Kingdom Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 607. United Kingdom Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 608. United Kingdom Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 609. United Kingdom Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 610. United Kingdom Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 611. United Kingdom Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 612. United Kingdom Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 613. United Kingdom Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 614. United Kingdom Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 615. United Kingdom Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 616. United Kingdom Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.11. Canada

Table 617. Canada Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Canada	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 618. Canada Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 619. Canada Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 620. Canada Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 621. Canada Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 622. Canada Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 623. Canada Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 624. Canada Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 625. Canada Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 626. Canada Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 627. Canada Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 628. Canada Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 629. Canada Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 630. Canada Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 631. Canada Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 632. Canada Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 633. Canada Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
11. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.12. Italy

Table 634. Italy Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Italy	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 635. Italy Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 636. Italy Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 637. Italy Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 638. Italy Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 639. Italy Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 640. Italy Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 641. Italy Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 642. Italy Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 643. Italy Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 644. Italy Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 645. Italy Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 646. Italy Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 647. Italy Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 648. Italy Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 649. Italy Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 650. Italy Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.13. Spain

Table 651. Spain Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Spain	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 652. Spain Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 653. Spain Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 654. Spain Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 655. Spain Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 656. Spain Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 657. Spain Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 658. Spain Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 659. Spain Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 660. Spain Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 661. Spain Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 662. Spain Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 663. Spain Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 664. Spain Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 665. Spain Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 666. Spain Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 667. Spain Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))
10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
11. Elisa - Virtual Power Plant
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.14. South Korea

Table 668. South Korea Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
South Korea	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 669. South Korea Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 670. South Korea Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 671. South Korea Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 672. South Korea Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 673. South Korea Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 674. South Korea Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 675. South Korea Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 676. South Korea Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 677. South Korea Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 678. South Korea Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 679. South Korea Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 680. South Korea Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 681. South Korea Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 682. South Korea Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 683. South Korea Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 684. South Korea Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. China Tower Corporation Limited - Interim Report 2026

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

2. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

· Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

3. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
4. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

5. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

6. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
7. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

8. IHS Holding Limited - 2025 Form 20-F
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

9. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

   · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

   · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

10. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

11. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

12. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

13. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

14. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

15. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

16. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
17. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
18. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

19. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
20. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
21. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
22. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
23. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
24. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
25. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

26. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
27. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
28. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
29. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
30. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
31. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

32. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
33. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
34. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
35. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

36. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
37. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
38. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
39. Battery Back-up Information | nbn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
40. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

20.15. Australia

Table 685. Australia Telecom Energy Storage System Market Size, 2017-2032 (USD Million)

Country	2023	2024	2025	2026	2027	2032	CAGR (%)
Australia	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 686. Australia Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million)

Product Integration	2023	2024	2025	2026	2027	2032	CAGR (%)
Battery Cells and Monoblocs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Integrated Storage and Power Conversion Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Banks and Racks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage Modules and Packs	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Storage-Integrated Telecom Power Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 687. Australia Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million)

Storage Technology	2023	2024	2025	2026	2027	2032	CAGR (%)
Flow Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Flywheel Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Metal-Air Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multi-Technology Storage Systems	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Based Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Supercapacitor Storage	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 688. Australia Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million)

Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Flooded Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Valve-Regulated Lead-Acid Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 689. Australia Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million)

Valve-Regulated Lead-Acid Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Absorbent Glass Mat Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Gel Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 690. Australia Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million)

Lithium-Ion Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Metal-Oxide-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Phosphate-Cathode Lithium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 691. Australia Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million)

Nickel-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Nickel-Cadmium Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Iron Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Metal Hydride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Nickel-Zinc Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 692. Australia Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million)

Sodium-Based Batteries	2023	2024	2025	2026	2027	2032	CAGR (%)
Sodium-Ion Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Nickel Chloride Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sodium-Sulfur Batteries	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 693. Australia Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million)

Network Application	2023	2024	2025	2026	2027	2032	CAGR (%)
Core and Switching Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Customer-Premises Network Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Fixed Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Network Facilities	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Edge Computing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Transport Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Wireless Access Networks	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 694. Australia Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million)

Storage Purpose	2023	2024	2025	2026	2027	2032	CAGR (%)
Electricity Cost Management	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Grid Services	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Multipurpose Operation	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
On-Site Generation Integration	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Peak Power Support	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Service Continuity Backup	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 695. Australia Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million)

Economic Buyer	2023	2024	2025	2026	2027	2032	CAGR (%)
Customer-Premises Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Equipment Leasing Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Private Network Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Shared Telecommunications Infrastructure Owners	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecom Energy-Service Companies	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Telecommunications Network Operators	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 696. Australia Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million)

Installation Environment	2023	2024	2025	2026	2027	2032	CAGR (%)
Climate-Controlled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Sheltered Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Uncontrolled Enclosures	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weather-Exposed Installations	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 697. Australia Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million)

Ownership Model	2023	2024	2025	2026	2027	2032	CAGR (%)
Equipment Leasing	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Provider-Owned Managed Energy	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
User-Owned Equipment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 698. Australia Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million)

Sales Channel	2023	2024	2025	2026	2027	2032	CAGR (%)
Direct Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Distributor and Reseller Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
OEM and Project-Integrator Supply	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 699. Australia Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million)

Grid Availability	2023	2024	2025	2026	2027	2032	CAGR (%)
Off-Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Reliable Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Weak Grid	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 700. Australia Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million)

Power Interface	2023	2024	2025	2026	2027	2032	CAGR (%)
AC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Combined AC/DC Interfaces	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
DC Interface	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Table 701. Australia Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million)

Procurement Lifecycle	2023	2024	2025	2026	2027	2032	CAGR (%)
Capacity Expansion	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
First Deployment	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Replacement and Retrofit	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx	xx.xx
Total	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**	**xx.xx**

Sources & Evidence

1. nbn Regulatory Submission - Chapter 9: Forecast Expenditure in the Next Regulatory Cycle
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Table xx.xx separates actual FY2024 battery replacement expenditure from later forecast spending, providing a fiscal-period commercial check after explicit currency and equipment-scope assumptions.
2. nbn - Battery Back-Up Information
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: nbn's end of its premises battery-backup power-supply offer from June 2024 qualifies automatic premises attachment and separates infrastructure replacement from provider-mediated alternatives.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Directs existing backup-unit owners to communications providers or compatible retailers for replacement batteries; supports a premises replacement channel, not a carrier-wide lifecycle share.
3. China Tower Corporation Limited - Interim Report 2026
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reported xx.xx June 2026 sites and xx.xx first-half additions constrain the approximately xx.xx year-end-2025 wireless pool. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The infrastructure-owner site stock anchors the buyer cohort; storage ownership and future equipment purchasing remain modeled. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The China Tower cohort supplies a scale weight for the regional channel model, not an observed direct-sales percentage. ([doc.irasia.com](https://doc.irasia.com/listco/hk/chinatower/interim/2026/intrep.pdf))

4. Shuangdeng Group Co., Ltd. - Global Offering Prospectus, August 18, 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Five-month-2025 company sales tables distinguish direct and distributor revenues; their mixed-application scope qualifies global direct-route extrapolation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Domestic distributor revenue was RMB xx.xx of RMB xx.xx; overseas was RMB xx.xx of RMB xx.xx. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The producer-level channel table constrains remaining route activity but does not separately disclose downstream integrator attribution. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
5. Shuangdeng Group Co., Ltd. - Interim Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom lithium shipment volume increased xx.xx% in first-half 2025, supporting substitution as a commercial signal, not an assembly-share observation. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The company-specific shipment shift qualifies the forecast component-to-pack substitution without establishing global cells/monobloc sales. ([hkexnews.hk](https://www.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

6. Shuangdeng Group Co., Ltd. - Annual Report 2025
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 telecom revenue was RMB xx.xx versus RMB xx.xx in 2024, an xx.xx% decline limiting growth extrapolation. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-specific revenue contraction prevents treating broader lithium-business growth as automatic telecom component replacement demand. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lead-acid revenue of RMB xx.xx spans applications and cannot be equated with telecom revenue; the stated telecom strategy conditionally favors substitution.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: 2025 lithium revenue grew xx.xx% while telecom revenue fell xx.xx%; counterevidence prevents broad lithium growth from being treated as measured telecom adoption.

7. Whidbey Telecom - Equipment Lease Agreement and Backup Power Source Schedule, 2023
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The historical schedule separately prices a micro-UPS at USD xx.xx and replacement pack at USD xx.xx supporting different purchased assemblies. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The agreement identifies dedicated subscriber voice/fiber backup, supporting premises telecom attribution rather than generic household storage. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup purchasing is distinguishable from network-equipment lease charges, supporting a separate premises acquiring-buyer role. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The priced micro-UPS has a DC output; integrated UPS equipment therefore is not automatically an AC-interface purchase. ([whidbeytel.com](https://www.whidbeytel.com/wp-content/uploads/2023/xx.xx/Equipment-Lease-Agreement-xx.xx.pdf))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Backup equipment can be purchased separately from network-equipment leasing, supporting a user-owned premises purchasing route rather than automatically attributing batteries to leasing.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Broad equipment leasing and separately purchased backup sources demonstrate why a storage-specific asset schedule is needed; the form is not a measured storage lease share.

8. Vertiv - Solutions for Efficient Edge Network and 5G Deployment
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Battery-backed NetSure offerings establish the broader telecom power-package boundary, not its revenue share. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Telecom-edge offerings support the application mapping; forecast purchasing multipliers remain assumptions. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Shared-bank offerings support single-asset attribution rather than additive tenant-specific storage values. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: NetSure inverter arrangements serve AC and DC equipment from one bank, supporting the combined-interface category, not adoption incidence. ([vertiv.com](https://www.vertiv.com/en-us/solutions/industries/telecom/))
9. EnerSys - PowerSafe mSeries Batteries
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: PowerSafe mSeries includes integral racking and telecommunications applications, supporting the assembled bank/rack classification rather than a sales weight. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The telecom offering identifies AGM/VRLA technology and integral racking; supports the nested category and assembly boundary, not a shipment fraction.
   - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.
   - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised AGM telecom offering supports category mapping; the modeled AGM mix and realization remain assumptions.

10. IHS Holding Limited - 2025 Form 20-F
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: xx.xx% hybrid penetration in the applicable 2025 African portfolio supports generation-storage coexistence, not global purchasing shares or generation displacement. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The disclosed power-source mix constrains grid-challenged demand, but does not directly classify global sites by connection reliability. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outsourcing activities at xx.xx% of towers supports a management-versus-acquisition distinction; outsourcing does not establish transfer of battery title. ([ihstowers.com](https://www.ihstowers.com/content/dam/ihs/corporate/documents/investors/earnings-materials/2025/IHS_Holding_Limited_Form_20F_4QFY_2025.pdf.downloadasset.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx owned/operated towers and ownership of applicable backup assets; supports the commercial stock and title proxy, not a global managed-energy share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Reports xx.xx towers built in 2025 against a much larger installed portfolio; constrains new-deployment incidence without equating tower construction with storage orders.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Describes applicable battery ownership and maintenance obligations; supports replacement purchasing as a distinct commercial activity, not its modeled global expenditure share.

11. IFC - IPT PowerTech, Project 49095, Summary of Investment Information

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: IFC describes IPT's energy-service business and more-than-xx.xx-site portfolio, anchoring commercial role and scale without establishing a global ESCO pool. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/SII/xx.xx/ipt-powertech))

12. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone - March 23, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The March xx.xx 2026 investment supports xx.xx telecom sites, providing a forward ESCO activity anchor rather than realized annual storage revenue. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Over xx.xx% of the financed portfolio is in off-grid or weak-grid locations; the combined proportion does not disclose either individual category share. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The project's concentrated grid-constrained footprint supports forecast purchasing context, not a global site-classification weight. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Solar and battery investment supports generation-storage integration as commercial activity; the financing package is not counted as equipment sales. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))

13. Elisa - Virtual Power Plant

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Elisa reports a xx.xx MWh backup-battery virtual-power-plant stock and Finnish permission, providing a scale check, not annual equipment revenue. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Electricity-purchasing shifts are reported uses; principal-purpose purchasing fractions and retained economic benefits remain unmeasured. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Combined backup, electricity-cost and balancing uses support concurrency but do not establish co-primary acquisition duties. ([elisa.com](https://elisa.com/corporate/sustainability/virtual-power-plant/))

14. Ofcom - Network and Service Resilience Guidance for Communications Providers, June 16, 2026

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: June xx.xx 2026 UK guidance expects backup for active components in new fixed-access cabinets; this supports a bounded forecast demand premise. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The guidance distinguishes aggregation/backhaul from core and their different site scales, qualifying simple equal-ticket site-count allocation. ([ofcom.org.uk](https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-xx.xx-xx.xx-weeks/xx.xx-resilience-guidance-and-mobile-ran-power-back-up/associated-documents/network-and-service-resilience-guidance-for-communications-providerspdf?v=xx.xx))

15. India Ministry of Communications - Connectivity in Remote Areas and BharatNet Status, February 11, 2026

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The official February xx.xx 2026 record reports xx.xx service-ready BharatNet gram panchayats at December xx.xx 2025; these are activity stock, not storage sales. ([dot.gov.in](https://www.dot.gov.in/static/uploads/2026/xx.xx/319b6f3061a137bf2d1442567c3797fa.pdf))

16. EnerSys - 2026 Proxy Statement and Annual Report

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: EnerSys discloses direct customer routes across a broad customer base; its filing does not quantify the telecom-specific route share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distributor routes coexist with direct sales, corroborating channel availability rather than the modeled global distributor weight. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

17. EnerSys - Financial Solutions

    · Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

    · Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertised financing transactions range from USD xx.xx to USD xx.xx-plus with capital and operating leases; actual telecom lessor acquisitions are undisclosed. ([enersys.com](https://www.enersys.com/en/resources/enersys-financial-solutions/))

18. Vodafone - Supply Chain
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier prequalification and separate high-risk approval establish an operator acceptance constraint; no aggregate approval rate or purchasing-share uplift is disclosed. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
19. ETSI TS 102 121 V1.4.1 - Power Distribution to Telecommunications and Datacom Equipment, February 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The February 2025 telecom/ICT framework recognizes DC distribution; its broader ICT scope requires telecom-specific economic attribution. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: AC UPS arrangements are separately recognized, supporting the load-interface boundary but not an observed AC equipment-value share. ([etsi.org](https://www.etsi.org/deliver/etsi_ts/102100_102199/xx.xx/xx.xx.01_60/ts_102121v010401p.pdf))
20. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lead-acid realization of RMB xx.xx/kWh; used as a relative-price input, not a global telecom share.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Issuer-owned product tables report five-month 2025 lithium-ion realization of RMB xx.xx/kWh; its ratio to lead-acid constrains the modeled value bridge.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer describes its lithium portfolio as mainly LFP; supports phosphate category mapping, not a quantified global cathode mix.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The issuer reports a 2023 sodium-ion telecom launch and adoption in named Chinese provinces; supports a commercialization premise, not modeled shipment incidence.

21. PowerSafe D | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named flooded lead-acid telecom offering establishes commercial classification; does not disclose its sales weight or contracted maintenance coverage.
22. PowerSafe OPzV Battery Range Summary | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The literature identifies telecom applications and VRLA gel technology; supports commercial category mapping, not the assumed gel premium or sales mix.
23. Focusing Stored Energy Where It Matters Most | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official commercial comparison distinguishes LFP from named conventional oxide-cathode lithium families; supports category separation only, not their modeled value shares.
24. PowerSafe NiCd | EnerSys
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Named NiCd telecom offering supports a specialty commercial purchasing category; actual purchasing incidence and package realization are modeled.
25. High-durability Nickel-Metal Hydride Batteries | FDK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official NiMH portfolio identifies communication base stations and component models; supports small-pack attribution rather than assuming complete site systems.
26. Telecom/5G | ZAF Energy Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier advertises nickel-zinc for telecom/5G and describes provider engagement; supports a commercialization premise, not realized orders or the forecast multiplier.
27. Products | Encell Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The supplier explicitly positions its nickel-iron offering for telecom; supports category participation as an advertised route, with dated annual sales remaining unverified.

28. Products | FZ Energy Storage Systems
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: HORIEN/FZSoNick salt batteries are identified as sodium-nickel chloride, with a TL telecom range; supports commercial mapping, not modeled order counts or prices.
29. Notice Regarding Discontinuation of Manufacturing and Sales Activities of NAS Batteries | NGK
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses JPY xx.xx fiscal-year NAS sales, October xx.xx 2025 discontinuation, scheduled January 2027 final shipments and continued maintenance-part supply. Supports the financial upper bound and exit adjustment; telecom attribution and storage-module fraction are assumed.
30. Phinergy - Commercial Negotiation Framework for 300 Indus Towers Backup Systems, February 8, 2023
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: February xx.xx 2023 filing describes a preliminary xx.xx-system commercial proposal totaling USD xx.xx including supply, installation and service. Used only as a price-scope proxy, not as an executed contract or 2025 revenue.
31. Telecom Battery and Cell Tower Batteries | StorEn
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Supplier advertises vanadium-flow storage for telecom. Supports an offering route and category boundary; does not establish base-year sales, modeled purchasing incidence or prices.
32. ITU-T Recommendation L.1222 (05/2018) - Supercapacitor Technology
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes supercapacitors in telecom access networks and distinguishes their commercial application from extended-outage storage; supports category attribution, not shipment shares.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Recognizes combinations of supercapacitors and batteries; supports a multiple-storage-technology offering boundary without establishing current package sales.
33. Active Power Overview Brochure
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Official flywheel-UPS commercial brochure supports present equipment availability and larger-facility package classification; telecom-specific sales and the assumed prices remain unverified.

34. Sacred Sun Showcases Its Green Energy Solutions at CIBF 2025
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The May 2025 company presentation includes intelligent sodium offerings with communications-system positioning; supports commercialization context, not attributable sodium sales.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Company commercial positioning describes mixed-use offerings involving different battery categories; supports investigating combined-storage purchasing while quantities remain modeled.
35. ETSI EN 300 019-1-3 V3.1.1 - Stationary Use at Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes temperature-controlled enclosed locations without necessarily controlled humidity; establishes the modeled category boundary, not its sales fraction.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Distinguishes enclosed locations without temperature or humidity control; supports separating uncontrolled cabinets from controlled enclosures.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Defines partial weather protection separately from fully enclosed locations; supports the sheltered boundary.
36. ETSI EN 300 019-1-4 V3.1.1 - Stationary Use at Non-Weatherprotected Locations
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Separately recognizes sheltered and open-air non-weatherprotected locations; supports the environment partition, not a claim that exposed bare cells are acceptable.
37. Vertiv NetSure IPE Series
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Outdoor telecom power offering with battery backup and protected modules establishes a package-level route. It does not measure uncontrolled-enclosure sales or complete-installation acceptance.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: The outdoor offering constrains assembly-level commercial interpretation; module protection is not evidence of every full installation's environmental coverage.

38. Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Qualitative commercial discussion distinguishes user-owned power assets with outsourced management from provider-financed power service. No externally attributed market estimates are used.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Power-as-a-Service discussion supports separating provider capital and service obligations from equipment ownership alone; does not supply modeled ownership shares.
39. UPS Hire Services | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Advertises UPS hire for telecom and temporary applications, establishing an asset-use route but not executed storage-specific leases or annual acquisition prevalence.
40. China Tower Announces 2025 Annual Results - March 18, 2026
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx year-end sites, constraining the storage-owner stock proxy; the xx.xx% managed-energy attribution and spending multipliers remain assumptions.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Discloses xx.xx net site additions in 2025; constrains new-site demand relative to installed stock but does not establish first battery deployments.
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Large installed stock relative to net additions constrains the purchasing model's replacement-led interpretation; storage-specific replacement expenditure is not disclosed.
41. Telecom Lithium Batteries | Vertiv
    - Evidence informing base-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.
    - Evidence informing forecast-year allocation inputs; displayed values and growth are calculated: Controller-linked remote monitoring identifies an integration relationship relevant to accepted replacement scope; does not prove universal exclusivity or measured retrofit expenditure.

21. Competitive Landscape

21.1. Market Share Analysis, 2025

[illegible] Suppliers should identify the approval counterparty and the accepted purchasing boundary before committing. For Replacement and Retrofit, the relevant alternative is an accepted offering with accountable controller and service support, not merely another battery in the same technology category.

Documented channels provide concrete routes to buyers without making upstream and downstream businesses equivalent. [illegible] An upstream supplier can also compete for integrator sourcing rather than the complete site contract.

Canadian access should be evaluated through the actual offered route. Discover Battery markets telecom front-terminal batteries through business-to-business channels, and Enexer lists telecom lithium products with a Canadian fulfillment proposition. [illegible]

Brazilian differentiation includes both equipment breadth and lifecycle accountability. Baterias Moura combines telecom batteries with an advertised Brazilian stationary-service and reverse-logistics route. [illegible]

[illegible] A buyer with an existing service

organization may retain equipment-only sourcing; a buyer lacking those functions can evaluate a consolidated project agreement. The agreement must distinguish the integrator's own obligations from those retained by the battery manufacturer.

Central American and Andean routes should be matched to package contents rather than regional branding. [redacted] Tronex's Mtek battery portfolio likewise needs a product-specific telecom commitment before comparison with a documented network-storage package.

Southern African alternatives include different equipment and support propositions. [redacted] For each route, local replacement responsibility and accepted package contents matter more than a general claim of regional presence.

Regional integrators can contribute access where a buyer lacks local project resources. [redacted] Helios Power Solutions' New Zealand telecom page describes backup-battery supply for repeater towers, although its unnamed buyer reference does not establish every current model or fulfillment obligation.

[redacted] Its regional role should not be assumed equivalent to Chloride Exide's inspected solar-battery offer or an unresolved Chloride Egypt telecom package. Buyers should obtain named storage products, manufacturer attribution, and the local warranty counterparty instead of infer corporate relationships from shared battery-brand terminology.

Middle Eastern alternatives also span equipment and integration. Future Power Technology lists the FPT-LiB family for telecom backup and states a Saudi local-supply and support proposition. [redacted]

[illegible]

Cross-border marketing is different evidence from destination-country fulfillment. Shanghai Warner Telecom Co., Ltd. and Lento Industries Pvt. [illegible] These brand references do not establish relationships with similarly named global power companies. A buyer should identify the actual seller and product warranty administrator before interpreting familiar terminology as transferable group support.

Figure 36. Global Telecom Energy Storage System Market Share, by Key Player, 2025

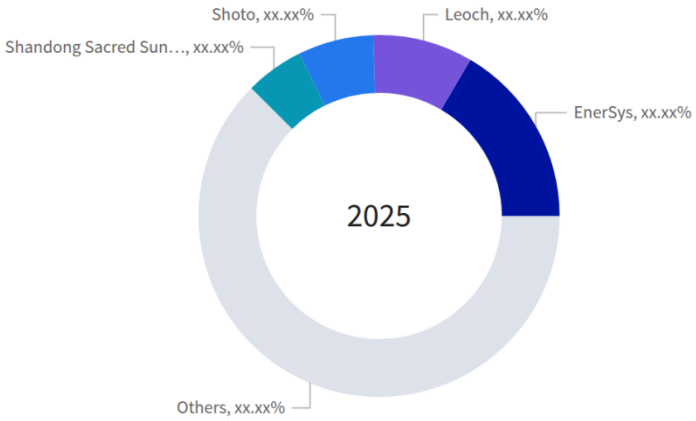


Table 702. Global Telecom Energy Storage System Market Share, by Key Player, 2025

Key Player	Share (%)
Amara Raja Energy & Mobility Limited	xx.xx
Ascot	xx.xx
ASPİLSAN Enerji	xx.xx
BAE Batterien GmbH	xx.xx
BSB Power	xx.xx

Table 702 - continued

Key Player	Share (%)
Clear Blue Technologies International Inc.	xx.xx
Elhim-Iskra JSC	xx.xx
EnerSys	xx.xx
Etica Battery Inc.	xx.xx
EVE Energy	xx.xx
Exicom	xx.xx
FDK	xx.xx
FIAMM Energy Technology	xx.xx
First Battery	xx.xx
GS Yuasa	xx.xx
Hangzhou LIAO Technology Co., Ltd.	xx.xx
HBL Engineering Limited	xx.xx
Highstar	xx.xx
HOPPECKE	xx.xx
HORIEN Salt Battery Solutions	xx.xx
Leoch	xx.xx
Metal Manufacturing Nigeria Limited	xx.xx
Nian Battery Khavaran	xx.xx
NPP Power	xx.xx
Polarium	xx.xx
Power Storage Solutions	xx.xx
Powersafe	xx.xx
REVOV	xx.xx
Sebang Global Battery Co., Ltd.	xx.xx
Shandong Sacred Sun Power Sources Co., Ltd.	xx.xx
Shenzhen Topband Co., Ltd.	xx.xx
Shoto	xx.xx
SIMGUN GLOBAL INTERNATIONAL PTY LTD	xx.xx
The Furukawa Battery Co., Ltd.	xx.xx
Vertiv	xx.xx
Vision Group	xx.xx
XGW Tech	xx.xx

Table 702 - continued

Key Player	Share (%)
Zhejiang Narada Power Source Co., Ltd.	xx.xx
ZTE	xx.xx
ZTT	xx.xx
Others	xx.xx

Sources & Evidence

1. Telecom Lithium Batteries | Vertiv
   · Vertiv lists Polarium Batteries and advertises NetSure Control Unit monitoring. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
   · Evidence informing base-year company-share estimates: Vertiv lists Polarium batteries within its telecom lithium-battery offering and describes controller-based monitoring. This supports evaluating downstream integration overlap, but does not measure the assumed elimination percentage. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
   · Evidence informing base-year company-share estimates: The telecom lithium-battery catalog identifies the Polarium supply route and NetSure monitoring relationship, supporting the distinction between battery resale and Vertiv-integrated offerings that requires revenue elimination. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
2. Supply Chain | Vodafone
   · Vodafone separates high-risk supplier approval specialists from commercial relationship staff. ([vodafone.com](https://www.vodafone.com/our-impact/trust/supply-chain))
3. Telecommunications | Powerbox Australia
   · Powerbox Australia's telecom page identifies Polarium batteries and advertised regional integration and support. ([powerbox.com.au](https://www.powerbox.com.au/pages/industries/telecommunications))
4. Baterias Estacionárias | Moura
   · Moura's stationary portfolio identifies telecom and telephone-exchange applications and lead-acid and lithium product lines. ([moura.com.br](https://www.moura.com.br/produtos/estacionarias?type=moura-vrla))
5. Serviços Estacionários | Baterias Moura
   · Moura advertises Brazilian stationary-battery installation, replacement resources, collection, and destination documentation. ([moura.com.br](https://www.moura.com.br/servicos-estacionarios))
6. Soluciones para Telecomunicaciones | Respaldo de Red
   · Tempel's Argentine telecom page identifies named batteries, local provision, replacement coordination, and maintenance. ([ar.tempelgrouplatam.com](https://ar.tempelgrouplatam.com/corporativo/telecomunicaciones/))
7. PowerPlus Energy Launches LiNET4835: A New Battery in Exclusive Partnership with RFI Technologies
   · PowerPlus launched LiNET4835 on June xx.xx 2025 and identified exclusive availability through RFI. ([powerplus-energy.com.au](https://www.powerplus-energy.com.au/linet4835-telecom-battery/))
8. TPL VRLA AGM Battery | Celltech
   · Celltech's Finnish catalog offers CSB TPL batteries for telecom and broadband backup. ([celltech.fi](https://celltech.fi/en/product-series/tpl-vrla-agm-battery/))
9. Front Terminal | Discover Battery
   · Discover markets front-terminal VRLA batteries for telecom backup through business-to-business supply routes. ([discoverbattery.com](https://discoverbattery.com/products/sla-vrla-batteries/front-terminal))

10. Telecom Lithium Batteries | Enexer
    - Enexer's telecom catalog lists own-branded lithium telecom products and a Canadian fulfillment proposition, not a reserved delivery undertaking. ([enexertech.com](https://www.enexertech.com/collections/telecom-batteries))
11. Telecom | SecPower
    - SecPower's telecom catalog lists lead-acid and lithium battery offerings. ([secpower.com.br](https://secpower.com.br/categoria-produto/telecom/))
12. Fulguris LFP Rack Battery
    - Fulguris markets an LFP rack battery with telecommunications among its applications. ([fulguris.com.br](https://www.fulguris.com.br/produto/lfp-48v-100ah-3u/))
13. Stationary Battery Characteristics | Tudor
    - Tudor's stationary portfolio identifies telephone exchanges, radio base stations, BTS, and fiber-access applications. ([tudor.com.br](https://tudor.com.br/pt_br/produtos/estacionaria/caracteristicas))
14. About Newmax
    - Newmax's company page identifies OPT behind the battery brand and telecommunications distribution. ([newmax.com.br](https://newmax.com.br/sobre-a-newmax/))
15. About Us | Getpower
    - Getpower identifies itself as Powersafe's special-battery brand and includes telecom applications. The record does not establish an EnerSys affiliation. ([getpower.com.br](https://www.getpower.com.br/sobre-nos/))
    - Evidence informing base-year company-share estimates: Getpower identifies itself as Powersafe's special-battery brand and includes telecom among its applications. This supports company/product attribution, not the modeled shipment quantity or market percentage.
16. BLL Telecom Lithium Battery | Intelbras
    - Intelbras markets the named BLL telecom lithium battery through an official product page. ([intelbras.com](https://www.intelbras.com/pt-br/bateria-de-litio-para-telecom-bll-xx.xx-xx.xx-t))
17. UNIPOWER Batteries | Fotus
    - Fotus markets UNIPOWER batteries and identifies UNIPOWER as a UCB Power brand serving telecom among other sectors. ([fotus.com.br](https://fotus.com.br/bateria-unipower/))
18. Lithium Batteries | VZH SRL
    - VZH advertises custom lithium packs and lists Vision-branded telecom batteries. ([vzh.com.ar](https://vzh.com.ar/baterias-de-litio/))
19. Industrial Battery Banks in Argentina | Maxener
    - Maxener offers supply and installation of telecom battery banks in Argentina. ([maxenersrl.com.ar](https://www.maxenersrl.com.ar/baterias-industriales))
20. Backup Batteries for Uninterrupted Energy | NEXA
    - NEXA advertises VRLA and lithium backup solutions for telecom applications. ([nexainn.com](https://nexainn.com/servicios/xx.xx-baterias-de-respaldo-para-energia-ininterrumpida/))
21. The Company | La Casa de las Baterías Guatemala
    - La Casa de las Baterías describes a regional battery and integrated backup-energy business; this does not settle each telecom package. ([guatemala.casabat.com](https://guatemala.casabat.com/la-empresa/))
22. About Us | USOA Bolivia
    - USOA describes telecommunications supply, AC/DC energy systems, and battery banks without identifying a named current telecom battery model. ([usoa-bolivia.com](https://usoa-bolivia.com/quienes-somos/))
23. Industrial Batteries | Anycar
    - Anycar's commercial catalog offers Dacar OPzS batteries with telecommunications among applications. ([anycar-sa.com](https://anycar-sa.com/baterias-industriales.html))
24. Off-Grid Solutions | BlueNova
    - BlueNova's off-grid page identifies isolated telecom infrastructure among storage applications. ([bluenova.co.za](https://www.bluenova.co.za/solutions/off-grid-solutions/))

25. Solar and Backup Power Batteries | First Battery
    - First Battery markets solar and backup batteries for remote microwave stations and radio repeaters. ([battery.co.za](https://www.battery.co.za/solar-and-backup-power/))
    - Evidence informing base-year company-share estimates: First Battery identifies microwave stations and radio repeaters among its solar and backup battery applications, alongside broader solar and UPS uses. This supports the application boundary but does not measure the assumed telecom mix.
26. iMAT VT48200B-A2 Lithium Battery
    - iMAT lists VT48200B-A2 on quotation for telecom base stations, edge stations, micro-cell stations, and FTTX. ([imat.co.za](https://imat.co.za/products/aa000002-7e57-xx.xx-xx.xx-00000000001c/imat-vt48200b-a2-lithium-battery-xx.xx-2v))
27. About Us | Star Plus Batteries
    - Star Plus identifies telecom among its battery applications and connects the brand with MMNL. ([starplus.com.ng](https://starplus.com.ng/about-us))
28. Afrigen Energy Power Box
    - Afrigen markets its battery-equipped Power Box for telecom infrastructure and other applications. ([afrigenenergy.co.ke](https://afrigenenergy.co.ke/afrigen-power-box.php))
29. Company | Inala
    - Inala's company description links telecom-site services with lithium-battery distribution and solar/storage integration. ([inala.com](https://www.inala.com/company))
30. Services | Phoenix Hi-Tech Nigeria
    - Phoenix Hi-Tech Nigeria advertises telecom solar-hybrid and storage services; package-specific battery inclusion is not established. ([phoenixhitech.com](https://www.phoenixhitech.com/services))
31. IT & Telecom | Helios Power Solutions
    - Helios describes backup-battery supply for New Zealand repeater towers; its buyer is unnamed and the statement is undated. ([heliosps.com](https://heliosps.com/industries/it-telecom-dc-power-systems/))
32. Stationary Batteries | ASSAD Group
    - ASSAD's stationary-battery portfolio expressly identifies telecommunications. ([assadgroup.com](https://assadgroup.com/services/stationnaire/))
33. Products | Future Power Technology
    - Future Power Technology lists FPT-LiB batteries for telecom backup. ([futurepowertechnology.com](https://futurepowertechnology.com/products.html))
34. About Future Power Technology
    - Future Power Technology states a Saudi local-production, supply, and support proposition; these are company commitments, not independently verified deliveries. ([futurepowertechnology.com](https://futurepowertechnology.com/about.html))
35. TechLine Energy LFP Battery Product Document
    - The TechLine-hosted product document identifies Technical Fiber Optics Lines Company, a Jordanian telecom LFP offering, and alternate business wording. ([techlinefactory.com](https://www.techlinefactory.com/sites/default/files/2024-xx.xx/Battery_0.pdf))
36. Power Solutions | Wind Energy
    - Wind Energy describes battery supply and telecom-power installations in Iraq without naming the customers. ([a1windenergy.com](https://a1windenergy.com/pages/power.html))
37. Telecommunication Systems | Tahghighat Electronic Fotrousi
    - Fotrousi markets customized indoor and outdoor telecom DC racks; the page does not establish battery inclusion in every package. ([fotrousi.com](https://fotrousi.com/products/telecommunication-systems/))
38. Battery Storage for Indonesia | Shanghai Warner Telecom
    - Warner's Indonesia-targeted page markets telecom battery storage but does not identify a verified local customer or selling entity. ([warnertele.com](https://www.warnertele.com/battery-storage-for-indonesia.html))

39. Lithium-Ion Battery in Indonesia | Lento
    · Lento's Indonesia-targeted page markets lithium batteries for telecom towers without establishing local manufacture or completed purchases.
    ([lentoindia.com](https://www.lentoindia.com/products/lithium-ion-battery-in-indonesia))
40. Sunstone Power Company Profile 2023
    · Sunstone's 2023 profile identifies telecom batteries and a Southeast Asian delivery/service route.
    ([sunstonepower.com](https://sunstonepower.com/uploads/ueditor/Common_Information/Sunstone_Company_Profile_2023.pdf))
41. Malaysia-Facing Battery and BESS Offering | ONESUN
    · ONESUN's Malaysia-facing publication advertises telecom battery solutions but does not independently establish a local entity or completed sale.
    ([onesunpv.com](https://www.onesunpv.com/news/malaysia-solar-battery-bess-manufacturer-w-xx.xx.html))
42. MW Power Batteries | MPL Energy
    · MPL Energy markets MW Power battery categories for telecom and other backup applications.
    ([mplenergy.pl](https://mplenergy.pl/en/products/batteries/))
43. Telecommunications Batteries | ENERGON
    · ENERGON's telecom portfolio markets DELTA lead-acid and DELTA Xpert lithium offerings; it does not establish affiliation with Delta Electronics.
    ([energon.ru](https://energon.ru/solutions/telekommunikatsii-i-svyaz/))
44. Telecom Lithium Batteries | VIES
    · VIES advertises lithium modules for telecom base stations and communications nodes.
    ([viesenergo.ru](https://viesenergo.ru/solutions/telekom))
45. Financial Segment Information - GS Yuasa
    · Evidence informing base-year company-share estimates: Official segment information reports Industrial Batteries and Power Supplies sales of JPY xx.xx for the year ended March 2025, anchoring the calendar-year bridge rather than directly observing telecom sales.
    ([ir.gs-yuasa.com](https://ir.gs-yuasa.com/en/ir/finance/segment.html))
46. GS Yuasa Corporation - Consolidated Earnings Report for the Nine Months Ended December 31, 2025
    · Evidence informing base-year company-share estimates: The segment note reports external Industrial Batteries and Power Supplies revenue of JPY xx.xx for April-December 2025 and JPY xx.xx for April-December 2024. These permit a calendar-2025 bridge and distinguish external revenue from intersegment transactions.
    ([data.swcms.net](https://data.swcms.net/file/gs-yuasa-ir/dam/jcr%3A3acd2fd0-xx.xx-4f70-91b0-266f09883647/xx.xx.pdf))
47. Energywith - Sustainability Report 2025
    · Evidence informing base-year company-share estimates: The report's company overview identifies CSB Energy Technology Co., Ltd. within Energywith's group for the reporting period April 2024-March 2025. This contradicts the batch's assumed GS Yuasa consolidation and supports removing its unsupported xx.xx% CSB deduction; it does not quantify CSB telecom sales.
    ([energy-with.com](https://www.energy-with.com/wp-content/uploads/2026/xx.xx/Energywith-Sustainability-Report2025_J.pdf))
48. Federal Reserve - Foreign Exchange Rates, G.5A Annual, January 5, 2026
    · Evidence informing base-year company-share estimates: The January xx.xx 2026 annual exchange-rate release reports JPY xx.xx per USD for 2025, supporting conversion of the modeled attributable equipment numerator. ([federalreserve.gov](https://www.federalreserve.gov/releases/g5a/xx.xx/))
49. Telecoms - GS Yuasa Industrial Batteries
    · Evidence informing base-year company-share estimates: The official telecom catalog lists VRLA families and LIM lithium-ion modules, supporting the telecom offering boundary and the selected Knowledge comparison. It does not measure the assumed telecom sales fraction, annual deliveries or customer acceptance.
    ([yuasa.com](https://www.yuasa.com/uk/industrial-batteries/telecoms))

50. GS Yuasa Report 2025 - Online Edition

· Evidence informing base-year company-share estimates: The industrial-business discussion distinguishes emergency-use, regular-use and forklift applications and references telecommunications base stations alongside data centers. This supports application exclusions and treating the telecom fraction as modeled, not counting all industrial revenue. ([gs-yuasa.com](https://www.gs-yuasa.com/en/ir/online-annualreport.php))

51. EnerSys - 2026 Proxy Statement and Annual Report

· Evidence informing base-year company-share estimates: The annual financial statements report fiscal-2025 Energy Systems sales of USD xx.xx and consolidated services of USD xx.xx. These constrain the fiscal-to-calendar and service-exclusion model, not a directly observed telecom share. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))

52. EnerSys - Form 10-Q for the Period Ended December 28, 2025

· Evidence informing base-year company-share estimates: The filing supplies nine-month Energy Systems revenue of USD xx.xx for the period ended December xx.xx 2025 and USD xx.xx for the comparative period, with consolidated service revenue of USD xx.xx and USD xx.xx respectively. These support the calendar-proxy revenue calculation. ([sec.gov](https://www.sec.gov/Archives/edgar/data/xx.xx/xx.xx/ens-xx.xx.htm))

53. Polarium Sharpens Strategic Focus After Year of Transformation

· Evidence informing base-year company-share estimates: Polarium reports SEK xx.xx of 2025 net sales versus SEK xx.xx in 2024 and expects distributed-energy-system revenue from the third quarter of 2026. These constrain the modeled base-year scale and application boundary without disclosing the exact telecom fraction. ([polarium.com](https://polarium.com/newsroom-articles/polarium-sharpens-strategic-focus-after-year-of-transformation/))

54. Telecom & Network - Polarium

· Evidence informing base-year company-share estimates: The official telecom portfolio establishes an in-scope battery-equipment offering. It supports commercial classification, not the assumed telecom sales percentage or annual delivered volume. ([polarium.com](https://polarium.com/telecom/))

55. Leoch International Technology Limited - Annual Report 2025

· Evidence informing base-year company-share estimates: The financial table reports RMB xx.xx of 2025 reserve-power revenue, while the business discussion identifies mixed data-center/network-power applications and telecom activity. This supports the relevant business-line anchor, not the assumed xx.xx% telecom fraction or final market share. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))

56. Zhejiang Narada Power Source Co., Ltd. - 2025 Annual Report

· Evidence informing base-year company-share estimates: The 2025 report supplies communication energy-storage revenue of RMB xx.xx and lead-acid product revenue of RMB xx.xx. Its broader application boundary requires telecom attribution rather than counting the communication-labelled line in full. ([disc.static.szse.cn](https://disc.static.szse.cn/disc/disk03/finalpage/2026-xx.xx-xx.xx/0727e67b-49cc-421f-b9d4-0bb1959e0163.PDF))

57. Federal Reserve - Foreign Exchange Rates, G.5A Annual, January 5, 2026
- Evidence informing base-year company-share estimates: The official 2025 annual average is SEK xx.xx per USD, supporting conversion of the modeled Polarium equipment numerator. ([federalreserve.gov](https://www.federalreserve.gov/releases/g5a/current/))
- Evidence informing base-year company-share estimates: The official 2025 annual average is RMB xx.xx per USD, supporting conversion of Leoch's attributed reserve-power numerator. ([federalreserve.gov](https://www.federalreserve.gov/releases/g5a/current/))
- Evidence informing base-year company-share estimates: The official 2025 annual average is RMB xx.xx per USD, supporting conversion of Narada's attributed telecom-equipment numerator. ([federalreserve.gov](https://www.federalreserve.gov/releases/g5a/current/))
- Evidence informing base-year company-share estimates: The 2025 annual-average CNY rate is xx.xx per USD, used to convert the modeled Shoto equipment numerator.
- Evidence informing base-year company-share estimates: The 2025 annual-average CNY rate is xx.xx per USD, used to convert the modeled communications-equipment numerator.
- Evidence informing base-year company-share estimates: The 2025 annual-average CNY rate is xx.xx per USD, used to convert the lead/lithium telecom-equipment estimate.
- Evidence informing base-year company-share estimates: The 2025 annual-average euro rate is USD xx.xx/EUR, used to convert FIAMM's assumption-led 2025 numerator.
- Evidence informing base-year company-share estimates: The 2025 annual-average euro rate is USD xx.xx/EUR, used to convert BAE's calibrated financial estimate.

58. Shuangdeng Group Co., Ltd. - Annual Report 2025
- Evidence informing base-year company-share estimates: The issuer's 2025 application table reports RMB xx.xx of telecom energy-storage revenue, separately from AIDC and electrical storage.
- Evidence informing base-year company-share estimates: The disclosed customer boundary includes operators and equipment manufacturers, supporting the need for an explicit modeled downstream-embedding deduction rather than treating all supplier receipts as final equipment purchases.
- Evidence informing base-year company-share estimates: The issuer's separately reported telecom and AIDC revenues provide a nonrepresentative commercial-mix comparison for FIAMM's assumption-led telecom allocation within reserve power; they do not establish FIAMM's mix.

59. Shuangdeng Group Co., Ltd. - Interim Report 2026
- Evidence informing base-year company-share estimates: First-half-2026 telecom revenue was RMB xx.xx, down xx.xx%, with selective reduction of lower-margin telecom orders.
- Evidence informing base-year company-share estimates: This subsequent-period observation qualifies the Knowledge growth narrative; it is not substituted for the 2025 numerator.

60. Shandong Sacred Sun Power Sources Co., Ltd. - 2025 Annual Report
- Evidence informing base-year company-share estimates: The 2025 filing reports communications revenue of RMB xx.xx and separately reports data/computing-center revenue of RMB xx.xx.
- Evidence informing base-year company-share estimates: The communications line supplies the observed numerator anchor before the explicit final-offering retention assumption.
- Evidence informing base-year company-share estimates: The separately disclosed communications and computing-center lines provide a bounded comparison for telecom mix within backup-power activity, not a direct observation of FIAMM revenue.

61. Shenzhen Center Power Tech Co., Ltd. - 2025 Annual Report
- Evidence informing base-year company-share estimates: The filing reports RMB xx.xx of communications lead-battery revenue, RMB xx.xx of lithium batteries/materials and RMB xx.xx of battery materials/accessories.
- Evidence informing base-year company-share estimates: These observed product lines calibrate the explicit lithium telecom allocation; end-user/equipment-manufacturer sales remain combined.

62. Shenzhen Center Power Tech Co., Ltd. - 2025 Interim Report
    - Evidence informing base-year company-share estimates: The company reports computing-center and data-center UPS activity at xx.xx% of first-half-2025 revenue and describes both own-brand and ODM business.
    - Evidence informing base-year company-share estimates: These disclosures constrain telecom attribution and support keeping computing-center activity outside the numerator.
63. HOPPECKE in Numbers
    - Evidence informing base-year company-share estimates: HOPPECKE publishes approximately xx.xx GWh annual production, turnover above EUR xx.xx and more than 2,000 employees.
    - Evidence informing base-year company-share estimates: The annual-output figure anchors the commercial-volume model; telecom allocation and realized price remain assumptions.
    - Evidence informing base-year company-share estimates: The approximate turnover and employee thresholds supply one financial revenue-per-employee comparator for BAE.
    - Evidence informing base-year company-share estimates: The comparator is not a directly observed BAE productivity or revenue figure.
64. Energy Solutions and Batteries for Telecommunication - HOPPECKE
    - Evidence informing base-year company-share estimates: HOPPECKE identifies telecom backup offerings, including grid | Xtreme VR and grid | power VR X-FT, and distinguishes associated accessories and services.
    - Evidence informing base-year company-share estimates: This supports the telecom application and equipment/service boundary, not the modeled shipment fraction or price.
65. Resonac-FIAMM-AURELIUS - Transaction Details
    - Evidence informing base-year company-share estimates: The sell-side adviser reports EUR xx.xx of 2024 FIAMM revenue and completion of the sale on December xx.xx 2025.
    - Evidence informing base-year company-share estimates: The transaction describes an automotive and industrial lead-acid battery business; it does not disclose telecom revenue or justify prorating continuous 2025 company activity to the closing month.
66. AURELIUS to Acquire FIAMM Energy Technology from Resonac
    - Evidence informing base-year company-share estimates: The acquisition announcement reports EUR xx.xx of 2024 FIAMM revenue, two operating sites and just over xx.xx employees.
    - Evidence informing base-year company-share estimates: These approximate financial and workforce anchors provide the second revenue-per-employee comparator used in BAE's modeled scale.
67. BAE Corporate Presentation - 2020 Market-Segment Mix
    - Evidence informing base-year company-share estimates: The BAE-authored presentation reports xx.xx employees and a 2020 application mix of xx.xx% stationary, xx.xx% solar, xx.xx% rail and xx.xx% traction.
    - Evidence informing base-year company-share estimates: These historical company-specific anchors support the financial-scale and stationary-mix proxy, subject to an explicit 2025 carry-forward assumption.
68. Stationary - BAE Batterien GmbH
    - Evidence informing base-year company-share estimates: BAE's stationary portfolio identifies telecommunications installations among its applications.
    - Evidence informing base-year company-share estimates: The catalog supports market participation and product scope, not the modeled telecom allocation or annual sales.
69. Telecom energy | ZTE
    - Evidence informing base-year company-share estimates: The telecom-energy page reports xx.xx-million-plus lithium batteries and xx.xx-million-plus DC-power units. These undated commercial counters anchor the explicitly modeled stock bridge, not observed 2025 revenue. ([zte.com.cn](https://www.zte.com.cn/global/solutions_latest/smart_energy/telecom_energy.html))
70. ZTE reports RMB 121.30 billion in revenue and RMB 8.42 billion in net profit for 2024
    - Evidence informing base-year company-share estimates: The February xx.xx 2025 release reports 2024 power-supply support for xx.xx 5G base stations and lithium-battery shipment growth exceeding xx.xx%, providing dated commercial context rather than a 2025 storage-sales observation. ([zte.com.cn](https://www.zte.com.cn/global/about/news/zte-reports-rmb-xx.xx-billion-in-revenue-and-rmb-xx.xx-billion-in-net-profit-for-2024.html))

71. Vertiv - Annual Report 2025

· Evidence informing base-year company-share estimates: Vertiv reports USD xx.xx of 2025 net sales. Its company-owned revenue presentation identifies approximately xx.xx% Communications Networks, rounded to the nearest five percentage points, and xx.xx% Products. Only those own-business figures are used; third-party leadership claims are excluded. ([s205.q4cdn.com](https://s205.q4cdn.com/xx.xx/files/doc_financials/2025/ar/Vertiv-2025-Annual-Report.pdf))

72. Vertiv NetSure IPE Series

· Evidence informing base-year company-share estimates: NetSure IPE identifies a telecom power offering with lithium-battery backup, supporting an included integrated-equipment category without measuring its sales mix or service inclusion. ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))

73. Amara Raja Energy & Mobility Limited - Q4 FY2025-26 Earnings Call Transcript, May 26, 2026

· Evidence informing base-year company-share estimates: The May xx.xx 2026 call describes approximately xx.xx GWh of telecom-pack supply, more than xx.xx MWh in the final quarter and INR xx.xx crore of quarterly New Energy revenue. Another passage uses cumulative-installation wording, leaving the annual-flow interpretation qualified. ([amararajaeandm.com](https://amararajaeandm.com/pdf/credit-ratings/Reg30earningscalltranscript.pdf))

74. Telecom | Amara Raja Energy & Mobility Limited

· Evidence informing base-year company-share estimates: The official telecom portfolio identifies AMARON SLEEK and AMARON VOLT lead-acid offerings, supporting inclusion of a separately modeled lead-acid component rather than treating lithium-pack volume as the complete company numerator. ([amararajaeandm.com](https://www.amararajaeandm.com/Industrial/telecom))

75. Exicom Tele-Systems Limited - Annual Report 2024-25

· Evidence informing base-year company-share estimates: The company annual filing reports FY2024-xx.xx consolidated Critical Power revenue of INR xx.xx crore and cumulative telecom lithium deployments exceeding xx.xx GWh through March 2025. The mixed segment and cumulative stock require explicit calendar and equipment-scope adjustments. ([bsmedia.business-standard.com](https://bsmedia.business-standard.com/_media/bs/data/announcements/bse/xx.xx/47761e2a-d046-4e88-badb-594667ccb1e0.pdf))

76. Telecom Batteries | Critical Power Solutions by Exicom

· Evidence informing base-year company-share estimates: The named EXTB range establishes telecom battery offerings for base stations, edge and FTTX applications, supporting the commercial scope of the modeled equipment component without establishing realized sales or warranty allocation. ([exicom.com](https://www.exicom.com/product-family/telecom-batteries))

77. HBL Engineering Limited - Annual Report 2024-25

· Evidence informing base-year company-share estimates: The customer-category note reports battery revenue of INR xx.xx lakh for Telecom/Industry and INR xx.xx lakh for exports in FY2024-xx.xx. These are mixed attribution pools, not telecom-only numerators. ([hbl.in](https://hbl.in/reports/hblannualreport2025.pdf))

· Evidence informing base-year company-share estimates: The report discusses telecom VRLA pressure, planned reductions and lithium non-entry, qualifying any assumption that assembly capability establishes lithium sales. ([hbl.in](https://hbl.in/reports/hblannualreport2025.pdf))

78. HBL Engineering Limited - Financial Results for the Quarter and Nine Months Ended December 31, 2025

· Evidence informing base-year company-share estimates: Standalone Industrial Batteries revenue is INR xx.xx crore for FY2024-xx.xx INR xx.xx crore for April-December 2025 and INR xx.xx crore for April-December 2024, enabling a calendar revenue bridge before telecom attribution. ([hbl.in](https://www.hbl.in/reports/results_dec2025.pdf))

79. Jiangsu Zhongtian Technology Co., Ltd. - 2025 Annual Report

· Evidence informing base-year company-share estimates: The issuer's 2025 annual report supplies New Energy revenue and separately disclosed photovoltaic-product revenues used in the residual calculation. It does not disclose telecom revenue or the modeled storage, application and deployment-facing fractions. ([static.cninfo.com.cn](https://static.cninfo.com.cn/finalpage/2026-xx.xx-xx.xx/xx.xx.PDF))

80. Telecommunications Backup Cell - ZTT

· Evidence informing base-year company-share estimates: ZTT's own telecom backup-cell offering supports component-level commercial classification and the need to eliminate upstream incorporation. It does not establish an award, realized annual volume or the model's retention percentage. ([zttgroup.com](https://www.zttgroup.com/product/telecommunications-backup-cell/))

81. EVE Energy Co., Ltd. - 2025 Annual Report

· Evidence informing base-year company-share estimates: EVE's 2025 filing reports RMB xx.xx of storage-battery revenue and identifies communication storage among its applications. This is the financial input, not direct observation of telecom revenue or final market share. ([static.cninfo.com.cn](https://static.cninfo.com.cn/finalpage/2026-xx.xx-xx.xx/xx.xx.PDF))

82. EV & ESS Applications - EVE Energy North America

· Evidence informing base-year company-share estimates: The regional catalog identifies telecom tower backup across cells, modules and custom packs. It informs offering-level attribution but supplies neither regional sales nor the modeled application and final-supply percentages. ([evebatteryusa.com](https://www.evebatteryusa.com/copy-of-ev-and-ess-applications))

83. All-In-One Cloud ERP Software for Project Management

· Evidence informing base-year company-share estimates: The implementation case reports a USD xx.xx inherited business and xx.xx customers in the 2018 commercial context. The customer count anchors the modeled purchasing cohort; neither figure is represented as observed 2025 telecom revenue.

· Evidence informing base-year company-share estimates: Engineering, fulfillment, installation and ongoing services identify scope adjustments necessary to exclude non-equipment activity.

84. Power Storage Solutions SCLFP48100-3U Specification Sheet

· Evidence informing base-year company-share estimates: The own-branded SCLFP48100-3U product document provides commercial offering context for the modeled finished-equipment numerator. It does not establish 2025 shipment volume or realized price.

85. Leadership | Meet Our Executive Team | Power Storage Solutions

· Evidence informing base-year company-share estimates: The leadership biography attributes USD xx.xx historical revenue to the broader Interstate PowerCare predecessor business. It supports rejecting that figure as a directly attributable PSS 2025 telecom-equipment numerator.

86. Expansão do mercado de baterias estacionárias impulsiona indústria e acelera investimentos no Brasil

· Evidence informing base-year company-share estimates: The January xx.xx 2026 company publication reports annual battery capacity above xx.xx units and approximately xx.xx units in inventory. These constrain a modeled supply flow but are not observed 2025 sales.

· Evidence informing base-year company-share estimates: The mixed stationary portfolio and manufacturing/distribution distinction support explicit telecom and own-equipment scope adjustments; neither adjustment is disclosed numerically.

87. Diário Oficial de Santa Catarina, nº 22.458, 21 de fevereiro de 2025

· Evidence informing base-year company-share estimates: The February xx.xx 2025 official purchasing publication lists Getpower stationary batteries at BRL xx.xx per unit through Powersafe. This is a comparable purchasing-price anchor, not observed telecom-specific factory revenue or annual sales volume.

88. Elhim-Iskra JSC - Financial Report for the Year Ended 31 December 2025

· Evidence informing base-year company-share estimates: The 2025 product-sales table reports BGN xx.xx total and BGN xx.xx Other after separately identified starter/semitraction, traction and traction-element sales. Other constrains the modeled eligible residual; it is not disclosed telecom revenue. ([elhim-iskra.com](https://elhim-iskra.com/wp-content/uploads/2026/xx.xx/89450072ij0a9hzk3569-xx.xx-bg-sep.pdf))

89. Стационарни батерии OPzS - ЕЛХИМ ИСКРА

· Evidence informing base-year company-share estimates: The official OPzS offering establishes a separately marketed stationary category used to bridge the financial residual; its presence does not measure application sales. ([elhim-iskra.com](https://elhim-iskra.com/produkti/staczionarni-i-solarni-baterii/opzs/))

90. Clear Blue Technologies Announces FY2025 and Q1 2026 Results

· Evidence informing base-year company-share estimates: The FY2025 announcement reports CAD xx.xx revenue and CAD xx.xx recurring revenue, providing the annual control used before application and included-equipment assumptions. ([www2.clearbluetechnologies.com](https://www2.clearbluetechnologies.com/clear-blue-technologies-announces-fy2025-and-q1-2026-results/))

91. Clear Blue Technologies International Inc. - Q1 2026 Management's Discussion and Analysis

· Evidence informing base-year company-share estimates: The 2025 Q1 comparatives provide telecom revenue CAD xx.xx total revenue CAD xx.xx and recurring revenue CAD xx.xx for the calibrated application bridge. ([clearbluetechnologies.com](https://www.clearbluetechnologies.com/investors/MDA_Q1_2026.pdf))

· Evidence informing base-year company-share estimates: Its quarterly recurring comparatives sum to CAD xx.xx exposing the CAD xx.xx difference from the annual announcement. ([clearbluetechnologies.com](https://www.clearbluetechnologies.com/investors/MDA_Q1_2026.pdf))

92. Clear Blue Technologies Announces 1,000 Pico-Plus Unit Orders from Eutelsat for Deployment Across Africa

· Evidence informing base-year company-share estimates: The Eutelsat announcement concerns 2026 purchase orders; those orders are excluded from the 2025 recognized-equipment numerator and used only to challenge the dated-event attribution. ([clearbluetechnologies.com](https://www.clearbluetechnologies.com/news/clear-blue-eutelsat-xx.xx-pico-plus-orders-africa))

93. Turkcell ile ASPİLSAN Enerji'den Yerli Batarya Üretiminde Stratejik İş Birliği

· Evidence informing base-year company-share estimates: The June xx.xx 2022 supplier announcement identifies approximately xx.xx telecom battery modules over a xx.xx-year agreement covering 2022-2025, constraining the modeled commercial quantity.

· Evidence informing base-year company-share estimates: The announcement describes an initial xx.xx-module delivery commitment; the model does not treat the entire agreement as immediate or directly observed 2025 revenue.

· Evidence informing base-year company-share estimates: The final share additionally uses explicitly assumed annual realization, unreported-sales allowance and equipment pricing; the source does not directly verify those parameters or the resulting percentage.

94. □□□□□□ □□□□□ □□□□ □□□□ - □□ □□□□□□

· Evidence informing base-year company-share estimates: The company reports an increase to annual capacity of xx.xx batteries from Iranian year xx.xx supplying the aggregate commercial-capacity anchor for the modeled numerator; this is capacity, not observed 2025 sales. ([nianbattery.com](https://nianbattery.com/%D8%AF%D8%B1%D8%A8%D8%A7%D8%B1%D9%xx.xx-%D9%xx.xx%D8%A7/))

· Evidence informing base-year company-share estimates: The page identifies the Shuangdeng licensing and Nian group relationships, supporting explicit treatment of licensing and possible downstream group incorporation rather than automatic duplication of finished-equipment revenue. ([nianbattery.com](https://nianbattery.com/%D8%AF%D8%B1%D8%A8%D8%A7%D8%B1%D9%xx.xx-%D9%xx.xx%D8%A7/))

95. Metair 2025 Audited Annual Financial Statements

· Evidence informing base-year company-share estimates: Audited note xx.xx reports ZAR xx.xx of 2025 First Battery industrial-division revenue and its discontinued-operation classification. This anchors the modeled business-line numerator, not an observed telecom share.

96. SIMGUN GLOBAL INTERNATIONAL PTY LTD - Our Company

· Evidence informing base-year company-share estimates: Identifies SIMGUN as the UNION manufacturer and reports aggregate Pune capacity of xx.xx cells monthly, with international customers.

· Evidence informing base-year company-share estimates: Supports the nameplate and Global economic perimeter used in the model, not its assumed 2025 shipment realization or telecom mix.

97. SIMGUN GLOBAL INTERNATIONAL PTY LTD - Application

· Evidence informing base-year company-share estimates: Lists telecom towers separately from motive-power, utility, solar and general backup applications, supporting a telecom scope split rather than attribution of all factory output.

98. Technical Specification (As per IS Specification OPzS-TBS)
    - Evidence informing base-year company-share estimates: The commercial reserve-cell range includes a 2V, 400Ah format, supporting the model's representative xx.xx-kWh nominal unit; shipment-weighted mix remains assumed.
99. About - REVOV Batteries
    - Evidence informing base-year company-share estimates: Current official material establishes continuing finished-storage design/manufacturing and general storage participation, not 2025 telecom sales.
    - Evidence informing base-year company-share estimates: Supports operational continuity for the historical-volume bridge while leaving application mix unmeasured.
100. Off-grid with a second life - 28 February 2022 - Dataweek
    - Evidence informing base-year company-share estimates: The dated interview corroborates management's historical statement of approximately xx.xx MWh supplied across applications over xx.xx months.
    - Evidence informing base-year company-share estimates: This is a historical mixed-use delivery anchor, not audited 2025 telecom revenue; annualization and destination attribution are modeled.
101. About US - Star Plus Batteries
    - Evidence informing base-year company-share estimates: Identifies Star Plus as MMNL's brand and telecom among its battery applications, supporting company and product attribution.
    - Evidence informing base-year company-share estimates: Leadership, market-share and broader market-growth assertions are not used.
102. StarPlus Battery Don’t Just Build Batteries, We Touch Lives
    - Evidence informing base-year company-share estimates: The July xx.xx 2025 company article repeats xx.xx units of current production and proposed expansion, supplying a company-published activity lead.
    - Evidence informing base-year company-share estimates: Its linked original dates the period-defined monthly output to 2024; proposed expansion is not counted as realized 2025 production.
103. Nigerian Company MMNL to Invest $50 Million to Scale Up Tubular Battery Production to 100,000
    - Evidence informing base-year company-share estimates: The original dated news record attributes a stable production rate of xx.xx units monthly as of 2024 to MMNL management.
    - Evidence informing base-year company-share estimates: Corroborates the historical operating-rate announcement and distinguishes it from future capacity targets; it does not directly verify 2025 output.
104. Buy Solar Batteries Online in Nigeria - Star PlusInverter Battery
    - Evidence informing base-year company-share estimates: A separate company product page reports xx.xx batteries of annual capacity, exposing an unresolved date/perimeter conflict with the later reported monthly output.
    - Evidence informing base-year company-share estimates: This quantity is used as counterevidence and sensitivity, not added to the operating-rate model.
105. Shuangdeng Group Co., Ltd. - Prospectus
    - Evidence informing base-year company-share estimates: The issuer's own January-May 2025 telecom battery realization of RMB xx.xx/kWh constrains the comparable monetary price bridge.
    - Evidence informing base-year company-share estimates: It does not establish UNION prices, shipment realization or telecom mix; externally authored market-research claims are excluded.
    - Evidence informing base-year company-share estimates: The issuer's own telecom realization provides a bulk-price constraint for the modeled net equipment price, not REVOV's observed transaction price.
    - Evidence informing base-year company-share estimates: The issuer's own telecom realization constrains the USD xx.xx/kWh working price after an explicitly inherited currency bridge; regional and product adjustments remain assumptions.
    - Evidence informing base-year company-share estimates: The issuer-owned telecom sales table reports average realization of RMB xx.xx/kWh during the five months ended May xx.xx 2025. This is a bulk commercial price comparator for the Etica model, not an Etica quotation or share observation; excluded industry-research sections are not used.
    ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))

106. 再传喜讯| 拓邦股份连续中标中国铁塔磷酸铁锂电池产品集采项目

· Evidence informing base-year company-share estimates: The February xx.xx 2024 company announcement reproduces the China Tower 2023-2024 telecom backup LFP battery award: RMB xx.xx including tax, RMB xx.xx equipment consideration and RMB xx.xx tax.

· Evidence informing base-year company-share estimates: The xx.xx% programme award and stated prior China Tower/China Mobile battery orders support a telecom-specific procurement benchmark and a separate operator route, not observed calendar-2025 revenue.

· Evidence informing base-year company-share estimates: The historical net award anchors the working annualization model; the 2025 realization and customer-concentration factors remain assumptions.

107. Lithium Battery Manufacturer, LiFePO4 Battery, Lithium-Ion Battery Supplier - Hangzhou LIAO Technology Co., Ltd.

· Evidence informing base-year company-share estimates: Company-authored seller material lists undated annual export revenue of USD xx.xx-xx.xx and export proportion of xx.xx-xx.xx%. These constrain a commercial-scale proxy, not observed 2025 telecom sales, and conflict with the manufacturer's separate export statement. (hzliao.en.made-in-china.com)

108. Energy Storage Battery Manufacturer and Supplier, Products | LIAO

· Evidence informing base-year company-share estimates: The manufacturer lists a telecom rack-pack offering among broader storage products and states xx.xx% exports. The export statement supplies the selected working denominator bridge but remains undated and inconsistent with the seller storefront. ([liaobattery.com](https://www.liaobattery.com/energy-storage-battery-xx.xx))

109. Consolidated Financial Results for the Nine Months Ended December 31, 2025 (April 1, 2025 to December 31, 2025)

· Evidence informing base-year company-share estimates: The financial table reports Batteries sales of JPY xx.xx for the fiscal year ending March 2025, JPY xx.xx for April-December 2024 and JPY xx.xx for April-December 2025. These derive calendar-2025 Batteries sales of JPY xx.xx before modeled application attribution. ([fdk.com](https://www.fdk.com/whatsnew-e/FY2025_3Q-e.pdf))

110. FDK Group Integrated Report 2024

· Evidence informing base-year company-share estimates: FDK identifies a JPY xx.xx Ni-MH sales goal for 2025. This is a commercial-scale target used to constrain the assumed Ni-MH business portion, not evidence that the target or telecom sales were achieved. ([fdk.com](https://www.fdk.com/csr-e/pdf/2024-e.pdf))

111. 高耐久｜ニッケル水素電池 | 製品情報 ｜ FDK 株式会社

· Evidence informing base-year company-share estimates: The high-durability Ni-MH catalog supports a component-product boundary. It does not disclose telecom revenue or a complete current site-service undertaking; this informs the model's downstream-incorporation exclusion. ([fdk.co.jp](https://www.fdk.co.jp/product/nimh/high_durability/))

112. 2025 年 3 月期 決算短信〔日本基準〕（連結）

· Evidence informing base-year company-share estimates: The fiscal-year filing reports JPY xx.xx of external Industrial segment revenue for April 2024-March 2025. This supplies the industrial sales proxy before explicit period, application and deployment-facing adjustments. ([corp.furukawadenchi.co.jp](https://corp.furukawadenchi.co.jp/ja/ir/news/auto_20250513545718/pdfFile.pdf))

113. 種類一覧 | 産業用蓄電池 | 製品情報 | 古河電池株式会社

· Evidence informing base-year company-share estimates: The industrial-battery catalog supports broader stationary and backup portfolio continuity. It does not independently measure current telecom sales or the modeled telecom proportion. ([corp.furukawadenchi.co.jp](https://corp.furukawadenchi.co.jp/ja/products/indust/syurui.html))

114. 古河電池株式会社 - PowerPoint プレゼンテーション

· Evidence informing base-year company-share estimates: The 2017 issuer presentation supplies historical telecom application context. Its age prevents treating it as observed 2025 customer sales or present contractual availability. ([corp.furukawadenchi.co.jp](https://corp.furukawadenchi.co.jp/ja/ir/library/presentation/main/xx.xx/teaserItems1/xx.xx/linkList/xx.xx/link/20170523_03.pdf))

115. 세방전지주식회사 - 사업보고서 (제60기, 2025년)

· Evidence informing base-year company-share estimates: The 2025 mandatory filing reports manufactured industrial-battery sales of KRW xx.xx, separately identifies KRW xx.xx merchandise resale and gives average 2025 FX of KRW xx.xx/USD. The model excludes resale and adjacent business lines before telecom attribution. ([kind.krx.co.kr](https://kind.krx.co.kr/external/2026/xx.xx/xx.xx/xx.xx/xx.xx/xx.xx.htm))

116. Industrial Battery catalog

· Evidence informing base-year company-share estimates: The official industrial catalog supplies product/application context for distinguishing reserve-battery activity from other industrial uses. It does not disclose the numerical standby or telecom sales mix. ([gbattery.com](https://www.gbattery.com/files/bbs_kresources/c4f2a7a63a20d015e830b546d1c9fba0.pdf))

117. Etica Battery to Install 15,000 Fire-Safe UPS Systems for Major Japan Telecom Provider

· Evidence informing base-year company-share estimates: The July xx.xx 2025 announcement identifies Etica Battery Inc. as supplier for a xx.xx-system Japanese telecom UPS project and describes approximately xx.xx kWh per module. These constrain project scale and commercial unit size; they do not establish completed 2025 deliveries or realized revenue. ([eticaag.com](https://eticaag.com/etica-battery-japan-5g-ups-telecom-installation/))

118. Etica Battery Won the Rising Star Award 2023

· Evidence informing base-year company-share estimates: Etica's 2023 commercial account reports more than xx.xx UPS batteries applied at domestic 5G telecom base stations. The model conservatively uses xx.xx as a historical commercial reference stock; maintained 2025 stock and replacement incidence are assumptions. ([etica.tw](https://etica.tw/etica-battery-won-the-rising-star-award-2023/?utm_source=openai))

119. About Us - Guangdong Npp New Energy Co., Ltd.

· Evidence informing base-year company-share estimates: NPP's company profile identifies its mixed lead-acid, lithium and sodium battery business and reports an xx.xx GWh aggregate capacity headline. This is a capacity-model input, not observed 2025 telecom sales.

120. Telecom - NPP Power India

· Evidence informing base-year company-share estimates: The NPP Power India telecom catalog identifies FT and lithium commercial offerings, supporting telecom category attribution but not the modeled application fraction.

121. Shanghai PRET Composites Co., Ltd. - 2025 Annual Report

· Evidence informing base-year company-share estimates: The 2025 filing reports xx.xx% utilization for its battery business. This is used only as an explicitly qualified cross-company commercial-realization calibration for NPP.

· Evidence informing base-year company-share estimates: The filing reports RMB xx.xx of 2025 LFP battery revenue, providing the relevant product-line monetary anchor for Highstar's modeled telecom-equivalent numerator.

· Evidence informing base-year company-share estimates: The reported xx.xx% battery utilization provides a qualified cross-company realization calibration, not BSB's observed utilization.

122. Shuangdeng Group Co., Ltd. - Prospectus, August 18, 2025

· Evidence informing base-year company-share estimates: The issuer's own five-month 2025 telecom sales table reports RMB xx.xx/kWh average realization. It constrains the modeled USD xx.xx/kWh international net-price assumption; excluded industry-research sections are not used.

· Evidence informing base-year company-share estimates: The issuer-reported telecom price provides a comparable monetary constraint for BSB's price bridge, not a BSB selling-price observation.

123. Pack & Solution - Highstar

· Evidence informing base-year company-share estimates: Highstar markets a Sodium-ion Battery System for Telecom alongside other applications. The source supports the commercial boundary and the need to avoid equating an LFP revenue proxy with sodium-specific sales.

124. BSB Power - Company and Commercial Capacity Overview

· Evidence informing base-year company-share estimates: BSB reports xx.xx MWh/month aggregate production capacity and a mixed battery and storage portfolio. The capacity supports a bounded financial model, not observed annual telecom shipments.

125. HORIEN Salt Battery Solutions - SBS Container brochure
· Evidence informing base-year company-share estimates: The manufacturer reports more than xx.xx GWh deployed in xx.xx countries. This cumulative deployment-scale anchor supports the modeled installed-stock bridge, not observed annual telecom revenue. ([saltbattery.horien.com](https://saltbattery.horien.com/wp-content/uploads/2025/xx.xx/Container.pdf))
126. HORIEN Salt Battery Solutions - Company Profile
· Evidence informing base-year company-share estimates: The corporate profile identifies the 2012 telecom-product launch and 2024 FZSoNick rebranding, supporting legacy commercial continuity within the company attribution rather than a pre-entry zero. ([saltbattery.horien.com](https://saltbattery.horien.com/wp-content/uploads/2026/xx.xx/SBS_COMPANY-PROFILE.pdf))
127. HORIEN Salt Battery Solutions - TL Range
· Evidence informing base-year company-share estimates: The TL Range brochure identifies telecom alongside other applications and advertises a long design life. It supports product scope and a replacement-rate caution, not measured telecom mix, service life or annual purchasing incidence. ([saltbattery.horien.com](https://saltbattery.horien.com/wp-content/uploads/2025/xx.xx/48TL200_TL-RANGE.pdf))
128. Products - FZ Energy Storage Systems
· Evidence informing base-year company-share estimates: The Malaysian supplier catalog identifies HORIEN/FZSoNick salt batteries as sodium-nickel chloride and lists the TL Range for telecommunications. This supports category and channel attribution, not realized sales or exclusive rights. ([fz.energy](https://www.fz.energy/products))
129. Hybridizing the World: over 35,000 Ascot generators installed in more than 60 countries
· Evidence informing base-year company-share estimates: Ascot's May xx.xx 2023 publication reports more than xx.xx generators installed in over xx.xx countries. The model applies explicit telecom, active-stock, purchasing and supplier-capture adjustments rather than treating this stock as annual storage sales. ([ascotinternational.com](https://ascotinternational.com/news/Hybridizing-the-World-over-xx.xx-Ascot-generators-installed-in-more-than-xx.xx-countries))
130. Innovations - Ascot
· Evidence informing base-year company-share estimates: Ascot identifies battery-inclusive hybrid offerings for telecom operators, supporting an attributable integrated-storage category while requiring exclusion of generator and separate service value. ([ascotinternational.com](https://ascotinternational.com/innovations))
131. Replacing VRLA Battery with 48V LiFePO4 for a Telecom Site - XGW Tech
· Evidence informing base-year company-share estimates: The supplier case describes a xx.xx-site telecom retrofit and first-twelve-month results, with publication dated August xx.xx 2026. It supports project scale, but the model's xx.xx% calendar-2025 attribution and purchased-module count remain assumptions. ([xgwtech.com](https://www.xgwtech.com/case-studies/vrla-to-lifepo4-telecom-battery-retrofit.html))
132. 48V LiFePO4 Telecom Battery with SNMP for High-Temperature Sites in Pakistan - XGW Tech
· Evidence informing base-year company-share estimates: The company reports three Pakistan telecom sites commissioned in June 2025 and supplied modules with xx.xx kWh of marketed capacity. These support a dated commercial cohort and unit-value bridge, not observed annual company revenue. ([xgwtech.com](https://www.xgwtech.com/case-studies/telecom-battery-snmp-pakistan.html))

21.2. Market Concentration Analysis, 2025

Commercial control is distributed across manufacturing, integration, authorized channels, and continuing energy-service relationships. PowerPlus Energy Pty Ltd and RFI document an exclusive LiNET4835 channel relationship; Polarium appears in Vertiv's telecom-battery portfolio; and Celltech Group's Finnish catalog offers CSB Energy Technology Co., Ltd. batteries.

[redacted]

■■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■ ■■■■■■■■ ■■ ■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■

Outsourced power relationships can move battery purchasing authority away from the network beneficiary. ■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■ The trade-off for operators is consolidated power accountability versus retained equipment and maintenance choice.

Sagemcom and Escotel illustrate why supplier, investor, and operating-service roles must remain separate. Their establishment announcement identifies Sagemcom as an investor, equipment supplier, and EPC and maintenance provider to Escotel, while Sagemcom separately markets PowerTel telecom-energy solutions. ■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■ ■■■■ ■■■■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■ ■■■ ■■■■■■■■■■■■ ■■■■■■ ■■ ■ ■■■ ■■■■■■■■■■■■■

Technology-linked relationships also require narrow attribution. ■■■■■ ■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■ ■■ ■■ ■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■■ ■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■ ■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■ ■■ ■■■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■ A technology relationship may contribute access, but cannot substitute for the local seller's committed obligations.

Ownership changes affect the independence of procurement alternatives. C&D Technologies is a retained product brand within the completed Stryten acquisition, and FIAMM Energy Technology's sale to AURELIUS is recorded as completed. ■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■ ■■■■■■■■

Overlapping company names do not establish independent competitors. IFC's records use IPT PowerTech and IPT PowerTech Group for the documented business, while Clear Blue's September 2026 announcement explicitly identifies Clear Blue Technologies International Inc. as Clear Blue. ■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■ ■■■■■■■■■■■ ■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■ ■■ ■■■■■■■■■■ ■■■■■ ■■■■■ ■■ ■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■

[illegible] The exact transaction date, acquired telecom-contract continuity, and current selling entity remain unresolved for that comparison. Procurement independence and contractual continuity should be assessed through the relevant business records rather than inferred from a retained name.

Buyer approval provides a counterforce to supplier and channel control. [illegible] Direct component procurement remains an alternative only where the buyer or an appointed integrator can hold those responsibilities.

Sources & Evidence

1. Telecom Lithium Batteries | Vertiv
   · The supplier-integrator relationship illustrates separate manufacturing, channel, and control-system roles, not market-wide exclusivity.
2. Supply Chain | Vodafone
   · Its approval structure provides an observed buyer control point distinct from commercial negotiation.
3. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
   · IFC describes IPT as designing, sourcing, operating, and maintaining telecom energy solutions and identifies IPI Group Holding Limited. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
4. Pixii welcomes Per Hove as Chairman of the Board
   · Pixii's June xx.xx 2026 statement identifies Morten F. Angelil as majority owner through Eltek Holding, not Delta Electronics. ([pixii.com](https://www.pixii.com/pixii-welcomes-per-hove-as-chairman-of-the-board/))
5. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   · IFC's March xx.xx 2026 announcement identifies IPT PowerTech and IPT PowerTech Group in the same financed telecom business relationship. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
6. Who We Are | Emtel Group of Companies
   · The disclosed relationship supports separating reseller, technology supplier, and transaction-specific warranty responsibilities.
7. PowerPlus Energy Launches LiNET4835: A New Battery in Exclusive Partnership with RFI Technologies
   · The announcement establishes product-specific channel control, not restrictions over unrelated products.
8. Introducing the PowerPlus LiNET4835: Exclusive to RFI
   · RFI independently describes the PowerPlus collaboration and exclusive sale of LiNET4835. ([news.rfi.com.au](https://news.rfi.com.au/listing/powerplus-linet4835-exclusive-to-rfi))
9. Eltek IPack65 | Delta Americas
   · The Delta-hosted Eltek portfolio establishes a branded offering, not ownership of Pixii.

10. TPL VRLA AGM Battery | Celltech
    - The listing establishes a producer-channel relationship rather than Celltech manufacture of the named CSB batteries.
11. Lithium Batteries | VZH SRL
    - The listing supports a channel relationship distinct from Vision manufacture and from VZH's custom-pack role.
12. Our Business Models: ESCO | Camusat
    - Camusat describes Aktivco's ESCO model combining solar, batteries, generators, and grid supply. ([camusat.com](https://camusat.com/?elementor_library=our-business-models-esco))
13. Financing the Construction of Energy Infrastructure | Proparco
    - Proparco identifies AktivCo as a Camusat subsidiary and financing customer for telecom-energy infrastructure including batteries. ([proparco.fr](https://www.proparco.fr/en/projects/financing-construction-energy-infrastructure))
14. CrossBoundary Energy Finances Telecom Energy in the DRC and South Sudan
    - CrossBoundary's September xx.xx 2024 announcement identifies an iSAT telecom-energy financing relationship and Clear Blue as equipment-solution supplier. ([crossboundaryenergy.com](https://crossboundaryenergy.com/wp-content/uploads/sites/xx.xx/2024/xx.xx/CrossBoundary-Energy-finances-renewable-energy-for-DRC-and-South-Sudan-FINAL.pdf))
15. Energy Vision Limited Project | FMO
    - FMO's dated project identifies Energy Vision as a telecom energy-service provider using battery-equipped hybrid systems. ([fmo.nl](https://www.fmo.nl/project-detail/xx.xx))
16. FEI and Norfund Financing for CREI's Mali Telecom Initiative
    - CREI's May xx.xx 2025 announcement describes financed Mali telecom hybrid-energy activity including battery storage. ([creicapital.com](https://www.creicapital.com/post/fei-and-norfund-will-provide-40m-of-financing-to-crei-to-drive-sustainability-and-efficiency-in-malis-telecoms-industry))
17. Chubu Completes Capital Increase in OMC Power
    - Chubu's November xx.xx 2024 announcement identifies OMC Power's Indian telecom-tower energy business using storage batteries. ([chuden.co.jp](https://www.chuden.co.jp/english/corporate/releases/pressreleases/1214873_5163.html))
18. Evolution II, Norfund and Sagemcom Commitment to Establish Escotel
    - The Escotel establishment announcement identifies Sagemcom as investor, equipment supplier, and EPC/maintenance provider. ([sagemcom.com](https://www.sagemcom.com/sites/default/files/2020-xx.xx/PR_Evolution-II-ESCOTEL_202012_0.pdf))
19. Electrification Solutions | Sagemcom
    - Sagemcom markets PowerTel telecom-energy solutions separately from its ESCO investment relationship. ([sagemcom.com](https://www.sagemcom.com/fr/energie-et-telecom/solutions-delectrification?language_content_entity=en))
20. Enercap Holdings and Apex Form Supercapacitor Storage Joint Venture
    - Apex's announcement identifies Enercap Holdings and a supercapacitor-storage joint venture; it does not establish the full present group or warranty chain. ([apexholding.ae](https://apexholding.ae/enercap-holdings-and-apex-investments-form-supercap-energy-storage-joint-venture/))
21. Atlas Announces Stryten's Completed Acquisition of C&D Trojan
    - Atlas states the Stryten acquisition of C&D and Trojan completed October xx.xx 2026 and the product brands would be preserved. ([atlasholdingsllc.com](https://www.atlasholdingsllc.com/news/atlas-holdings-announces-stryten-energys-acquisition-of-cd-trojan/))
22. Resonac-FIAMM-AURELIUS Transaction | Houlihan Lokey
    - Houlihan Lokey's record of its own advisory engagement states FIAMM's sale to AURELIUS closed December xx.xx 2025. ([hl.com](https://hl.com/about-us/transactions/resonac-fiamm-aurelius/))

23. Clear Blue Announces Eutelsat Pico-Plus Purchase Orders for Africa
    - The September xx.xx 2026 announcement identifies Clear Blue Technologies International Inc. as Clear Blue. ([clearbluetechnologies.com](https://www.clearbluetechnologies.com/news/clear-blue-eutelsat-xx.xx-pico-plus-orders-africa))
24. About Us | COSMX
    - CosMX reports historical separation from Coslight and subsequent renaming; this does not establish the full present ownership relationship. ([cosmx.com](https://www.cosmx.com/html/en/html/about/about/))
25. Ignite Completes ENGIE Energy Access Acquisition
    - Ignite states that it completed the ENGIE Energy Access acquisition and launched Ignite Energy Access; telecom-contract succession and the exact completion date are not stated. ([igniteaccess.com](https://igniteaccess.com/ignite-power-completes-acquisition-of-engie-energy-access-launching-ignite-energy-access-xx.xx/))

21.3. Recent Developments & Impact Analysis, 2025

Completed ownership transactions change procurement independence and counterparty diligence. ■■■■■ ■■■■■■■■ ■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■ ■■ ■■■■■■■ ■■ ■■■■ ■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■ ■■ ■■■■■■■■ ■■ ■■■■■■■■ ■■ ■■■■■ ■■■ ■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■ ■■ ■ ■■■■ ■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■ ■■■■ ■■ ■■■■■■■■■ ■■■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ These business-wide transactions do not establish a telecom-specific change in buyer leverage.

New product announcements broaden the offerings to evaluate, but do not establish buyer-approved substitution. Exide Technologies introduced Solition Telecom on January xx.xx 2025 for new installations and replacement applications. ■■■■■■■■■ ■■■■■■ ■■■ ■■■■■ ■■■■ ■■ ■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■ ■■■ ■■■■■ ■■■■■■■■■■■ ■■■■ ■ ■■■■■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■ ■■■■■■■ ■■■■■■ ■■ ■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■ ■■■■■ ■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■.

Supplier business emphasis can alter the commitments a buyer needs to secure. Polarium's August xx.xx 2026 announcement sharpened its focus on telecom and distributed storage and identified production in Vietnam. ■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■ ■■■■ ■■■■■■■■■ ■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■ ■■■■■■■■■■■ ■■■ ■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■■ ■■ ■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■ ■■■ ■■■■■■■■■■■■ ■■ ■■■■■ ■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■ ■■■■ ■■■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■

Development financing strengthens a commercial route without proving completion of every site commitment. IFC's March xx.xx 2026 announcement supports IPT PowerTech's solar- and battery-based telecom power modernization, operation, and maintenance in Ethiopia, Liberia, and Sierra Leone. ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■ ■■ ■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■ ■■■ ■■■ ■■■■ ■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■■■

[redacted]

Customer orders and product-support changes have different consequences. Clear Blue Technologies International Inc. reported Eutelsat purchase orders on September xx.xx 2026 and described delivery as expected in tranches; the announcement does not establish completed fulfillment. [redacted]

Sources & Evidence

1. Polarium Sharpens Strategic Focus After Year of Transformation
   · Polarium's August xx.xx 2026 announcement sharpens telecom/distributed-storage focus and identifies production in Vietnam.
   ([polarium.com](https://polarium.com/newsroom-articles/polarium-sharpens-strategic-focus-after-year-of-transformation/))
2. Shuangdeng Group Co., Ltd. - Interim Report 2026
   · Shuangdeng's first-half 2026 business disclosure retains telecom storage alongside an AIDC emphasis; it does not settle every telecom model's availability.
   ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
3. PP36L and PP75L Micro UPS Version Updates: The Next-Generation Battery Backup
   · Precision's July xx.xx 2026 Micro UPS update advertises residential battery-and-power-supply replacement coverage without establishing included field visits.
   ([goprecisiongroup.com](https://goprecisiongroup.com/precision-power/pp36l-and-pp75l-micro-ups-version-updates-the-next-generation-battery-backup/))
4. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   · The financing supports solar/battery telecom modernization, operation, and maintenance in Ethiopia, Liberia, and Sierra Leone; universal completion is not established.
5. PowerPlus Energy Launches LiNET4835: A New Battery in Exclusive Partnership with RFI Technologies
   · The dated launch changes the identified access route without establishing buyer acceptance or executed support terms.
6. Introducing the PowerPlus LiNET4835: Exclusive to RFI
   · The channel party corroborates the launch relationship; transaction-specific support remains separate.
7. Exide Technologies Launches Solition Telecom
   · The dated launch broadens the marketed replacement proposition but does not establish buyer acceptance.
8. FEI and Norfund Financing for CREI's Mali Telecom Initiative
   · The announcement establishes a financing initiative, not completed deployment at every project site.
9. Atlas Announces Stryten's Completed Acquisition of C&D Trojan
   · The completed ownership change supports post-transaction counterparty diligence, not a telecom-specific bargaining conclusion.
10. Resonac-FIAMM-AURELIUS Transaction | Houlihan Lokey
    · The record resolves announced-versus-completed status without establishing telecom product or support succession.

11. Clear Blue Announces Eutelsat Pico-Plus Purchase Orders for Africa
· The company reports received Eutelsat purchase orders and describes delivery as expected in tranches, not completed fulfillment.
12. Renewable Energy Supplies Sierra Leone's 5G Rollout | CrossBoundary Energy
· CrossBoundary's June xx.xx 2025 announcement identifies battery-equipped telecom energy arrangements for Zoodlabs in Sierra Leone. ([crossboundaryenergy.com](https://crossboundaryenergy.com/wp-content/uploads/sites/xx.xx/2025/xx.xx/Renewable-energy-supplies-the-first-5G-rollout-in-Sierra-Leone_FINAL.pdf))

21.4. Product Portfolio Analysis, 2025

Telecom storage alternatives differ first in the commitment being purchased. EnerSys' PowerSafe mSeries combines VRLA batteries with racking; Vertiv's NetSure IPE adds a telecom-power-system boundary; and Mission Critical Electronics, through Newmar, offers assembled rack-power proposals that can include batteries. ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪

Several suppliers offer alternatives across battery categories rather than a single technology. ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ Portfolio breadth can preserve replacement options within a supplier relationship, but does not establish that a buyer accepts every family or that support transfers unchanged between them.

The lead-acid comparison includes materially different commercial formats. East Penn Manufacturing lists Deka monobloc and cell/system offerings; C&D Technologies covers flooded and VRLA telecom batteries; and GS Yuasa's UK-facing telecom range includes VRLA families and lithium modules. ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪

Nickel-based and historical specialty offerings require their own comparison boundaries. ▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ FIAMM Energy Technology's reserve-power

brochure, Banner GmbH's Stand-by Bull gel brochure, and an Elhim-Iskra JSC stationary-battery channel listing support additional product-category comparisons, subject to refreshed availability and responsibility commitments.

Indian supplier comparisons should distinguish named products from broader application positioning. Amara Raja Energy & Mobility Limited identifies AMARON SLEEK and AMARON VOLT telecom VRLA families. [redacted]

[redacted] Teksan and Ascot describe battery-equipped hybrid telecom configurations. For these alternatives, the buyer should hold storage inclusion, controller responsibilities, and the continuing service boundary constant before interpreting broader integration as greater portfolio value.

[redacted] BMZ Group's INDUSTRIÆ brochure and MIDAC S.p.A.'s LFPblock catalog add broader industrial products with documented telecom applications; their commercial breadth does not make every configuration an equivalent carrier backup offer.

[redacted] Sunwoda Energy's BTS brochure, BSB Power's outdoor-telecom gel brochure, and Pylon Technologies Co., Ltd.'s 2022

telecom-backup disclosure establish product or business context at their respective publication boundaries. Shenzhen Topband Co., Ltd.'s Japanese catalog identifies a base-station BMS category; this component role should not be treated as an undisclosed finished battery-system commitment.

Asian regional propositions are similarly differentiated. ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ Current model supply, the local seller, and application acceptance remain separate from these category-level records.

▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ HORIEN Salt Battery Solutions' TL Range is identified in its Malaysian commercial catalog as sodium-nickel chloride, distinct from sodium-ion. These records justify technology-specific commercial evaluation, not an inference of equivalent acceptance, availability, or continuity outcomes.

Accepted nonbattery and metal-air categories add different fulfillment obligations. Emtel Energy markets MicroTel as supercapacitor-based telecom storage through an Enercap-linked supply relationship. ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪

Precision Group spans infrastructure batteries and customer-premises Micro UPS products, so it should not be confined to a single network application. ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ Portfolio comparison should therefore separate a marketed telecom range, a historical application, and a current contract-ready package rather than treat all three as the same commercialization status.

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys
   - PowerSafe mSeries is advertised as VRLA batteries with integral racking for telecommunications applications. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))

2. Vertiv NetSure IPE Series
   · NetSure IPE is advertised for telecom base stations with lithium battery backup, supporting a system-level comparison.
   ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))
3. Products | FZ Energy Storage Systems Sdn Bhd
   · FZ Energy lists HORIEN/FZSoNick's TL telecom range and identifies sodium-nickel chloride technology.
   ([fz.energy](https://www.fz.energy/products/))
4. Energy Backup | Phinergy
   · Phinergy markets aluminum-air telecom backup with energy reloading and remote monitoring.
   ([phinergy.com](https://phinergy.com/solutions/energy-backup/))
5. Shuangdeng Group Co., Ltd. - Prospectus
   · Shuangdeng's prospectus reports a sodium-ion telecom-system launch and use in named Chinese regions; the business disclosure is issuer-reported.
   ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
6. Telecom Batteries | Critical Power Solutions by Exicom
   · Exicom markets the named EXTB LFP telecom battery range for base stations, edge sites, and FTTX.
   ([exicom.com](https://www.exicom.com/product-family/telecom-batteries))
7. Telecommunications Backup Cell | ZTT
   · ZTT advertises a telecommunications backup cell for communication base stations; the listing does not establish a complete power-system undertaking.
   ([zttgroup.com](https://www.zttgroup.com/product/telecommunications-backup-cell/))
8. MicroTel - Electrostatic Energy Storage Solution | Emtel Energy
   · Emtel markets MicroTel as supercapacitor-based storage for telecom networks and provides a quotation route. ([emtel.group](https://emtel.group/microtel/))
9. Who We Are | Emtel Group of Companies
   · Emtel describes a partner and reseller relationship with Enercap Power Industries/Kilowatt Labs for supply and support. ([emtel.group](https://emtel.group/who-we-are/))
10. High-durability Nickel-Metal Hydride Batteries | FDK
    · FDK's high-durability nickel-metal-hydride category lists communication base stations among applications and individual battery models. ([fdk.co.jp](https://www.fdk.co.jp/product/nimh/high_durability/))
11. Power Plants | Newmar Powering the Network
    · Newmar advertises fully assembled telecom rack-power proposals that can include batteries.
    ([poweringthenetwork.com](https://www.poweringthenetwork.com/power-plants/))
12. About Newmar | Powering the Network
    · Newmar identifies itself as part of Mission Critical Electronics and describes its telecom integration business.
    ([poweringthenetwork.com](https://www.poweringthenetwork.com/about/))
13. Applications | EVE Energy North America
    · EVE Energy North America's application page connects telecom backup with LFP cells, modules, and custom-pack solutions.
    ([evebatteryusa.com](https://www.evebatteryusa.com/copy-of-ev-and-ess-applications))
14. Exide Technologies Launches Solition Telecom
    · Exide introduced Solition Telecom on January xx.xx 2025 as LFP-based BTS backup for new and replacement installations.
    ([exidegroup.com](https://www.exidegroup.com/eu/en/news/exide-technologies-launches-solition-telecom-pioneering-energy-storage-system-modern))
15. Telecom Batteries | Leoch EMEA
    · Leoch's EMEA telecom catalog lists LFeLi lithium, AGM, gel, pure-lead, and tubular battery families.
    ([leoch.eu](https://leoch.eu/network-power/telecom/))

16. Telecom | Narada Power
    - Narada's telecom portfolio lists lithium families including NPFC and lead-acid families including Acme. ([en.naradapower.com](https://en.naradapower.com/solution/industry.html))
17. Telecom Li-ion Battery | Sacred Sun
    - Sacred Sun maintains an official Telecom Li-ion Battery offering within its network-power portfolio. ([sacredsun.com](https://sacredsun.com/Product/Battery/2020/xx.xx/Telecom-Lithium.html))
18. Battery System | Vision Group
    - Vision's catalog lists V-LFP48V Standard Series Telecom Lithium Battery and describes broader telecom-power offerings. ([vision-batt.com](https://www.vision-batt.com/en/product/cate-xx.xx))
19. Telecommunications & 5G Network Backup Batteries | East Penn
    - East Penn's communications page lists Deka monobloc and cell/system products. ([eastpennmanufacturing.com](https://www.eastpennmanufacturing.com/applications/telecommunications/))
20. Telecommunications | C&D Technologies
    - C&D's telecom portfolio covers flooded and VRLA reserve batteries for wireless, wireline, cable, and remote communications applications. ([cdtechno.com](https://www.cdtechno.com/industries/telecom))
21. Telecoms | GS Yuasa
    - GS Yuasa's UK telecom page lists VRLA families and LIM lithium-ion modules for telecom applications. ([yuasa.com](https://www.yuasa.com/uk/industrial-batteries/telecoms))
22. Energy Solutions and Batteries for Telecommunication | HOPPECKE
    - HOPPECKE identifies front-terminal grid | Xtreme VR within its telecom battery and solution portfolio. ([hoppecke.com](https://www.hoppecke.com/en-us/applications/grid/telecommunication/))
23. Stationary | BAE Batterien GmbH
    - BAE's stationary portfolio identifies telecommunications installations and offers VLA and VRLA-GEL designs. ([bae-berlin.de](https://www.bae-berlin.de/en/station%C3%A4r))
24. Sunlight VRLA Batteries Brochure
    - Sunlight's VRLA brochure identifies STB front-terminal AGM batteries for telecom applications. ([sunlight-group.com](https://www.sunlight-group.com/files/xx.xx/xx.xx-sunlight_vrla_batteries_brochure.pdf))
25. Industrial Batteries | Monbat
    - Monbat's industrial reserve-battery portfolio identifies telecom applications. ([monbat.com](https://www.monbat.com/product_category/industrial-batteries/))
26. UPLFT Pure Lead Front Terminal Batteries for Telecom Cabinets | Ultracell
    - Ultracell publishes the UPLFT pure-lead front-terminal range for telecom cabinets. ([ultracell.co.uk](https://ultracell.co.uk/uplft-front-terminal-series))
27. Telecom Battery Solutions | Power-Sonic
    - Power-Sonic's telecom portfolio includes front-terminal VRLA, tubular gel, and other reserve-battery offerings. ([power-sonic.com](https://www.power-sonic.com/telecom/))
28. About Us | GAZ ENERGY
    - GAZ identifies nickel-cadmium batteries used in telecommunications and distinguishes its broader lithium-storage business. ([gazenergy.cz](https://www.gazenergy.cz/about-us))
29. Saft Evolion Batteries Help Ausonia Deliver Hybrid Power for Off-Grid Telecom Sites
    - The February 2013 Saft-authored case describes Evolion batteries incorporated into Ausonia's off-grid telecom hybrid system. ([ausonia.net](https://ausonia.net/wp-content/uploads/2024/xx.xx/Saft_21853-xx.xx-0213_CS_Ausonia_Protected.pdf))
30. FIAMM General Overview: Reserve Power Solutions
    - The supplier-authored FIAMM brochure identifies reserve-power battery ranges and telecom applications; it does not establish refreshed availability. ([concentricusa.com](https://www.concentricusa.com/hubfs/Product%20Pages/Products/RS-xx.xx-Fiamm-Overview.pdf))

31. Banner Stand-by Bull SBG Gel Batteries
    - Banner's February 2021 Stand-by Bull SBG brochure identifies mobile-radio and switching-system applications. ([bannerbatterien.com](https://www.bannerbatterien.com/energysolutions/upload/files/SBG-Cell-StandbyBull-GB.pdf))
32. Stationary Batteries | Elhit
    - Elhit's commercial catalog identifies Elhim-Iskra as producer of stationary batteries offered for telecommunications. ([elhitbg.com](https://elhitbg.com/bg/Statsionarni-baterii.c143))
33. Telecom | Amara Raja Energy & Mobility Limited
    - Amara Raja's telecom portfolio lists AMARON SLEEK and AMARON VOLT VRLA families. ([amararajaeandm.com](https://www.amararajaeandm.com/Industrial/telecom))
34. Exide Industries Investor Presentation, Q4 FY26
    - Exide Industries' Q4 fiscal 2026 issuer presentation includes telecom within its industrial portfolio. ([nsearchives.nseindia.com](https://nsearchives.nseindia.com/corporate/EXIDEIND_05052026161448_sdSEInvestorPPt.pdf))
35. About Us | RELICELL
    - Greenvision's company page identifies RELICELL and telecommunications power supply among its battery applications. ([relicellbattery.com](https://www.relicellbattery.com/about-us/))
36. Telecom Battery Solutions | Pastiche Energy Solutions
    - Pastiche markets telecom lithium batteries with a commercial quotation route. ([pesl.co.in](https://pesl.co.in/telecom.php))
37. About Trontek
    - Trontek's official portfolio identifies telecom infrastructure among its battery applications without settling a named current model. ([trontek.com](https://trontek.com/about-us/))
38. Livguard Solar Retail Catalogue 2023
    - Livguard's 2023 solar catalog identifies telecom towers among its battery applications. ([livguard.com](https://www.livguard.com/static-assets/solar-all-products-brochure.pdf))
39. Energy Storage Solutions | Okaya Power
    - Okaya presents telecom integrated-power offerings with a VRLA configuration and distinguishes separately supplied lithium batteries. ([okaya.in](https://www.okaya.in/energy-storage-solution))
40. Digitalizing Site Power for Green Connectivity and Computing | Huawei
    - Huawei describes 5G Power and BoostLi storage within coordinated telecom site-energy management. ([huawei.com](https://www.huawei.com/en/huaweitech/publication/xx.xx/digitalizing-site-power-green-connectivity-computing))
41. Telecom Energy | ZTE
    - ZTE's telecom-energy portfolio includes battery-equipped site and storage solutions. ([zte.com.cn](https://www.zte.com.cn/global/solutions_latest/smart_energy/telecom_energy.html))
42. Li-ion Battery Backup Systems | Delta
    - Delta lists lithium battery-backup products under telecom infrastructure. ([deltaww.com](https://www.deltaww.com/en-US/products/telecom-battery-systems))
43. Eltek IPack65 | Delta Americas
    - Delta Americas markets Eltek IPack65 with telecom battery-backup options. ([delta-americas.com](https://www.delta-americas.com/en-US/products/eltek/ipack65-xx.xx-vdc))
44. Telecom | CEGASA
    - CEGASA advertises tailored and all-in-one battery-based telecom-energy solutions. ([cegasa.com](https://www.cegasa.com/en/lithium/sectors/telecom))
45. EXERON T | International Power Supply
    - EXERON T is marketed for hybrid and off-grid telecom sites; the platform listing does not settle battery inclusion in each package. ([ips-group.net](https://ips-group.net/products/telecom-outdoor/exeron-t))

46. Telecom Solutions | Teksan
    · Teksan's Telecom Solutions portfolio includes battery groups within telecom-power configurations. ([teksan.com](https://www.teksan.com/en/telecom-solutions/))
47. Innovations | Ascot
    · Ascot describes hybrid power systems including batteries for telecom operators. ([ascotinternational.com](https://ascotinternational.com/innovations))
48. ET-LI-ION Battery | Eternity Technologies
    · Eternity's ET-LI-ION listing identifies telecom power and backup applications. ([eternitytechnologies.com](https://eternitytechnologies.com/product/lithium/et-li-ion-battery/))
49. Telecom | Green Cubes Technology
    · Green Cubes advertises complete stationary power solutions for telecom installations. ([greencubes.com](https://greencubes.com/industries/telecom/))
50. Power Storage Solutions SCLFP48100-3U Product Document
    · Power Storage Solutions' own-branded SCLFP document identifies remote or outdoor telecom backup as an application. ([pwrstoragesolutions.com](https://pwrstoragesolutions.com/cdn/shop/files/Power_Storage_Solutions_SCLFP48100_3U_Specification_Sheet--uuid.pdf?v=xx.xx))
51. Which Battery Backup Is Best for 5G Small Cell Node Equipment? | Inventus Power
    · Inventus' supplier publication connects lithium pack backup to small-cell network equipment, without a current named-product commitment. ([news.inventuspower.com](https://news.inventuspower.com/blog/which-battery-backup-is-best-for-5g-small-cell-node-equipment))
52. Lightweight AGM Batteries | Concorde Battery
    · Concorde identifies telecommunications among applications of its sealed lead-acid battery lines. ([concordebattery.com](https://concordebattery.com/about/lightweight-agm))
53. BMZ INDUSTRIÆ Industrial and Commercial Storage Brochure
    · BMZ's INDUSTRIÆ brochure includes remote telecom transmission equipment among backup applications. ([bmz-group.com](https://bmz-group.com/media/attachments/2023/xx.xx/xx.xx/industriae_bmz__en-on-line_2023.pdf))
54. MIDAC Integrated Solutions Catalog, January 2022
    · MIDAC's January 2022 Integrated Solutions catalog identifies LFPblock telecom applications. ([midacbatteries.com](https://midacbatteries.com/wp-content/uploads/2025/xx.xx/1_CAT-INTEGRATED-SOLUTIONS_MOTIVE_EN_IT_DE_FR-01_2022-xx.xx-0967_21.pdf))
55. Telecommunication Energy Storage Battery | Ritar
    · Ritar maintains an official telecommunication battery and storage offering. ([ritarpower.com](https://www.ritarpower.com/telecommunication-battery.html))
56. Backup Power Batteries | KIJO
    · KIJO markets backup batteries for telecom and identifies its front-terminal category for that application. ([kijo-battery.com](https://www.kijo-battery.com/products/backup-power-battery/))
57. Telecom | NPP Power India
    · NPP's Indian-facing telecom catalog lists FT and lithium battery series. ([npppower.co.in](https://npppower.co.in/category/telecom/))
58. Great Power Company Introduction
    · Great Power's company catalog includes telecom backup battery-pack applications. ([greatpower.net](https://www.greatpower.net/vancheerfile/files/2026/xx.xx/xx.xx.pdf))
59. About Us | HRESYS
    · HRESYS identifies communication-backup products, including named LFP and outdoor telecom families. ([hresys.com](https://www.hresys.com/about-us/))
60. Battery Solutions for Diverse Applications | Aokly
    · Aokly's official solutions page identifies telecom among its battery application sectors. ([aokly-battery.com](https://www.aokly-battery.com/category/solution/))

61. Telecom | COSMX
    - CosMX maintains a telecom-pack category; the inspected content does not settle a comparable named commercial package. ([cosmx.com](https://www.cosmx.com/html/en/html/pestorageapp/PACK-APP/telecom/))
62. Sunwoda Energy IDC Li-ion Battery Power Solution
    - Sunwoda's manufacturer brochure includes a Telecom BTS Backup Power Solution. ([sunwodaenergy.com](https://www.sunwodaenergy.com/static/upload/file/xx.xx/xx.xx.pdf))
63. BSB Power LSG Series Gel Technology
    - The BSB-authored LSG gel brochure identifies outdoor telecom applications. ([tethysco.com](https://tethysco.com/wp-content/uploads/xx.xx/xx.xx/BSB-LSG.pdf))
64. Pylon Technologies ESG Report 2022
    - Pylontech's 2022 company disclosure describes telecom-backup activity. ([pylonwebs3.s3.amazonaws.com](https://pylonwebs3.s3.amazonaws.com/upload/2024/xx.xx/xx.xx/Pylontech%20ESG%20Report%202022_20240902110633A210.pdf))
65. Product Catalog | TOPBAND JAPAN
    - Topband's Japanese product catalog identifies a base-station BMS category, not an established complete telecom battery package. ([topband.jp](https://www.topband.jp/products.html))
66. Li-ion Battery Solution for Telecom Base Station | Samsung SDI
    - Samsung SDI's official brochure identifies a lithium battery solution for telecom base stations. ([samsungsdi.com](https://samsungsdi.com/upload/ess_brochure/ESS%20for%20BTS.pdf))
67. Industrial Battery Catalog | Sebang Global Battery
    - Sebang's industrial-battery catalog includes communication equipment among applications. ([gbattery.com](https://www.gbattery.com/files/bbs_kresources/c4f2a7a63a20d015e830b546d1c9fba0.pdf))
68. Telecom | Etica Battery Inc.
    - Etica markets battery-energy-storage systems for telecom infrastructure. ([etica.tw](https://etica.tw/industrial-manufacturing-xx.xx/))
69. Lithium Battery Series for Telecom | Kung Long Batteries
    - Kung Long's lithium telecom category describes batteries for communication applications without settling individual model availability. ([kunglong.com](https://www.kunglong.com/solution-detail/lithium-battery-series-for-telecom/lead-acid-battery/))
70. Rahimafrooz Accumulators Ltd. | Rahimafrooz Bangladesh
    - Rahimafrooz identifies its accumulators business as producing and marketing industrial batteries for telecommunications. ([rahimafrooz.com](https://www.rahimafrooz.com/project/ral/))
71. VRLA Batteries | Osaka Batteries
    - Osaka's front-terminal VRLA portfolio identifies telecom and microwave-relay applications. ([osaka.com.pk](https://www.osaka.com.pk/technology/vrla-batteries/))
72. Telecom Battery | Vestel Mobility
    - Vestel Mobility catalogs a named Telecom Battery and a quotation route. ([vestelmobility.com](https://vestelmobility.com/products/battery-solutions/telekom-battery-products/telecom-battery))
73. Lithium-ion Batteries | Mutlu Akü
    - Mutlu's lithium portfolio identifies project-specific batteries and telecom-station applications. ([mutlu.com.tr](https://www.mutlu.com.tr/lityum-iyon-akuler))
74. Pack & Solution | Highstar
    - Highstar markets a Sodium-ion Battery System for Telecom within its pack portfolio. ([en.highstar.com](https://en.highstar.com/packsolution))
75. NFPP Sodium-Ion Telecom Battery System | Zynavex
    - Zynavex identifies ZXTS48100 as a sodium-ion telecom product. ([zynavex.com](https://zynavex.com/products/nfpp/telecom/))

76. Telecom Battery | XGW Tech
   · XGW Tech markets a named telecom battery proposition for base stations and communication cabinets. ([xgwtech.com](https://www.xgwtech.com/products/battery-ess/telecom-battery-48v.html))
77. Precision Power Products | Precision Group
   · Precision's portfolio includes infrastructure batteries and customer-premises backup categories. ([goprecisiongroup.com](https://goprecisiongroup.com/precision-power-products/))
78. Distributed Power Africa Trial on Tesla Powerwall | Econet
   · Econet describes Distributed Power Africa's telecom-tower Tesla Powerwall trial and planned deployment, not confirmed continuing deliveries. ([econetafrica.com](https://www.econetafrica.com/news/dpa-trial-on-tesla-powerwall-a-huge-success))

21.5. Benchmarking Analysis, 2025

A defensible benchmark compares the same network application, supplied integration level, acceptance boundary, and contractual obligation. ▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ An equipment buyer should specify which level is required before evaluating breadth; an integrator may prefer separate sourcing where it can retain finished-product responsibility.

▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪ ▪▪▪ KG's NetCologne case identifies battery-equipped systems and separately allocated installation and maintenance roles. These examples challenge the assumption that either direct manufacture or a single equipment order necessarily consolidates every lifecycle handoff.

Contract specificity is an observable capability distinction. HORIEN Salt Battery Solutions expressly makes maintenance and repair dependent on the signed contract. ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪

Specialist technology benchmarking remains commercial, not experimental. Shoto's reported sodium-ion application experience is different evidence from Highstar's catalog offering or Zynavex's named product document. ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪ ▪▪ ▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪ ▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

[illegible] A continuity-only agreement avoids unsupported secondary-use commitments. Moura's stationary-services page also advertises battery leasing, but an advertised ownership option is not an executed telecom lease or proof of a particular allocation of replacement funding.

Broader power and battery portfolios should not receive an assumed telecom-system score. Eaton's DV2-3G record establishes a telecom battery-cabinet proposition without settling supplied batteries. [illegible]

Publication period matters when assessing continuity. [illegible] A buyer relying on them should request the current model, accountable seller, warranty, and delivery undertaking before replacement procurement.

Current participation and seller attribution remain material for several established or regional names. Canbat Technologies Inc., Starmax Batteries, ASPİLSAN Enerji, Enerdzhi Treyd, Taiwan Truewin Technology Co., Ltd., and PT Century Batteries Indonesia require resolved current telecom deliverables and selling responsibilities before being treated as contract-ready substitutes. [illegible]

[redacted] For Solutum de México, Interberg, RITMA, De Luna Lithium Battery, ABM Limited, Métrica, Power Box Energy Guatemala, Clarios, Off Grid Tecnologia, CABONORTE S.A., Power Place Cia Ltda, SEGURIA, and Riello UPS, the unresolved comparison is whether the proposed transaction supplies the required storage equipment, integration, and support together or leaves material obligations outside the order. This prevents assuming equivalence with a documented battery-bank or project-service proposal; it does not establish absence of activity.

At the Middle Eastern supply boundary, Phoenix Hi-Tech, Saba Battery, Jubaili Bros, PowiDian Energy, Nian Battery Khavaran, and Oman Solar Systems require confirmation of a current battery-inclusive telecom offering, responsible seller, and continuing support. Oman Solar Systems' historical project list documents a battery-equipped telecom reference, but cannot settle a new contract. [redacted]

For SIMGUN GLOBAL INTERNATIONAL PTY LTD, KGANG ENERGY SOLUTIONS, ROSPIK Technology Group, Basic Association of Technology Projects Company Limited, Innova-Tech Energy Solutions Ltd, Mutlular Endüstri, REVOV, WATT Renewable Corporation, El-Nisr, Bergerat Monnoyeur Algérie, Anglobal, and Biswal Limited, named package contents, operating seller, and contract-specific telecom fulfillment remain unresolved. RT Systems' inspected brochure establishes telecom-power adjacency rather than the complete backup-storage obligation under comparison; M-P Infrastructure's power portfolio also needs a telecom-specific storage bridge. [redacted]

Component-versus-pack and brand-versus-seller questions remain unresolved for Inverted Energy, Hangzhou LIAO Technology Co., Ltd., Tenpower Lithium Co., Ltd., IBT, iBAN POWER, Ubatt Energy Co., Ltd., Sunpower Technologies Sdn Bhd, PINACO, ChargeX, Herewin, and VoltCrave Power. A current named telecom deliverable, legal supplier, applicable commercial rights, and warranty administrator are needed before these identities can be placed beside documented module or system offers. [redacted]

Sources & Evidence

1. Vertiv NetSure IPE Series
   - The named storage-integrated offering supports comparison of system obligations separately from battery supply.
2. Sales & Services | EnerSys
   - EnerSys separately advertises installation, maintenance, and recycling services for communications-related customers. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))

3. Products | FZ Energy Storage Systems Sdn Bhd
   - The named sodium-nickel chloride proposition is distinct from sodium-ion and does not establish substitution equivalence.
4. Energy Backup | Phinergy
   - Advertised replenishment introduces a continuing fulfillment question beyond the equipment transaction.
5. Shuangdeng Group Co., Ltd. - Prospectus
   - Reported application experience is distinct from a catalog-only proposition and does not establish transferable acceptance.
6. Telecom Batteries | Critical Power Solutions by Exicom
   - The named range establishes a marketed product, not battery-specific long-term service coverage.
7. Telecommunications Backup Cell | ZTT
   - The telecom cell is a component-level comparison, distinct from a complete-system obligation.
8. Serviços Estacionários | Baterias Moura
   - The services page also advertises battery leasing; actual inclusion and telecom-contract allocation require confirmation.
9. Soluciones para Telecomunicaciones | Respaldo de Red
   - The advertised local project role does not establish an identical service package elsewhere.
10. Telecom and TowerCos | Pixii
    - Pixii advertises PowerShaper TC as combined telecom UPS and storage with potential secondary uses, not a grant of market rights. ([pixii.com](https://www.pixii.com/market/telecom/))
11. MicroTel - Electrostatic Energy Storage Solution | Emtel Energy
    - Supplier performance assertions do not independently establish operator acceptance or a matching contractual continuity commitment.
12. Cellnex successfully tests new renewable energy sources at its sites
    - Cellnex's November xx.xx 2022 record identifies a completed Phinergy pilot retained at a Spanish site while broader incorporation was considered, not a fleet rollout. ([cellnex.com](https://www.cellnex.com/fr-fr/news/cellnex-tests-new-renewable-energy-sources-sites/))
13. High-durability Nickel-Metal Hydride Batteries | FDK
    - The component catalog does not establish a complete telecom-system or field-service commitment.
14. Service - HORIEN Salt Battery Solutions
    - HORIEN advertises lifecycle support and explicitly conditions maintenance and repair on the signed contract. ([saltbattery.horien.com](https://saltbattery.horien.com/service/))
15. Applications | EVE Energy North America
    - The regional portfolio spans different supplied integration levels and does not settle one complete telecom package.
16. Telecommunications & 5G Network Backup Batteries | East Penn
    - The page advertises Deka services, maintenance, removal and recycling, and a North American distribution/support route.
17. Saft Evolion Batteries Help Ausonia Deliver Hybrid Power for Off-Grid Telecom Sites
    - The dated case establishes a historical supplier-integrator relationship, not current complete-system availability.
18. Banner Stand-by Bull SBG Gel Batteries
    - The February 2021 brochure supports period-specific product context rather than present delivery commitments.
19. Livguard Solar Retail Catalogue 2023
    - The 2023 catalog does not establish present model supply or contractual telecom support.
20. MIDAC Integrated Solutions Catalog, January 2022
    - The dated catalog establishes product context, not current model delivery or support.

21. Sunwoda Energy IDC Li-ion Battery Power Solution
    - The brochure establishes portfolio context, not present product succession or fulfillment.
22. BSB Power LSG Series Gel Technology
    - The distributor-hosted supplier document does not establish refreshed availability.
23. Pylon Technologies ESG Report 2022
    - The 2022 reporting period does not establish current telecom models or delivery commitments.
24. Li-ion Battery Solution for Telecom Base Station | Samsung SDI
    - The brochure's inspected content does not establish publication timing or present orderability.
25. Pack & Solution | Highstar
    - The catalog supports an advertised offering, not independent operator acceptance.
26. NFPP Sodium-Ion Telecom Battery System | Zynavex
    - The product page does not settle manufacturing, licensing, private-label relationships, or a transaction-specific legal seller.
27. Telecom Battery | XGW Tech
    - The offering does not establish relationships with other storage brands or allocate proposal-specific liability.
28. Sunstone Power Company Profile 2023
    - The dated profile does not establish unchanged current regional fulfillment.
29. BENNING POWER News, Q1 2024
    - BENNING's Q1 2024 NetCologne case identifies battery-equipped telecom systems and separately allocated installation and maintenance counterparties. ([benning.de](https://www.benning.de/files/benning/global_content/downloads/powernews_and_case_studies/2024/q1/10151956_17_PowerNews_Q1_2024_GB_r21_Web.pdf))
30. DV2-3G Metro Power Solutions Battery Cabinet | Eaton
    - Eaton's DV2-3G page identifies a telecom battery cabinet but does not settle batteries included in the sold package. ([eaton.com](https://www.eaton.com/us/en-us/catalog/dc-power-solutions/dv2-3g-metro-power-solutions-battery-.html))
31. Telecommunication Range | Schneider Electric USA
    - Schneider's inspected telecommunications DC-power range is marked discontinued. ([se.com](https://www.se.com/us/en/product-range/xx.xx-telecommunication/))
32. Stationary Batteries | TAB
    - TAB lists stationary battery families; the inspected catalog does not settle the exact current telecom package. ([tab.si](https://www.tab.si/tab-stationary-batteries/))
33. Industrial Battery Types | The Furukawa Battery Co., Ltd.
    - Furukawa maintains a stationary industrial-battery catalog; it does not establish a transaction-specific telecom commitment. ([corp.furukawadenchi.co.jp](https://corp.furukawadenchi.co.jp/ja/products/indust/syurui.html))
34. Teverola 1 and Teverola 2 | FAAM
    - FAAM's Teverola announcement includes telecom among target applications without establishing a named orderable telecom product. ([faam.com](https://faam.com/en/teverola-xx.xx-and-teverola-xx.xx/))
35. Industrial, Commercial and Marine Batteries | Balancell
    - Balancell's industrial and commercial battery portfolio does not settle a named telecom commitment. ([balancell.com](https://www.balancell.com/products))
36. FORTELION Battery System | Murata
    - Murata's FORTELION system brochure establishes a broader battery-system portfolio, not the required telecom-specific commitment. ([murata.com](https://www.murata.com/-/media/webrenewal/products/batteries/ess/pdf/energystoragesystem))
37. About Naion
    - Naion's company page describes sodium-ion storage in New Zealand without settling a marketed telecom package. ([naion.co.nz](https://www.naion.co.nz/about))

38. Telecommunications | Battery Lithium Chile

· Battery Lithium Chile's telecom category lists device-oriented battery products rather than an established base-station storage package. ([batterylithium.cl](https://batterylithium.cl/aplicaciones/telecomunicaciones/))

39. Coslight India Response on Sustainable Telecommunications, 2017

· Coslight India's regulator-hosted 2017 consultation response identifies historical telecom storage activity, not present group continuity. ([trai.gov.in](https://www.trai.gov.in/sites/default/files/2024-xx.xx/Coslight_India_05_04_2017.pdf))

40. Solar Battery | Chloride Exide

· Chloride Exide's named solar-battery offer does not establish telecom-infrastructure obligations or a verified Exide corporate relationship. ([chloridexide.com](https://www.chloridexide.com/product-page/xx.xx-solar-chloride-exide))

41. Oman Solar Systems Major Project References, 1990-2023

· Oman Solar Systems' historical project list includes a battery-equipped telecom reference, not a current package or support undertaking. ([omansolar.com](https://www.omansolar.com/wp-content/uploads/2024/xx.xx/OSS-Major-Project-Reference-List-Year-1990-2023.pdf))

42. MiniTec Group

· MiniTec identifies energy storage, autonomous telecom-site power, advisory services, and turnkey project delivery without a named complete storage product. ([minitecgroup.com](https://minitecgroup.com/group))

43. RT Systems Commercial Brochure 2026

· The inspected RT Systems brochure establishes telecom-power adjacency, not the complete backup-storage obligation under comparison. ([rtsystems.co.za](https://rtsystems.co.za/wp-content/uploads/2026/xx.xx/RT-2026-Brochure_WEB-xx.xx.pdf))

44. Power and Renewable Energy | M-P Infrastructure

· M-P Infrastructure describes broader power and storage activity without establishing a current battery-inclusive telecom package. ([mpiafrica.com](https://www.mpiafrica.com/services/power-and-renewable-energy))

22. Company Profiles

22.1. EnerSys

EnerSys offers an assembled lead-acid storage proposition alongside separately advertised lifecycle services. PowerSafe mSeries combines valve-regulated lead-acid batteries with integral racking and identifies telecommunications among its applications. ■■■■ ■■■■■ ■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■ ■■■■■ ■■■■■■■■■■ ■■ ■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■

■■■ ■■■■■■■ ■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ They also explain that product warranties vary by application, geography, and product type and generally cover workmanship and material defects within specified usage parameters. A product warranty therefore should not be treated as an undertaking to provide site attendance, uninterrupted telecommunications service, or battery retirement.

■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■ Buyers seeking fewer contractual handoffs can request a combined equipment-and-service proposal, provided the local counterparty, covered locations, replacement responsibilities, and retirement obligations are expressly included. Equipment-only procurement remains a defensible alternative where an existing integrator or maintenance provider can assume those responsibilities; it preserves supplier choice but requires explicit coordination between contracts.

Sources & Evidence

1. PowerSafe mSeries Batteries | EnerSys
   · EnerSys advertises PowerSafe mSeries VRLA batteries with integral racking for telecommunications applications. ([enersys.com](https://www.enersys.com/en/products/batteries/powersafe/powersafe-mseries/))
2. Sales & Services | EnerSys
   · EnerSys separately advertises installation, maintenance, and recycling services and identifies Communications Networks among its service categories. Inclusion in an equipment transaction remains a contractual question. ([enersys.com](https://www.enersys.com/en-gb/sales--services/))

3. EnerSys 2026 Proxy Statement and Annual Report
   - The fiscal 2026 filing describes direct and distributor routes, company-owned sales and service facilities, and independent representatives. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
   - Product warranties vary by application, geography, and product type and generally cover workmanship and material defects within specified usage parameters. ([s206.q4cdn.com](https://s206.q4cdn.com/xx.xx/files/doc_financials/2026/ar/b317caf6-56f8-42fa-bea1-bf685eb4132a.pdf))
   - Company verification: EnerSys's 2026 annual report establishes its current consolidated corporate identity and continuing Energy Systems business.
   - Company verification: The report identifies energy storage, power conversion, distribution and enclosures supplied to telecommunications and broadband customers.
   - Company verification: The consolidated reporting perimeter supports retaining EnerSys rather than separately representing its acquired operating brands.
4. Communications Network Power Solutions | EnerSys
   - Company verification: EnerSys publicly offers power and energy-storage solutions for communications networks.
   - Company verification: Its portfolio expressly covers central offices, macro cells, small cells and 5G network infrastructure.
5. EnerSys SEC filing - NorthStar and Alpha acquisition note
   - Company verification: The SEC filing records EnerSys's September xx.xx 2019 acquisition of NorthStar and December xx.xx 2018 acquisition of Alpha businesses.
   - Company verification: The filing identifies Alpha's broadband and telecom power-solution activities, supporting historical reporting-level consolidation.

22.2. Polarium

[redacted] Its telecom portfolio advertises modular Polarium Battery products, including a rack-format phosphate-cathode lithium-ion offering. The commercial proposition is an identifiable storage product, not an automatic transfer of responsibility for the surrounding power system.

Vertiv separately lists Polarium Batteries in its telecom lithium-battery catalog and advertises monitoring through the NetSure Control Unit. Powerbox Australia also identifies Polarium batteries in its telecommunications portfolio and offers local integration and support services. [redacted]

Polarium's August xx.xx 2026 announcement reaffirmed its telecom focus and identified production in Vietnam. [redacted]

Sources & Evidence

1. Telecom Lithium Batteries | Vertiv
   · Vertiv lists Polarium Batteries in its telecom lithium-battery catalog and advertises NetSure Control Unit monitoring, corroborating an identifiable downstream commercial route. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
   · Company verification: Vertiv independently lists Polarium Batteries in its telecom lithium-battery portfolio, corroborating Polarium's commercial channel participation.
2. Telecom & Network | Polarium
   · Polarium advertises modular telecom batteries and identifies a rack-format LFP offering. These are supplier product claims, not independently established operator acceptance. ([polarium.com](https://polarium.com/telecom/))
   · Company verification: Polarium markets Polarium Battery solutions for telecom infrastructure.
   · Company verification: Its telecom page includes a modular LFP battery offering for rack-based telecom environments.
3. Polarium Sharpens Strategic Focus After Year of Transformation
   · Polarium's August xx.xx 2026 announcement reaffirmed a telecom-power focus and identified production in Vietnam; it does not establish order-specific origin or delivery commitments. ([polarium.com](https://polarium.com/newsroom-articles/polarium-sharpens-strategic-focus-after-year-of-transformation/))
   · Company verification: Polarium's August xx.xx 2026 announcement confirms continuing operations and a sharpened focus on telecom power and distributed energy storage.
   · Company verification: The announcement describes its modular battery and software-enabled telecom business and identifies Stockholm headquarters and production in Vietnam.
   · Company verification: Earlier South African and Mexican manufacturing announcements should not be treated as confirmation of an unchanged current production footprint.
4. Telecommunications | Powerbox Australia
   · Powerbox Australia identifies Polarium batteries in its telecommunications portfolio and advertises integration, on-site installation, and ongoing support services. These establish an advertised regional route, not a model-specific fulfillment contract. ([powerbox.com.au](https://www.powerbox.com.au/pages/industries/telecommunications))
   · Company verification: Powerbox independently identifies Polarium batteries in its Australian telecommunications portfolio, establishing a regional channel listing.
5. Polarium Energy Solutions AB hanterar brister i batterisystem - Elsäkerhetsverket
   · Company verification: The Swedish electrical-safety authority's August xx.xx 2026 record identifies Polarium Energy Solutions AB as a manufacturer and identifies the Polarium Energy Solutions brand.
   · Company verification: The record concerns named household battery systems; it does not establish a withdrawal of Polarium's telecom portfolio.
6. Polarium Starts Production in New Factory in South Africa
   · Company verification: Polarium announced the start of production at a Cape Town factory and described its ATC Africa partnership.
   · Company verification: The dated announcement identifies Swedish headquarters, manufacturing in Mexico and Vietnam, and international sales presence.

22.3. Shoto

Shoto adds company-reported sodium-ion commercialization experience to the telecom supplier comparison. ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪ ▪ ▪▪▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪ ▪▪▪ ▪▪ ▪▪▪▪▪▪ ▪▪▪▪▪▪▪▪ ▪▪▪▪▪▪▪ ▪▪▪ ▪▪▪▪▪▪▪ These are

issuer-reported application references, not independent confirmation of performance, universal operator acceptance, or availability through every group subsidiary.

■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■ ■■ ■ ■■■■■■■■■ ■■■■■■ ■■■■■ ■■■■■■■■■■■ ■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■ ■ ■■■■■■■ ■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■ ■■■■■■■ ■■■■■■ Reported deployment experience justifies examining the proposition, but does not remove these purchasing conditions. A documented conventional-battery alternative may be preferable where the operator has not accepted the sodium-ion offering or where local fulfillment cannot be committed.

Sources & Evidence

1. Shuangdeng Group Co., Ltd. - Prospectus
   - The issuer reports a sodium-ion telecom battery-system launch in 2023 and use in Anhui, Qinghai, Tibet, and Gansu. The passage is the company's own business disclosure, not an independent deployment assessment. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
   - The prospectus identifies SHOTO-named subsidiaries within Shuangdeng Group's corporate structure. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2025/xx.xx/xx.xx.pdf))
2. Shuangdeng Group Co., Ltd. - Interim Report 2026
   - The first-half 2026 business review retains telecom energy storage as a business pillar while emphasizing AIDC infrastructure and reporting selective reduction of lower-margin telecom orders. ([www1.hkexnews.hk](https://www1.hkexnews.hk/listedco/listconews/sehk/2026/xx.xx/xx.xx.pdf))
   - Company verification: Shuangdeng Group Co., Ltd.'s interim report establishes continuing consolidated operations for January through June 2026.
   - Company verification: The issuer reports realized telecom energy-storage revenue and identifies telecom storage as a continuing business pillar.
   - Company verification: The report describes a changing business mix toward AIDC infrastructure; telecom activity should not be equated with the entire group's revenue.
3. Overview | Shoto
   - Company verification: Shoto's official group overview expressly offers energy-storage solutions for the telecom industry.
   - Company verification: The overview describes a group business supplying communication lithium-ion batteries and systems.
4. Contact Us - China Shoto, Green Energy Storage Expert
   - Company verification: The official Shoto store contact page identifies Shuangdeng Group Co., Ltd. and Chinese battery production locations.
   - Company verification: The page provides an explicit corporate-to-store identity statement supporting alias control.
5. □□□□□□□ □□□ □□□□□□□ □□□□□ □□□□□ □□□□□ - □□□□□□ □□□□□ □□□□ □□□□ □ UPS □□□ □ □□□□□ ...
   - Company verification: Nian Battery Khavaran publicly describes a battery-technology licensing relationship with Shoto, identified as Shuangdeng Group.

22.4. Vertiv

[redacted] Its product page also identifies US customer-service and technical-support contacts for DC power systems and outdoor enclosures. These disclosures establish an offering and a support route, not the inclusion of every service in an equipment order.

[redacted] The two catalog disclosures do not establish that every NetSure IPE configuration uses Polarium, or that any independently purchased replacement is accepted. For Replacement and Retrofit, buyers should obtain confirmation of the exact supported battery offering, controller access, and responsibility for complete-system support before changing suppliers.

A Vertiv system proposal can provide a commercial route for coordinating storage, power conversion, and control commitments. [redacted] Separate battery sourcing preserves purchasing flexibility but leaves the buyer or another integrator responsible for obtaining the required acceptance and support commitments; a regional product listing alone does not settle delivery or service coverage elsewhere.

Sources & Evidence

1. Vertiv NetSure IPE Series
   - Vertiv advertises NetSure IPE for low-power telecom base stations with lithium battery backup and outdoor installation options. ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))
   - The product page identifies US customer-service and technical-support contacts for DC power systems and outdoor enclosures; it does not define transaction-specific service inclusion. ([vertiv.com](https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/vertiv-netsure-ipe-series/))
2. Telecom Lithium Batteries | Vertiv
   - Vertiv's telecom battery portfolio identifies Polarium Batteries and remote monitoring through the NetSure Control Unit; it does not establish the battery supplied in every NetSure IPE configuration. ([vertiv.com](https://www.vertiv.com/en-latam/products-catalog/critical-power/dc-power-systems/telecom-lithium-batteries/))
   - Company verification: Vertiv markets lithium batteries specifically for telecom energy storage.
   - Company verification: Its product table identifies Polarium Batteries, establishing a supplier/channel relationship.
3. Vertiv Solutions for Efficient Edge Network and 5G Deployment
   - Company verification: Vertiv's telecom portfolio identifies NetSure IPE outdoor power systems available with dedicated lithium-ion battery backup.
   - Company verification: The page establishes a telecom system-integration role in addition to battery resale.

22.5. Exicom

Exicom markets a named phosphate-cathode lithium-ion battery range for telecom base stations, edge sites, and FTTX applications. Its catalog identifies EXTB xx.xx EXTB xx.xx and EXTB xx.xx. ■■■ ■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■ ■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■■ ■■■■■■■ ■■ ■■■■■■■■ ■■■■■ ■■ ■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■

■■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ Exicom's published support page includes charger-focused installation, warranty, and maintenance commitments; these should not be transferred automatically to the telecom battery range. Before accepting an extended customer obligation, a buyer or integrator should obtain the exact battery warranty, replacement counterparty, local service coverage, and allocation of upstream component liability.

Battery-only procurement can preserve the buyer's choice of power-system provider, but it requires separate integration accountability. A broader Exicom proposal is preferable only if the named equipment, applicable buyer acceptance, and telecom-specific support obligations are included. ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■ ■■■■■■■■■■■■■

Sources & Evidence

1. Telecom Batteries | Critical Power Solutions by Exicom
   - Exicom markets LFP batteries for telecom base stations, edge sites, and FTTX and names EXTB xx.xx EXTB xx.xx and EXTB xx.xx. The catalog establishes a marketed range, not an award. ([exicom.com](https://www.exicom.com/product-family/telecom-batteries))
   - Company verification: Exicom markets LFP lithium battery backup for telecom base stations, edge sites and FTTX deployments.
   - Company verification: Its official product family lists EXTB xx.xx EXTB xx.xx and EXTB xx.xx telecom batteries.
2. EXTB 10048 | Telecom Batteries by Exicom
   - The EXTB xx.xx product page advertises a rack-oriented telecom battery with integrated battery management and remote-status visibility. ([exicom.com](https://www.exicom.com/products/extb-xx.xx))
3. Support | EV Charging & Critical Power | Exicom
   - Exicom's support page includes charger installation, charger-service processes, and maintenance-contract commitments. Their charger-specific context does not establish the corresponding telecom-battery obligations. ([exicom.com](https://www.exicom.com/support))
4. Exicom Tele-Systems Limited - Annual Report 2024-25
   - Company verification: The mandatory filing identifies Exicom Tele-Systems Limited and its consolidated businesses.
   - Company verification: The report describes lithium-ion battery banks for telecom, deployments at telecom towers, overseas orders and an advance purchase order from BharatNet system integrators.
   - Company verification: The filing identifies NextWave Communications Private Limited as the majority shareholder at March xx.xx 2025.
   - Company verification: Reported critical-power orders and revenue also include nonstorage equipment and cannot be adopted as telecom-storage-only sales.

22.6. HBL Engineering Limited

[redacted] Despite pack-assembly capability, HBL cited extended customer warranties without matching cell-supplier coverage as a reason for non-entry.

This illustrates a commercial liability barrier, not a lack of assembly capability. Investors should not treat an assembly asset as a committed telecom offering. [redacted]

Sources & Evidence

1. HBL Engineering Limited - Annual Report 2024-25
   - Fiscal 2024-xx.xx disclosure describes telecom VRLA, planned reductions, and lithium non-entry despite assembly capability, citing unmatched cell-supplier warranty coverage. ([hbl.in](https://www.hbl.in/reports/hblannualreport2025.pdf))
2. HBL Engineering Limited - Annual Report 2024-25
   - Company verification: HBL's FY2024-xx.xx annual report identifies HBL Engineering Limited, formerly HBL Power Systems Limited.
   - Company verification: The report establishes an Indian telecom 2V-VRLA battery business and plans to reduce related capacity.
   - Company verification: It explicitly states that HBL was not participating in the telecom lithium opportunity at that time.

22.7. ZTT

[redacted] Its product description also targets China Tower projects. That establishes a telecom-oriented component proposition; project targeting is not evidence of a particular purchase award.

[redacted] An operator seeking a complete storage commitment should require a separately documented finished offering and accountable supplying entity rather than treat the cell catalog as equivalent. The named selling entity and allocation of responsibility should be established in the proposal before commitment.

Sources & Evidence

1. Telecommunications Backup Cell | ZTT
   · ZTT advertises a Telecommunications backup cell for communication base stations and targets China Tower projects; targeting does not establish an award. ([zttgroup.com](https://www.zttgroup.com/product/telecommunications-backup-cell/))
2. Lithium Battery Cell Portfolio | ZTT
   · ZTT lists the telecom backup offering within its lithium-battery-cell portfolio, supporting a component-level purchasing distinction rather than a presumed finished-system commitment. ([zttgroup.com](https://www.zttgroup.com/product-category/new-energy/lithium-battery-cell/))
   · Company verification: ZTT's official product portfolio markets dedicated telecommunications backup cells for communication base stations.
   · Company verification: This source establishes a telecom-specific upstream offering, not complete current telecom pack/system sales.

22.8. Baterias Moura

Baterias Moura combines a stationary telecom battery portfolio with an advertised regional lifecycle route. ■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■ ■■■■ ■■■ ■■■■■■■ ■■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■ ■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■ This supports a regional purchasing comparison, not a claim that identical equipment and support packages are available throughout South America.

■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■■ It describes nationwide Brazilian service coverage and issuance of destination documentation for retired batteries. For a Brazilian buyer, these are relevant capabilities to request in a combined proposal, particularly when comparing them with imported equipment whose local service and retirement responsibilities must be arranged separately.

The regional distinction matters: distribution presence outside Brazil does not establish that the Brazilian service undertaking transfers unchanged. Buyers should identify the local seller, eligible battery offering, collection counterparty, warranty scope, and destination documentation before relying on consolidated fulfillment. ■ ■■■■■ ■■■■■■■■■■■■■■■■■■■■■■ ■■■■■ ■■■ ■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■ ■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■■■■ ■■■■■ ■■ ■■■■■■■■ ■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■■■

Sources & Evidence

1. Baterias Estacionárias | Moura
   · Moura's stationary portfolio identifies telecom and telephone-exchange applications, VRLA and lithium product lines, distribution/service units, and Programa Ambiental Moura reverse logistics. ([moura.com.br](https://www.moura.com.br/produtos/estacionarias?type=moura-vrla))
   · Company verification: Baterias Moura markets stationary battery solutions for telecom and telephone exchanges.
   · Company verification: Its portfolio includes Moura VRLA and lithium product lines and describes South American distribution.

2. Serviços Estacionários | Baterias Moura
   - Moura advertises stationary-battery installation, monitoring, replacement-support resources, reverse logistics, and destination documentation, with service coverage described for Brazil. ([moura.com.br](https://www.moura.com.br/servicos-estacionarios))
   - The advertised service route supports a conditional consolidated-fulfillment comparison; inclusion and eligibility require confirmation in the buyer's agreement. ([moura.com.br](https://www.moura.com.br/servicos-estacionarios))
3. Sobre Nós | Baterias Moura
   - Moura's corporate page identifies distribution in Argentina, Brazil, and Uruguay; this does not establish identical telecom-specific service packages in those countries. ([moura.com.br](https://www.moura.com.br/sobre-nos))
   - Company verification: Moura's official corporate page uses the Baterias Moura and Grupo Moura identities.
   - Company verification: It identifies distribution across Brazil, Argentina and Uruguay.

22.9. Precision Group

[redacted] Named offerings include Li-xx.xx and Li-xx.xx Micro UPS products. The Li-xx.xx ordering guide separately lists complete units, battery packs, and power supplies, creating a component-specific replacement route rather than requiring every replacement purchase to encompass the complete backup unit.

A July xx.xx 2026 product update advertises a five-year replacement warranty covering the battery and power supply in residential PP36L and PP75L systems, alongside local representatives throughout the United States. These are relevant commercial support commitments, but a replacement warranty should not be interpreted as an included customer-premises service visit. [redacted]

For a fiber operator, the practical choice is between managing replacement within its own service relationship and assigning defined responsibilities to the subscriber. Before adopting either route, it should establish supported premises equipment and who funds and supplies replacements. [redacted]

Sources & Evidence

1. How to buy a phone modem battery case for your Xfinity Voice service
   - Xfinity explicitly conditions premises voice backup on network availability and warns that network failures can prevent calls. This supports the bounded local-versus-network continuity interpretation, not Precision-specific eligibility. ([xfinity.com](https://www.xfinity.com/support/articles/getting-a-new-battery))
2. Micro UPS DC Battery Backups | Precision Group
   - Precision Group markets Micro UPS solutions for FTTH, FTTx, and FTTB deployments and lists Li-xx.xx and Li-xx.xx products. ([goprecisiongroup.com](https://goprecisiongroup.com/product-category/micro-ups/))

3. Li-36 Micro UPS | Uninterrupted DC Power
   - The Li-xx.xx ordering guide separately lists a complete Micro UPS, a battery-pack-only item, and a power-supply-only item, supporting a component-specific purchasing interpretation. ([goprecisiongroup.com](https://goprecisiongroup.com/product/li-xx.xx-micro-ups-12v-36w-indoor-pp36l/))
4. PP36L and PP75L Micro UPS Version Updates: The Next-Generation Battery Backup
   - The July xx.xx 2026 update advertises a five-year replacement warranty for the battery and power supply in residential PP36L and PP75L systems. ([goprecisiongroup.com](https://goprecisiongroup.com/precision-power/pp36l-and-pp75l-micro-ups-version-updates-the-next-generation-battery-backup/))
   - The same notice advertises local representatives throughout the United States; it does not specify an included field-service visit. ([goprecisiongroup.com](https://goprecisiongroup.com/precision-power/pp36l-and-pp75l-micro-ups-version-updates-the-next-generation-battery-backup/))
5. Precision Power Products - Precision Group
   - Company verification: Precision Group's official Precision Power catalog lists LFP rack-mount batteries and telecom batteries.
   - Company verification: The catalog includes central-office and cabinet batteries, establishing an infrastructure offering beyond customer-premises backup.

22.10. Tempel Group

Tempel Group's Argentine telecom portfolio combines Kaise AGM batteries, phosphate-cathode lithium-ion offerings, and UPS products for radio sites, network nodes, and technical rooms. ■■ ■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ These commitments distinguish a regional project-delivery proposition from an equipment-only import route, but advertised stock does not establish reservation of a particular product for a customer's schedule.

■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ Its warranty and return channel describes direct support for products under its own brand and coordination of requests with partners. Buyers consequently need to distinguish Tempel's own obligations from those retained by an equipment manufacturer or another service provider.

For an Argentine operator coordinating replacements across distributed sites, a Tempel project agreement could reduce separate procurement and service handoffs if it names the selling entity, covered sites, delivery commitments, warranty administrator, and maintenance scope. Equipment-only purchasing remains an alternative when the operator already controls these functions. ■■■■■■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■ ■■■■■■■■

Sources & Evidence

1. Soluciones para Telecomunicaciones | Respaldo de Red
   - Tempel's Argentine telecom portfolio lists Kaise AGM batteries, phosphate-cathode lithium-ion batteries, and UPS products for telecom applications. ([ar.tempelgrouplatam.com](https://ar.tempelgrouplatam.com/corporativo/telecomunicaciones/))
   - The page advertises local-stock provision, site replacement coordination, maintenance, and a return channel that distinguishes own-brand support from partner-request coordination. ([ar.tempelgrouplatam.com](https://ar.tempelgrouplatam.com/corporativo/telecomunicaciones/))
   - Company verification: Tempel Group's Argentine telecom portfolio lists Kaise AGM and lithium batteries for radio sites, network nodes and remote sites.
   - Company verification: The page describes local-stock supply and integrated project services for telecom networks.
2. Preguntas Frecuentes (FAQ) | Tempel Group Argentina
   - Tempel's Argentine FAQ includes telecommunications among project sectors and advertises turnkey equipment supply, installation, commissioning, training, and preventive and corrective maintenance. ([ar.tempelgrouplatam.com](https://ar.tempelgrouplatam.com/faq/))
   - These advertised services support a conditional project-consolidation option; the page does not establish a particular customer's contracted package. ([ar.tempelgrouplatam.com](https://ar.tempelgrouplatam.com/faq/))
   - Company verification: Tempel Group's Argentine business page describes turnkey projects combining supply and its own engineering services.
   - Company verification: Telecommunications is expressly included among the company's served commercial sectors.

22.11. Pixii AS

Pixii AS markets PowerShaper TC as a combined telecom uninterruptible power supply and battery energy-storage system. Its proposition extends beyond continuity to advertised electricity-cost management and potential grid services. ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■ ■■ ■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■ ■■■■■■■■ ■■ ■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■

Deutsche Telekom's April xx.xx 2024 announcement names Pixii alongside INTILION as partners in PASM's storage project at Münster. ■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■ ■■■■ ■■■ ■■■■■■■■ ■ ■■■■■■■■■■■■ ■■ ■■■■■■■■ ■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■■■■■■

For an operator or tower company evaluating multipurpose storage, hardware functionality and participation rights are separate purchasing questions. In Finland, Fingrid requires a reserve-market agreement and permits service providers to handle commercial functions. ■ ■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■■ ■■■■ ■■■■ ■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■ ■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■

Sources & Evidence

1. Reserve Markets | Fingrid
   · Fingrid requires a valid reserve-market agreement for reserve providers and permits use of service providers for commercial functions. These Finnish requirements demonstrate an access condition separate from storage functionality. ([fingrid.fi](https://www.fingrid.fi/en/electricity-market/reserves/reserve-markets/))
2. Telecom and TowerCos | Pixii
   · Pixii markets PowerShaper TC as a combined telecom UPS and battery energy-storage system and advertises cost-management and potential grid-service uses. ([pixii.com](https://www.pixii.com/market/telecom/))
   · Pixii identifies collaboration with Enetek Power. The offering page establishes advertised functionality, not a buyer's electricity-market rights. ([pixii.com](https://www.pixii.com/market/telecom/))
   · Company verification: Pixii markets PowerShaper TC as a combined telecom backup-power and battery-energy-storage offering.
   · Company verification: The page identifies collaboration with Enetek Power and describes both as Eltek Holding companies.
   · Company verification: The page identifies Pixii AS as the commercial entity.
3. Markets | Enetek Power
   · Enetek Power describes Pixii as a sister company and states that it incorporates Pixii battery energy-storage systems into its commercial offerings, including telecom applications. ([enetek-power.com](https://www.enetek-power.com/markets/))
4. Pixii welcomes Per Hove as Chairman of the Board
   · Pixii's June xx.xx 2026 announcement states that Morten F. Angelil remains majority owner through Eltek Holding; it does not identify Delta Electronics ownership. ([pixii.com](https://www.pixii.com/pixii-welcomes-per-hove-as-chairman-of-the-board/))
   · Company verification: Pixii's June xx.xx 2026 announcement identifies Morten F. Angelil as its majority owner through Eltek Holding.
   · Company verification: This supplies a dated ownership statement; it does not identify Pixii as a Delta Electronics subsidiary.
5. Deutsche Telekom - Battery storage for renewable energy, April 26, 2024
   · Deutsche Telekom's April xx.xx 2024 announcement identifies Pixii and INTILION as PASM partners for storage integrated at Münster on April xx.xx 2024. It does not identify PowerShaper TC. ([telekom.com](https://www.telekom.com/de/newsroom/aktuelles/medieninformationen/2024/xx.xx/batteriegrossspeicher-fuer-erneuerbare-energien))
6. Pixii PowerShaper TC ID, Hybrid, LFP - November 12, 2024
   · Company verification: The November xx.xx 2024 PowerShaper TC brochure describes an integrated telecom UPS and battery-energy-storage product.
   · Company verification: The named product is presented for telecom-site applications rather than only general-purpose power conversion.

22.12. IPT PowerTech

[redacted] IFC describes IPT as an energy systems integrator that sources, operates, and maintains energy solutions for network operators and tower companies in the Middle East and Africa. Its relevance therefore extends beyond selling equipment to managing the continuing power relationship.

[redacted] On March xx.xx 2026, IFC announced financing to support solar- and battery-based telecom power in Ethiopia, Liberia, and Sierra Leone. These

records support the service model and an expansion commitment, not a conclusion that every financed site upgrade has been completed or that advertised savings are independently established.

Where IPT holds the outsourced power agreement and sourcing authority, a battery vendor may need to sell through IPT rather than negotiate only with the network beneficiary. An operator considering that route should compare consolidated service responsibility with retaining direct equipment choice and maintenance control. ■■■■■■ ■■■■■■■■■■■■ ■■■■ ■■■■■■■■■ ■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■ ■■■ ■■■■■ ■■■■■■■ ■■■■■■■ ■■ ■■■ ■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■■■■■ ■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■

Sources & Evidence

1. IPT PowerTech - Project 49095, Environmental and Social Review Summary | IFC
   - IFC identifies IPT PowerTech as a telecom energy-service company and systems integrator sourcing, operating, and maintaining energy solutions for operators and tower companies in the Middle East and Africa. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
   - IFC names IPI Group Holding Limited as project company. The record does not establish the operating seller or guarantor for a particular country contract. ([disclosures.ifc.org](https://disclosures.ifc.org/project-detail/ESRS/xx.xx/ipt-powertech))
   - Company verification: IFC's disclosure identifies IPT PowerTech as a telecom-energy services company and energy systems integrator operating in the Middle East and Africa.
   - Company verification: The disclosure establishes operations in Lebanon and identifies IPI Group Holding Limited as the project company; it was updated February xx.xx 2026.
   - Company verification: IFC's disclosure, updated February xx.xx 2026, identifies IPI Group Holding Limited as the project company for IPT PowerTech.
   - Company verification: The record establishes a telecom-energy service and systems-integration business using sourced batteries; the retained IPT PowerTech identity maps to this group.
2. Energy Storage & Battery Systems | IPT PowerTech
   - IPT PowerTech markets E2S lithium iron phosphate storage for telecom applications and separately lists stationary batteries. ([iptpowertech.com](https://iptpowertech.com/solutions/energy-storage-battery-systems))
   - Company verification: IPT PowerTech publicly offers Energy Storage & Battery Systems for telecom infrastructure, including E2S lithium storage and stationary batteries.
   - Company verification: Its portfolio identifies LFP and VRLA commercial options.
3. IFC Supports IPT PowerTech to Deliver Clean Telecom Power Across Ethiopia, Liberia, and Sierra Leone
   - On March xx.xx 2026, IFC announced financing supporting telecom power modernization, operation, and maintenance using solar and battery systems in Ethiopia, Liberia, and Sierra Leone. This is not proof of completion at every supported site. ([ifc.org](https://www.ifc.org/en/pressroom/2026/ifc-supports-ipt-powertech-to-deliver-clean-telecom-power-across-ethiopia-liberia-))
4. T-ESCO for Telecom Networks in Liberia | IPT PowerTech
   - IPT's case study names Orange Liberia, dates the engagement to 2025, and describes T-ESCO deployment and performance-management responsibility. Its website uses IPT PowerTech Group branding. ([iptpowertech.com](https://iptpowertech.com/case-studies/t-esco-for-telecom-networks-in-liberia))
   - The described service relationship supports a conditional sourcing-counterparty inference; asset title, acceptance, replacement liabilities, and remedies require the applicable agreement. ([iptpowertech.com](https://iptpowertech.com/case-studies/t-esco-for-telecom-networks-in-liberia))

22.13. Emtel Energy

[redacted] This provides an identifiable proposition within Supercapacitor Storage. Emtel's group materials describe a partner and reseller relationship with Enercap Power Industries/Kilowatt Labs for supplying and supporting these solutions, while its product portfolio attributes manufacture to Enercap.

[redacted] MicroTel's longevity, safety, and maintenance claims remain supplier assertions; the offering page does not independently establish equivalent continuity outcomes, operator acceptance, or a matching contractual warranty. These limitations constrain substitution claims without removing Supercapacitor Storage from the study.

A telecom buyer assessing MicroTel should require the quotation to name the legal seller, manufacturer warranty obligations, included equipment, support territory, and service counterparty. The route may consolidate supply and integration when those obligations are accepted, but it also creates dependence on both reseller and manufacturer. [redacted]

Sources & Evidence

1. MicroTel - Electrostatic Energy Storage Solution | Emtel Energy
   - Emtel Energy markets MicroTel as supercapacitor-based storage for telecom networks, towers, and base stations and provides a quotation route. ([emtel.group](https://emtel.group/microtel/))
   - Longevity, safety, and maintenance statements on this page are supplier claims, not independent evidence of operator acceptance or contracted continuity outcomes. ([emtel.group](https://emtel.group/microtel/))
   - Company verification: Emtel Energy markets MicroTel supercapacitor-based storage for telecom networks, towers and base stations through an official quotation route.
2. Who We Are | Emtel Group of Companies
   - Emtel's group materials describe a partner and reseller relationship with Enercap Power Industries/Kilowatt Labs for supplying and supporting supercapacitor solutions, and identify Emtel Energy as the group's energy umbrella. ([emtel.group](https://emtel.group/who-we-are/))
   - Company verification: Emtel describes designing, supplying and supporting supercapacitor-based telecom solutions as a global partner and reseller of Enercap Power Industries/Kilowatt Labs.
3. Products of Emtel Energy | Electrostatic Energy Storage Solutions
   - Emtel Energy's product portfolio attributes manufacture of its storage range to Enercap and includes MicroTel, supporting separation of reseller and manufacturer responsibilities. ([emtel.group](https://emtel.group/products/))
4. Contact Us | Call, Email, Visit Us | Emtel Group
   - Company verification: Emtel's contact page identifies its UAE headquarters at Dubai Silicon Oasis.

22.14. Phinergy

[redacted]

■■■ ■■■■■■ ■■■■■■■■■■■■ The commercial distinction is a continuing replenishment obligation beyond equipment supply. A hardware warranty alone would not identify who restores the offering's energy availability after use.

Cellnex reported on November xx.xx 2022 that it had completed a Phinergy pilot at Ossa de Montiel, Spain, and retained the system on site while considering broader incorporation. ■■■■ ■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■ ■■■ ■ ■■■■■■■■■■ ■■■■■ ■■■■■■■ ■■ ■ ■■■■■■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■■■

A continuity buyer should secure an accountable replenishment route, service territory, response commitment, and monitoring rights before treating Phinergy's offering as a replacement option. ■■■■ ■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■■■■■■■■ ■■ ■■■ ■■■■■■■■■■■■ ■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■■ ■■■■■■ ■■■■■■■■■■■ The historical Cellnex relationship does not resolve these obligations for a new jurisdiction or contract.

Sources & Evidence

1. Energy Backup | Phinergy
   - Phinergy markets aluminum-air backup to telecom operators and tower companies and advertises energy reloading and remote monitoring. The continuing replenishment obligation is a bounded commercial inference from these features. ([phinergy.com](https://phinergy.com/solutions/energy-backup/))
   - Company verification: Phinergy's current Energy Backup portfolio expressly markets aluminum-air backup systems to telecom operators and tower companies.
2. Cellnex successfully tests new renewable energy sources at its sites
   - Cellnex's November xx.xx 2022 announcement identifies a completed Phinergy pilot at Ossa de Montiel, Spain, and retention of the system on site while broader incorporation was considered. It does not establish a subsequent fleet rollout. ([cellnex.com](https://www.cellnex.com/fr-fr/news/cellnex-tests-new-renewable-energy-sources-sites/))
3. Company
   - Company verification: Phinergy's official corporate page establishes its Israeli origin and Tel Aviv Stock Exchange listing.
   - Company verification: The page identifies an IndianOil joint venture for aluminum-air energy systems.

22.15. FDK

FDK's high-durability nickel-metal-hydride portfolio identifies communication base stations among its applications and lists individual battery models, including HR-AAULT and HR-AAAUTU. This supports a telecom-oriented component proposition within Battery Cells and Monoblocs. ■■ ■■■■ ■■■■ ■■ ■■■■■■■ ■■■■■■■■ ■ ■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■ ■■ ■ ■■■■■■■■■■■■ ■■■■■■■■■■■

■■■ ■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■ ■■■ ■■■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■ ■■■■■■■■ ■■ ■■■■■■■ ■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■■ ■■■■■■ ■■■■ ■■■■ ■■■ ■■■■■■■■ ■■■ ■■■ ■■■■■■■ ■■ ■■■■■ ■■■■ ■■■■■■■ That announcement is evidence of a named historical buyer relationship, not proof of present system orderability or continuing KDDI purchases.

[redacted] A network owner seeking turnkey accountability should require a current complete-system offer rather than extrapolate from the cell catalog or historical announcement. Component sourcing preserves integration choice but is unsuitable as a substitute for an uncontracted whole-system obligation.

Sources & Evidence

1. High-durability Nickel-Metal Hydride Batteries | FDK
   - FDK's high-durability nickel-metal-hydride category identifies communication base stations among its applications and lists individual models including HR-AAULT and HR-AAAUTU. The catalog does not establish a complete site-service package. ([fdk.co.jp](https://www.fdk.co.jp/product/nimh/high_durability/))
   - Company verification: FDK's accessible high-durability nickel-metal-hydride battery category identifies communication base stations among its applications.
   - Company verification: This establishes a telecom-oriented battery category, not current sales of a complete base-station storage system.
2. FDK announces portable DC storage system, February 20, 2014
   - FDK's February xx.xx 2014 announcement described a portable DC storage system for base-station maintenance and emergency support, stated KDDI selection, and planned an April 2014 launch. It does not establish present orderability or continuing purchases. ([fdk.co.jp](https://www.fdk.co.jp/whatsnew-j/release20140220-j.html))
   - Company verification: On February xx.xx 2014, FDK announced a portable DC battery-storage system for mobile base-station maintenance and emergency backup, with a planned April 2014 launch.
   - Company verification: The announcement states that KDDI had selected the product; it does not establish present availability or continuing purchases.

22.16. RFI

RFI provides a documented product-specific channel relationship for telecom storage. [redacted] These records establish a commercial relationship between manufacturer and channel provider; they do not establish RFI as a battery-cell manufacturer or disclose the exclusivity agreement's duration and territorial terms.

RFI's energy-storage portfolio advertises telecom VRLA, AGM, and lithium backup batteries, Australian warehouses, technical support, and after-sales service. [redacted] Warehouse coverage nevertheless does not guarantee allocated inventory, a delivery date, or included on-site service for a particular purchase.

[redacted] Other products remain alternative

sourcing routes. The trade-off is coordinated local access versus dependence on a product-specific intermediary, not foreclosure of the wider telecom-storage market.

Sources & Evidence

1. PowerPlus Energy Launches LiNET4835: A New Battery in Exclusive Partnership with RFI Technologies
   · PowerPlus Energy's June xx.xx 2025 announcement identifies LiNET4835 as a telecom battery available exclusively through RFI. The announcement does not disclose exclusivity duration or contractual territorial terms. ([powerplus-energy.com.au](https://www.powerplus-energy.com.au/linet4835-telecom-battery/))
2. Introducing the PowerPlus LiNET4835: Exclusive to RFI
   · RFI separately describes collaboration with PowerPlus Energy and exclusive sale of LiNET4835 through RFI Technology Solutions, corroborating the product-specific channel relationship from the channel party. ([news.rfi.com.au](https://news.rfi.com.au/listing/powerplus-linet4835-exclusive-to-rfi))
3. Energy Storage Product Overview | RFI
   · RFI advertises telecom VRLA, AGM, and lithium backup batteries, warehouses across Australia, technical support, and after-sales service. These company-level capabilities do not establish allocated inventory or included site service for a transaction. ([products.rfi.com.au](https://products.rfi.com.au/energy-storage-solutions))
   · Company verification: RFI describes its battery and power-system integration business serving telecommunications and other industries.
   · Company verification: It markets telecom-specific VRLA, AGM and lithium backup batteries and describes Australian stocking and support.
4. PowerPlus Energy Launches LiNET4835: A New Battery in Exclusive Partnership with RFI Technologies
   · Company verification: The June xx.xx 2025 announcement identifies RFI as PowerPlus Energy's exclusive LiNET4835 channel partner.
   · Company verification: This establishes a dated commercial relationship, not RFI battery-cell manufacturing.
5. Telecommunications & Critical Infrastructure Batteries
   · Company verification: RFI's telecommunications and critical-infrastructure catalog lists LiNET4835 and other PowerPlus battery bundles.
   · Company verification: Catalog listing establishes an offering; stock and completed customer sales are not inferred.

22.17. HORIEN Salt Battery Solutions

■■■■■■ ■■■■ ■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■ ■■ ■■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■ ■■■ ■■■■■■■■■■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■ ■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■ ■■■■■■■■■■ ■■ ■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■ ■■■■■■■■ This establishes a named telecom storage proposition, not interchangeability with other sodium technologies or independently demonstrated performance superiority. Buyers should compare the exact offering and its acceptance conditions rather than procure against a broad sodium-battery label.

Brand continuity and contractual identity require separate treatment. HORIEN's corporate profile describes a Switzerland-based business formerly named FZSoNick and identifies a 2024 rebranding; its commercial contact page lists SoNick S.p.■■ ■■ ■■■■■■ ■■■■■ ■■■■■■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■■■■■■■ ■■■■ ■■■ ■■■■■■ ■■■■■■ ■■■ ■■ ■■■ ■■■■■■■■■■■■■ ■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■ ■■ ■■■■■■■■ ■■ ■■■■■■■ ■■■■■■■■■■■■

[redacted]

HORIEN advertises installation supervision, battery monitoring, remote support, and repair through authorized technical facilities. [redacted] Buying modules and support together could reduce contractual handoffs where these obligations are consolidated; a module-only purchase should not be assumed to include them.

Malaysia provides an inspectable regional purchasing route: FZ Energy Storage Systems Sdn Bhd lists HORIEN by FZSoNick salt batteries and the telecom-oriented TL Range, with business locations in Selangor, Sabah, and Sarawak. [redacted] Direct manufacturer engagement remains an alternative for a buyer able to contract separately for local support; neither route establishes an executed telecom purchase or transaction-specific warranty coverage.

Sources & Evidence

1. Products | FZ Energy Storage Systems Sdn Bhd
   · FZ Energy identifies salt batteries as sodium-nickel chloride, lists HORIEN by FZSoNick and the TL Range for telecommunications, and provides Malaysian business locations in Selangor, Sabah, and Sarawak. ([fz.energy](https://www.fz.energy/products/))
2. TL Range - SMC Technology, HORIEN Salt Battery Solutions
   · The HORIEN TL Range brochure identifies telecommunications applications and the 48TL200, and advertises integrated battery management for monitoring, diagnostics, and data logging. These are manufacturer claims, not independent performance findings. ([saltbattery.horien.com](https://saltbattery.horien.com/wp-content/uploads/2025/xx.xx/48TL200_TL-RANGE.pdf))
3. HORIEN Salt Battery Solutions - Company Profile
   · HORIEN's corporate profile describes a Switzerland-based business formerly named FZSoNick and identifies its HORIEN rebranding in 2024. This supports reported brand history, not independent verification of registered ownership or contractual succession. ([saltbattery.horien.com](https://saltbattery.horien.com/wp-content/uploads/2026/xx.xx/SBS_COMPANY-PROFILE.pdf))
   · Company verification: The corporate profile identifies the Swiss business formerly named FZSoNick, its 2024 HORIEN rebranding, and the historical 48TL200 telecom product launch. ([saltbattery.horien.com](https://saltbattery.horien.com/wp-content/uploads/2026/xx.xx/SBS_COMPANY-PROFILE.pdf))
4. Contacts - HORIEN Salt Battery Solutions
   · HORIEN's contact page provides a commercial inquiry route and lists SoNick S.p.A. in Italy. The contact identification does not establish which entity assumes a particular sales or warranty obligation. ([saltbattery.horien.com](https://saltbattery.horien.com/contacts/))

5. Service - HORIEN Salt Battery Solutions
   - HORIEN advertises installation supervision, battery monitoring, remote support, and repair at authorized technical facilities. Its after-sales description expressly conditions maintenance and repair services on the signed contract. ([saltbattery.horien.com](https://saltbattery.horien.com/service/))
6. Services - FZ Energy Storage Systems Sdn Bhd
   - FZ Energy advertises industrial battery supply and delivery, installation, EPC services, and ongoing lifecycle maintenance. These establish advertised provider capabilities, not a specific HORIEN service agreement or manufacturer authorization. ([fz.energy](https://www.fz.energy/services/))

23. Companies Covered

Table 703. Global Telecom Energy Storage System Market, Companies Covered

Company
ABM Limited
Afrigen Energy Limited
Amara Raja Energy & Mobility Limited
Anglobal
Aokly
Ascot
ASPİLSAN Enerji
Ausonia
BAE Batterien GmbH
Balancell
Banner GmbH
Basic Association of Technology Projects Company Limited
Baterias Moura
Battery Lithium Chile
BENNING Elektrotechnik und Elektronik GmbH & Co. KG
Bergerat Monnoyeur Algérie
Biswal Limited
BlueNova
BMZ Group
BSB Power
C&D Technologies
CABONORTE S.A.
Camusat Group
Canbat Technologies Inc.
CEGASA Energía
Celltech Group
ChargeX
Chloride Egypt
Chloride Exide
Clarios

Table 703 - continued

Company
Clear Blue Technologies
Clear Blue Technologies International Inc.
CM Telecomm
Concorde Battery Corporation
Coslight
CREI
CrossBoundary Energy
CSB Energy Technology Co., Ltd.
De Luna Lithium Battery
Delta Electronics, Inc.
Discover Battery
Distributed Power Africa
East Penn Manufacturing
Eaton
El-Nisr
Elhim-Iskra JSC
Emtel Energy
Enercap Holdings
Enerdzhi Treyd
ENERGON
Energy Vision Limited
ENERQUIMICA SOCIEDAD ANONIMA CERRADA
EnerSys
Enexer
ENGIE Energy Access
Escotel
Eternity Technologies
Etica Battery Inc.
EVE Energy
Exicom
Exide Industries Limited
Exide Technologies

Table 703 - continued

Company
FAAM
FDK
FIAMM Energy Technology
First Battery
Fulguris
Future Power Technology
GAZ ENERGY
Great Power
Green Cubes Technology
Greenvision Technologies Pvt. Ltd.
GS Yuasa
Hangzhou LIAO Technology Co., Ltd.
Haze Battery
HBL Engineering Limited
Helios Power Solutions
Herewin
Highstar
HOPPECKE
HORIEN Salt Battery Solutions
HRESYS
Huawei
iBAN POWER
IBT
iMAT Manufacturing
Inala
Industrias Dacar
Innova-Tech Energy Solutions Ltd
Intelbras
Interberg
Intercel
International Power Supply
Inventus Power

Table 703 - continued

Company
Inverted Energy
IPT PowerTech
IPT PowerTech Group
Jubaili Bros
KGANG ENERGY SOLUTIONS
KIJO Group
Kung Long Batteries
L'Accumulateur Tunisien ASSAD
La Casa de las Baterías
Lento Industries Pvt. Ltd.
Leoch
Livguard Energy Technologies Private Limited
M-P Infrastructure
Maxener SRL
maxwell+spark
Metal Manufacturing Nigeria Limited
MIDAC S.p.A.
MiniTec Group
Mission Critical Electronics
Monbat AD
MPL Energy
Murata Manufacturing Co., Ltd.
Mutlu Akü
Mutlular Endüstri
Métrica
Naion
NEXA
Nian Battery Khavaran
NPP Power
Off Grid Tecnologia
Okaya Power Pvt. Ltd.
Oman Solar Systems

Table 703 - continued

Company
OMC Power Private Limited
ONESUN
OPT - Eletrônicos e Baterias Ltda.
Osaka Batteries
Pastiche Energy Solutions
Phinergy
Phoenix Hi-Tech
Phoenix Hi-Tech Nigeria Ltd
PINACO
Pixii AS
Polarium
Power Box Energy Guatemala
Power Place Cia Ltda
Power Storage Solutions
Power-Sonic
Powerbox Australia Pty Ltd
PowerPlus Energy Pty Ltd
Powersafe
PowiDian Energy
Precision Group
PT Century Batteries Indonesia
Pylon Technologies Co., Ltd.
Rahimafrooz (Bangladesh) Ltd.
REVOV
RFI
Riello UPS
Ritar International Group
RITMA
ROSPIK Technology Group
RT Systems
Saba Battery
Saft

Table 703 - continued

Company
Sagemcom
Samsung SDI
Schneider Electric
Sebang Global Battery Co., Ltd.
SecPower
SEGURIA
Shandong Sacred Sun Power Sources Co., Ltd.
Shanghai Warner Telecom Co., Ltd.
Shenzhen Topband Co., Ltd.
Shoto
SIMGUN GLOBAL INTERNATIONAL PTY LTD
Solutum de México
Starmax Batteries
Sunlight Group
Sunpower Technologies Sdn Bhd
Sunstone Power Industry Co., Ltd.
Sunwoda Energy
TAB
Tahghighat Electronic Fotrousi
Taiwan Truewin Technology Co., Ltd.
Technical Fiber Optics Lines Company
Teksan
Tempel Group
Tenpower Lithium Co., Ltd.
Tesla
The Furukawa Battery Co., Ltd.
Tronex
Trontek
Tudor Batteries
Ubatt Energy Co., Ltd.
UCB Power
Ultracell (UK) Limited

Table 703 - continued

Company
USOA S.R.L. IMPORT EXPORT
Vertiv
Vestel Mobility
VIES
Vision Group
VoltCrave Power
VZH SRL
WATT Renewable Corporation
Wind Energy
XGW Tech
Yiğit Akü
Zhejiang Narada Power Source Co., Ltd.
Zhuhai CosMX Battery Co., Ltd.
ZTE
ZTT
Zynavex

Sources & Evidence

1. EnerSys - 2026 Proxy Statement and Annual Report
   - Company verification: EnerSys's 2026 annual report establishes its current consolidated corporate identity and continuing Energy Systems business.
   - Company verification: The report identifies energy storage, power conversion, distribution and enclosures supplied to telecommunications and broadband customers.
   - Company verification: The consolidated reporting perimeter supports retaining EnerSys rather than separately representing its acquired operating brands.
2. Exide Technologies - ESG Report 2025
   - Company verification: Exide Technologies' 2025 sustainability report defines its consolidated perimeter as Energy Technologies Holdings, LLC and its subsidiaries.
   - Company verification: The report records the fiscal 2025 introduction of Solition Telecom for communication-network backup.
   - Company verification: This establishes continuing telecom portfolio activity within the Exide Technologies group, rather than the separately staged Exide Industries Limited.
3. Our Passion Is to Empower - East Penn Manufacturing
   - Company verification: East Penn's official corporate page identifies its continuing family-owned operating business.
   - Company verification: The page states that the business has remained family-owned since its establishment, supporting the proposed operating-company reporting level.

4. Polarium Sharpens Strategic Focus After Year of Transformation
   - Company verification: Polarium's August xx.xx 2026 announcement confirms continuing operations and a sharpened focus on telecom power and distributed energy storage.
   - Company verification: The announcement describes its modular battery and software-enabled telecom business and identifies Stockholm headquarters and production in Vietnam.
   - Company verification: Earlier South African and Mexican manufacturing announcements should not be treated as confirmation of an unchanged current production footprint.
5. Polarium Energy Solutions AB hanterar brister i batterisystem - Elsäkerhetsverket
   - Company verification: The Swedish electrical-safety authority's August xx.xx 2026 record identifies Polarium Energy Solutions AB as a manufacturer and identifies the Polarium Energy Solutions brand.
   - Company verification: The record concerns named household battery systems; it does not establish a withdrawal of Polarium's telecom portfolio.
6. Leoch International Technology Limited - Annual Report 2025
   - Company verification: The 2025 annual report identifies Leoch International Technology Limited and its consolidated subsidiaries.
   - Company verification: The report identifies Master Alliance Investment Limited as its immediate and ultimate holding company.
   - Company verification: The filing establishes continuing power-solutions operations and the listed-group reporting perimeter; third-party market estimates embedded in the report were not used.
7. LEOCH Wins Lithium Bid for Telecom Infrastructure Project
   - Company verification: Leoch's March xx.xx 2025 announcement reports winning an integrated telecom backup and energy-storage project bid finalized in February 2025.
   - Company verification: The customer is unnamed, so the record supports supplier-reported commercial activity rather than independent customer verification or completed deployment totals.
8. Shuangdeng Group Co., Ltd. - Interim Report 2026
   - Company verification: Shuangdeng Group Co., Ltd.'s interim report establishes continuing consolidated operations for January through June 2026.
   - Company verification: The issuer reports realized telecom energy-storage revenue and identifies telecom storage as a continuing business pillar.
   - Company verification: The report describes a changing business mix toward AIDC infrastructure; telecom activity should not be equated with the entire group's revenue.
9. Delta Electronics, Inc. - Consolidated Financial Report, First Quarter 2026
   - Company verification: Delta Electronics' first-quarter 2026 consolidated financial report establishes its current consolidated operating perimeter.
   - Company verification: The subsidiary schedule includes Delta Electronics (Norway) AS and Eltek-related operating companies.
   - Company verification: This supports consolidating the captured Delta-hosted Eltek telecom portfolio under Delta Electronics, Inc.; it does not establish that Pixii's Eltek Holding reference denotes the same owner.
10. Exicom Tele-Systems Limited - Annual Report 2024-25
    - Company verification: The mandatory filing identifies Exicom Tele-Systems Limited and its consolidated businesses.
    - Company verification: The report describes lithium-ion battery banks for telecom, deployments at telecom towers, overseas orders and an advance purchase order from BharatNet system integrators.
    - Company verification: The filing identifies NextWave Communications Private Limited as the majority shareholder at March xx.xx 2025.
    - Company verification: Reported critical-power orders and revenue also include nonstorage equipment and cannot be adopted as telecom-storage-only sales.

11. ULTRACELL (UK) LIMITED - Companies House Overview
    - Company verification: The inspected Companies House overview continues to identify ULTRACELL (UK) LIMITED, company number xx.xx as active.
    - Company verification: The registry establishes the legal operating-company identity corresponding to the staged Ultracell title.
    - Company verification: Companies House identifies ULTRACELL (UK) LIMITED, company number xx.xx as active.
    - Company verification: The entity is a private limited company with a registered office in Bootle, Merseyside, and a battery-manufacturing business classification.
12. Contact Us - GAZ ENERGY
    - Company verification: GAZ ENERGY's official contact page identifies GAZ Energy a.s. in Czechia and GAZ Geräte- und Akkumulatorenwerk Zwickau GmbH in Germany.
    - Company verification: It also identifies group commercial entities in the United States and Saudi Arabia, supporting the market-facing group-to-operating-entity mapping.
13. About Us - GAZ ENERGY
    - Company verification: GAZ ENERGY's current corporate history identifies its relationship with Bochemie Group and Second Foundation.
    - Company verification: It describes the establishment of GAZ Energy as the battery and energy-storage branch of Bochemie Group.
    - Company verification: The history distinguishes the present business from its earlier EnerSys ownership.
    - Company verification: GAZ ENERGY identifies telecommunications among applications for its industrial nickel-cadmium batteries.
    - Company verification: Its business history identifies Bochemie Group ownership and describes earlier EnerSys ownership.
14. PPK Group Limited - Annual Report 2025
    - Company verification: PPK Group Limited's 2025 audited annual report identifies PowerPlus Energy Pty Ltd as a consolidated Australian subsidiary.
    - Company verification: The filing reports PPK's xx.xx% interest at June xx.xx 2025 and describes PowerPlus's continuing battery and energy-storage business.
    - Company verification: The filing supports the operating-subsidiary identity; the separate captured LiNET release and RFI catalog establish telecom participation.
15. Haze Telecom Batteries - CEA Power LLC
    - Company verification: CEA Power's inspected commercial page offers Haze-branded telecom batteries and describes its own supply and installation role.
    - Company verification: This establishes an inspectable telecom channel offering for Haze, but not Haze's current legal ownership or manufacturer-level operating status.
16. Impressum - BAE Batterien GmbH
    - Company verification: BAE's German legal imprint identifies BAE Batterien GmbH and Berlin-Charlottenburg registration number HRB 99445B.
    - Company verification: The record supports the protected German legal-name wording.
17. Imprint - BAE Batterien GmbH
    - Company verification: BAE's English imprint uses translated company wording but gives the same Berlin address, registration number HRB 99445B and tax identifier as its German imprint.
    - Company verification: The matching identifiers support interpreting the English wording as the same legal entity, not a separately reportable competitor.

18. Houlihan Lokey Advises Resonac - FIAMM Sale to AURELIUS
    - Company verification: Houlihan Lokey's transaction record, describing its own sell-side advisory engagement, identifies FIAMM Energy Technology S.p.A.
    - Company verification: The record states that Resonac's sale of FIAMM to AURELIUS closed on December xx.xx 2025.
    - Company verification: This resolves the earlier announced-versus-completed transaction gap without establishing refreshed telecom product availability.
19. Corporate Profile - Vision Group
    - Company verification: Vision's inspected corporate profile explicitly identifies Shenzhen Center Power Tech Co., Ltd., stock code xx.xx as the business known as Vision Group.
    - Company verification: The company identifies telecommunications among its battery applications and describes international operating entities.
    - Company verification: Supplier market-share and leadership assertions on the page were not adopted.
    - Company verification: Vision's corporate profile identifies the Vision Group business and references the establishment of Shenzhen Center Power.
    - Company verification: Its history describes overseas factories and regional branches, supporting a multinational business identity without establishing market share.
20. About Us - HRESYS
    - Company verification: HRESYS's official company page identifies Zhejiang Hengrui (HRESYS) Technology Co., Ltd. in Hangzhou.
    - Company verification: The page offers communication backup systems and identifies TL-LFP and DFG product families for communication or outdoor telecom applications.
    - Company verification: These business facts establish an inspectable offering and observed corporate identity, not independently verified ownership or deployments.
21. IT & Telecom - Helios Power Solutions Group
    - Company verification: Helios Power Solutions' official IT and telecom page describes supplied backup batteries for New Zealand cell-repeater towers.
    - Company verification: The company describes a multiyear supply relationship but does not name the buyer or establish the statement's publication date.
    - Company verification: The page supports battery supply and integration participation rather than an inference based only on power-conversion equipment.
22. PowiDian Energy, une approche pragmatique de l'hydrogène stationnaire - Xerys
    - Company verification: Xerys's October xx.xx 2024 publication identifies PowiDian Energy as a stationary-energy business through an interview with its sales director.
    - Company verification: The publication describes continuing customer-facing operations and the business's origins in remote communications-power needs.
    - Company verification: It does not establish the current registered entity or a named presently marketed telecom battery package.
23. About Naion - Sodium-Ion Battery Storage for New Zealand
    - Company verification: Naion's inspected company page describes a New Zealand sodium-ion energy-storage business.
    - Company verification: The page's footer identifies Naion Ltd and Auckland, New Zealand.
    - Company verification: This resolves the observed geographic business-name path, but not independent incorporation, ownership or a marketed telecom offering.
24. Solar-Powered Cell Towers in Africa Curb Costs, Emissions and Outages - AP News
    - Company verification: AP's inspected reporting identifies an Airtel Africa relationship with ENGIE Energy Access involving telecom sites in Zambia and Congo.
    - Company verification: The report corroborates a telecom-energy relationship, but does not establish the exact legal supplier, supplied battery portfolio or storage-attributable revenue.

25. Communications Network Power Solutions | EnerSys
    - Company verification: EnerSys publicly offers power and energy-storage solutions for communications networks.
    - Company verification: Its portfolio expressly covers central offices, macro cells, small cells and 5G network infrastructure.
26. EnerSys SEC filing - NorthStar and Alpha acquisition note
    - Company verification: The SEC filing records EnerSys's September xx.xx 2019 acquisition of NorthStar and December xx.xx 2018 acquisition of Alpha businesses.
    - Company verification: The filing identifies Alpha's broadband and telecom power-solution activities, supporting historical reporting-level consolidation.
27. Telecom | Exide
    - Company verification: Exide Technologies offers telecom batteries and battery-storage solutions for mobile network operators, tower companies and BTS equipment manufacturers.
    - Company verification: Its telecom catalog lists Solition Telecom, Marathon, Sonnenschein and other battery families.
28. Telecommunications & 5G Network Backup Batteries - East Penn
    - Company verification: East Penn markets communications batteries for 5G small cells, traditional wireline and cable broadband applications.
    - Company verification: The page describes North American reserve-power distribution supporting these offerings.
29. Telecom & Network | Polarium
    - Company verification: Polarium markets Polarium Battery solutions for telecom infrastructure.
    - Company verification: Its telecom page includes a modular LFP battery offering for rack-based telecom environments.
30. Polarium Starts Production in New Factory in South Africa
    - Company verification: Polarium announced the start of production at a Cape Town factory and described its ATC Africa partnership.
    - Company verification: The dated announcement identifies Swedish headquarters, manufacturing in Mexico and Vietnam, and international sales presence.
31. Telecom Batteries | Leoch EMEA
    - Company verification: Leoch's EMEA catalog offers AGM, gel, pure-lead, tubular and lithium-ion telecom batteries.
    - Company verification: Named offerings include LFeLi lithium and multiple lead-acid telecom families; the page identifies regional sales entities.
32. Telecom - Narada Power
    - Company verification: Narada's official telecom portfolio lists lithium and lead-acid storage products, including NPFC and Acme families.
    - Company verification: The page attributes its business information to Zhejiang Narada Power Source Co., Ltd.
33. Overview | Shoto
    - Company verification: Shoto's official group overview expressly offers energy-storage solutions for the telecom industry.
    - Company verification: The overview describes a group business supplying communication lithium-ion batteries and systems.
34. Contact Us - China Shoto, Green Energy Storage Expert
    - Company verification: The official Shoto store contact page identifies Shuangdeng Group Co., Ltd. and Chinese battery production locations.
    - Company verification: The page provides an explicit corporate-to-store identity statement supporting alias control.

35. Telecom Lithium Battery | Sacred Sun
    - Company verification: Sacred Sun maintains an official Telecom Li-ion Battery product page.
    - Company verification: The page identifies Shandong Sacred Sun Power Sources Co., Ltd. and telecom network-power applications.
36. Battery System | Vision Battery
    - Company verification: Vision's official battery-system catalog lists the V-LFP48V Standard Series Telecom Lithium Battery.
    - Company verification: The offering is explicitly classified for telecom battery applications.
37. Communication Batteries - GS Yuasa Energy Solutions
    - Company verification: GS Yuasa Energy Solutions markets communication VRLA battery families.
    - Company verification: The communication catalog lists Goldtop, PWL, PXL and PYB product families.
38. Telecoms - Industrial Batteries | Yuasa
    - Company verification: GS Yuasa's European-facing telecom catalog offers backup batteries for mobile base stations, broadband, landline and mobile systems.
39. Energy Solutions and Batteries for Telecommunication | HOPPECKE
    - Company verification: HOPPECKE markets batteries and associated services for telecom infrastructure backup.
    - Company verification: Named offerings include grid | Xtreme VR and grid | power VR X-FT.
40. FIAMM - General Overview: Reserve Power Solutions
    - Company verification: The supplier-authored FIAMM brochure identifies FIAMM Energy Technology (USA) LLC.
    - Company verification: It lists reserve-power battery ranges and telecom among application sectors; it does not establish refreshed current availability or global ownership.
41. BAE Batterien GmbH - Stationary
    - Company verification: BAE's official stationary portfolio identifies telecommunication installations as an application.
    - Company verification: The portfolio offers VLA and VRLA-GEL stationary batteries.
    - Company verification: The page title uses BAE Batterien GmbH while the English footer uses BAE Batteries Ltd, leaving a legal-name mapping qualification.
42. Digitalizing Site Power for Green Connectivity and Computing - Huawei
    - Company verification: Huawei describes its 5G Power telecom site-energy solution and BoostLi energy-storage system.
    - Company verification: The commercial offering combines telecom power infrastructure with battery storage and energy management.
43. Telecom Energy | ZTE
    - Company verification: ZTE's telecom energy portfolio includes battery-equipped site solutions and energy-storage systems.
    - Company verification: Its related commercial products include SmartLi Battery and iEnergy.
44. Products - Li-ion Battery Backup Systems - Delta
    - Company verification: Delta Electronics, Inc. lists Li-ion Battery Backup Systems under Telecom Infrastructure.
    - Company verification: The official portfolio includes TEB4810, TEB4815, TEB5110 and DUO5128 LFP battery products.
45. Products - Eltek IPack65 - Delta Americas
    - Company verification: Delta Americas markets the Eltek IPack65 telecom power offering with lithium-ion battery backup options.
    - Company verification: The Delta-hosted product establishes a branded portfolio relationship relevant to deduplication.

46. Telecom Lithium Batteries | Vertiv
    - Company verification: Vertiv markets lithium batteries specifically for telecom energy storage.
    - Company verification: Its product table identifies Polarium Batteries, establishing a supplier/channel relationship.
    - Company verification: Vertiv independently lists Polarium Batteries in its telecom lithium-battery portfolio, corroborating Polarium's commercial channel participation.
47. Vertiv Solutions for Efficient Edge Network and 5G Deployment
    - Company verification: Vertiv's telecom portfolio identifies NetSure IPE outdoor power systems available with dedicated lithium-ion battery backup.
    - Company verification: The page establishes a telecom system-integration role in addition to battery resale.
48. Telecom | Amara Raja Energy & Mobility Limited
    - Company verification: Amara Raja Energy & Mobility Limited markets battery solutions for telecom installations.
    - Company verification: Its official telecom portfolio includes AMARON SLEEK and AMARON VOLT VRLA families.
49. Telecom Batteries | Critical Power Solutions by Exicom
    - Company verification: Exicom markets LFP lithium battery backup for telecom base stations, edge sites and FTTX deployments.
    - Company verification: Its official product family lists EXTB xx.xx EXTB xx.xx and EXTB xx.xx telecom batteries.
50. HBL Engineering Limited - Annual Report 2024-25
    - Company verification: HBL's FY2024-xx.xx annual report identifies HBL Engineering Limited, formerly HBL Power Systems Limited.
    - Company verification: The report establishes an Indian telecom 2V-VRLA battery business and plans to reduce related capacity.
    - Company verification: It explicitly states that HBL was not participating in the telecom lithium opportunity at that time.
51. ET-LI-ION Battery - Eternity Technologies
    - Company verification: Eternity Technologies markets its ET-LI-ION battery for telecom power systems and hybrid-power applications.
    - Company verification: The product page expressly identifies indoor power and telecom backup systems.
    - Company verification: Eternity Technologies retains an official ET-LI-ION Battery listing identifying an LFP battery module.
52. DV2-3G Metro Power Solutions Battery Cabinet | Eaton
    - Company verification: Eaton markets the DV2-3G Metro Power Solutions Battery Cabinet for critical telecom equipment.
    - Company verification: The page establishes a battery-backup integration/cabinet role, but does not confirm that batteries are included in the sold package.
53. Sunlight - VRLA Catalogue
    - Company verification: Sunlight's official VRLA catalog lists telecommunications among battery applications.
    - Company verification: The STB front-terminal family is expressly described as addressing telecom industry requirements.
54. Lithium Battery Cell Archives - ZTT
    - Company verification: ZTT's official product portfolio markets dedicated telecommunications backup cells for communication base stations.
    - Company verification: This source establishes a telecom-specific upstream offering, not complete current telecom pack/system sales.

55. Applications | EVE Energy North America
    - Company verification: EVE Energy North America's official application catalog connects telecom tower backup to prismatic LFP cells, modules and custom pack solutions.
    - Company verification: The source establishes regional commercial offering categories; the parent-to-regional legal mapping remains unresolved.
56. Baterias Estacionárias | Moura
    - Company verification: Baterias Moura markets stationary battery solutions for telecom and telephone exchanges.
    - Company verification: Its portfolio includes Moura VRLA and lithium product lines and describes South American distribution.
57. Sobre nós - Baterias Moura
    - Company verification: Moura's official corporate page uses the Baterias Moura and Grupo Moura identities.
    - Company verification: It identifies distribution across Brazil, Argentina and Uruguay.
58. Off-grid Solutions - BlueNova
    - Company verification: BlueNova markets modular LFP battery-energy-storage systems for off-grid applications.
    - Company verification: Its official commercial page expressly includes isolated telecom infrastructure among target applications.
59. Telecommunication | Schneider Electric USA
    - Company verification: Schneider Electric's U.S. telecom DC-power range addresses customer-premises broadband and low-power wireless applications.
    - Company verification: The official range is marked discontinued; it does not establish a current telecom battery-storage offering.
60. Industrial, Commercial and Marine Batteries - Balancell
    - Company verification: Balancell's official portfolio establishes industrial and commercial battery offerings.
    - Company verification: The inspected portfolio does not establish a telecom-specific storage offering, so it supports adjacent corporate identity only.
61. Telecom Battery Solutions | Power-Sonic
    - Company verification: Power-Sonic's official telecom portfolio markets battery systems for telecom cabinets, shelters and tower backup.
    - Company verification: The portfolio identifies front-terminal VRLA, tubular gel and high-capacity battery offerings for telecom networks.
62. Which battery backup is best for 5G small cell node equipment?
    - Company verification: Inventus Power's supplier publication connects its lithium-ion battery-backup business to 5G small-cell network equipment.
    - Company verification: The company describes itself as a provider of battery packs and lithium-ion backup solutions; the publication does not establish a current named telecom product or customer.
63. About Newmar | Powering the Network
    - Company verification: Newmar's official company page identifies Newmar as part of Mission Critical Electronics.
    - Company verification: The page describes Newmar's telecom power and system-integration business, supporting a group-to-operating-brand mapping.
64. Power Plants | Newmar Powering the Network
    - Company verification: Newmar markets fully integrated rack power systems that can include batteries and be delivered assembled.
    - Company verification: The official page identifies telecom and communications applications including cellular sites and remote repeaters.

65. Precision Power Products - Precision Group
    - Company verification: Precision Group's official Precision Power catalog lists LFP rack-mount batteries and telecom batteries.
    - Company verification: The catalog includes central-office and cabinet batteries, establishing an infrastructure offering beyond customer-premises backup.
66. Telecom - Green Cubes Technology
    - Company verification: Green Cubes Technology markets lithium battery-backup units and complete stationary power solutions for telecom infrastructure.
    - Company verification: Its telecom page lists a Kokomo, Indiana, United States business address.
67. SCLFP48100-3U - LiFePO4 smart lithium-ion battery system
    - Company verification: Power Storage Solutions publishes an own-branded SCLFP48100-3U lithium-ion battery-system offering.
    - Company verification: The product document expressly identifies backup power at remote or outdoor telecom sites as its commercial application.
68. About Power Storage Solutions | Trusted Critical DC Power Experts
    - Company verification: Power Storage Solutions describes a battery-storage and critical DC-power systems business.
    - Company verification: The company identifies its Dallas, Texas headquarters and additional U.S. operating locations.
69. Concorde Battery - Lightweight AGM Battery
    - Company verification: Concorde Battery Corporation identifies itself as a manufacturer of lead-acid batteries.
    - Company verification: Its official business page includes telecommunications among the applications of its current sealed battery product lines.
70. Canbat Technologies Inc. - A Canadian battery manufacturer
    - Company verification: Canbat's company page identifies Canbat Technologies Inc. and a Vancouver, British Columbia head office.
    - Company verification: The company describes a battery-supply business serving telecommunications and distribution across Canada and the United States.
71. Telecom Lithium Batteries - LiFePO4 Telecom Batteries Canada Supplier
    - Company verification: Canbat expressly markets lithium iron phosphate batteries for telecom backup in Canada.
    - Company verification: Its telecom portfolio includes battery offerings and custom battery racks and cabinets.
72. Front Terminal | Discover Battery
    - Company verification: Discover Battery markets VRLA AGM front-terminal batteries expressly for telecommunications backup.
    - Company verification: The company describes business-to-business sales through factory warehouses and directly to original equipment manufacturers.
73. Telecom Batteries Canada | Canadian Energy
    - Company verification: Canadian Energy's official telecom catalog offers Discover Energy OPz batteries.
    - Company verification: The catalog provides a Canadian telecom route-to-market record for Discover-branded storage, not proof of completed customer purchases.
74. Telecom - Starmax Batteries
    - Company verification: Starmax Batteries' official telecom page markets battery solutions for telecom backup.
    - Company verification: The page identifies a Canadian global head office.
75. About Us - Starmax Batteries
    - Company verification: Starmax's official company page states that it is Canadian-owned.
    - Company verification: The page identifies a Delta, British Columbia business address and a battery manufacturing/supply business.

76. Telecom Lithium Batteries for Sale | Lithium Options - Enexer
    - Company verification: Enexer's official catalog lists own-branded lithium telecom batteries and Canada-wide shipping.
    - Company verification: The telecom catalog includes unavailable or sold-out product listings, qualifying immediate availability.
77. About Us | Enexer’s Mission, Vision & Power Solutions
    - Company verification: Enexer states that its products are designed and engineered in Canada.
    - Company verification: Its official company page identifies a Brantford, Ontario business address.
78. Solutum de México | Soluciones en respaldo de energía
    - Company verification: Solutum de México's business catalog offers telecom batteries, including stationary VRLA offerings.
    - Company verification: The company also markets telecom AC/DC power systems and describes its own rack and cabinet fabrication role; battery inclusion in every integrated package is not established.
79. interberg® - Baterías industriales de níquel-cadmio y plomo-ácido
    - Company verification: Interberg's official business catalog markets stationary industrial batteries for telecom infrastructure.
    - Company verification: The catalog expressly addresses the Mexican industrial market and includes named lead-acid and nickel-cadmium battery series.
80. RITMA · Sistemas de energía en corriente directa y almacenamiento
    - Company verification: RITMA publicly presents DC-energy and storage-system offerings for the Mexican market.
    - Company verification: Its business page identifies telecom sites among its application sectors; a named battery-inclusive telecom package remains unresolved.
81. De Luna Lithium Battery - Innovación Patentada en México
    - Company verification: De Luna Lithium Battery's official site identifies a Mexican business and presents telecom backup as a prospective commercial application.
    - Company verification: The site describes planned factory infrastructure; this supports an announced entrant lead, not established operating production or current telecom sales.
82. Construction and Electrical Engineering Contractors | ABM Bermuda
    - Company verification: ABM Limited describes engineered turnkey critical-power solutions, including UPS, for customers in Bermuda.
    - Company verification: The company identifies telecom providers and co-location facilities as served customer categories and an APC sales/service relationship.
83. C & D Technologies | Telecommunications
    - Company verification: C&D Technologies' official telecom page markets battery solutions for wireless networks, remote communications sites and wireline/cable applications.
    - Company verification: The inspected portfolio includes TEL-HT telecom batteries and other stationary telecom battery categories.
84. Atlas Holdings Announces Stryten Energy’s Acquisition of C&D Trojan, Creating a Premier Global Battery Manufacturing Platform
    - Company verification: Atlas Holdings announced on October xx.xx 2026 that its portfolio company Stryten Energy completed the acquisition of C&D Technologies, Inc. and Trojan Battery Company, LLC.
    - Company verification: The announcement establishes a current ownership/reporting relationship requiring consolidation controls around the protected C&D Technologies identity.
    - Company verification: Atlas Holdings states that Stryten Energy completed its acquisition of C&D Technologies and Trojan Battery Company on October xx.xx 2026.
    - Company verification: The combined business will operate under Stryten Energy while preserving the C&D Technologies and Trojan Battery product brands.

85. Bateria Unipower - Fotus Distribuidora Solar
    - Company verification: Fotus markets UNIPOWER batteries and identifies UNIPOWER as a UCB Power brand.
    - Company verification: The distributor's brand page identifies telecom among the brand's served applications and presents a Brazilian commercial route.
86. TELECOM - SecPower Energia
    - Company verification: SecPower's telecom catalog lists its own-branded OPzV, OPzS and lithium battery offerings.
    - Company verification: The portfolio provides direct evidence of a marketed telecom-battery offering, not evidence of completed customer orders.
87. Fulguris LFP 48V 100Ah (3U) | FULGURIS
    - Company verification: Fulguris publicly lists the Fulguris LFP rack-battery product.
    - Company verification: The product page expressly includes telecommunications among its commercial applications.
88. Características Estacionária | Tudor Baterias
    - Company verification: Tudor's stationary-battery portfolio expressly addresses telephone exchanges, radio base stations, BTS and fiber-access networks.
89. Company | Tudor Batteries
    - Company verification: Tudor's own English-language corporate page uses the English market-facing name Tudor Batteries.
90. NEWMAX | Sobre nós
    - Company verification: The Newmax corporate page identifies OPT and describes its São Paulo office, Minas Gerais factory and distribution serving telecommunications.
    - Company verification: Newmax is presented as a battery brand rather than a separately established additional company.
91. NEWMAX | FNC12V-CF | Baterias estacionárias 12V
    - Company verification: The official Newmax catalog offers the FNC12V-CF stationary-battery family and provides a linked ANATEL homologation certificate.
92. Certificado de Homologação Nº 07171-19-03358
    - Company verification: ANATEL certificate No. xx.xx-xx.xx-xx.xx issued December xx.xx 2019, names OPT - ELETRÔNICOS E BATERIAS LTDA. as manufacturer.
    - Company verification: The certificate identifies named FNC stationary VRLA models; it does not establish present sales or deployment volumes.
93. Sobre nós - Marca de baterias estacionárias | Getpower
    - Company verification: Getpower's corporate page identifies Getpower as Powersafe's official special-battery brand.
    - Company verification: The page describes VRLA, ventilated and lithium battery portfolios and expressly includes telecom applications in its Brazilian business.
94. Bateria de Litio para Telecom BLL 48-150 T | Intelbras
    - Company verification: Intelbras markets the BLL xx.xx-xx.xx T under the explicit product category Bateria de Litio para Telecom.
    - Company verification: The official product page provides a commercial purchase route.
95. Baterías de Litio - I+D Soluciones a Medida | VZH SRL
    - Company verification: VZH SRL publicly offers custom lithium battery packs for telecommunications and other commercial applications.
    - Company verification: Its portfolio also lists VISION-branded lithium batteries for telecommunications, establishing a supplier/channel role distinct from Vision Group.

96. Maxener SRL: Distribuidor Oficial ABB y Expertos en Energía
    - Company verification: Maxener SRL identifies itself as an Argentine critical-energy company selling battery banks and related power systems.
    - Company verification: Its company page states national service coverage and a Buenos Aires business address.
97. Bancos de Baterías Industriales en Argentina | Maxener
    - Company verification: Maxener offers supply and installation of industrial battery banks for telecommunications throughout Argentina.
    - Company verification: The portfolio identifies VRLA and lithium-ion storage options.
98. Soluciones para Telecomunicaciones | Respaldo de Red
    - Company verification: Tempel Group's Argentine telecom portfolio lists Kaise AGM and lithium batteries for radio sites, network nodes and remote sites.
    - Company verification: The page describes local-stock supply and integrated project services for telecom networks.
99. Preguntas Frecuentes (FAQ) | Tempel Group Argentina
    - Company verification: Tempel Group's Argentine business page describes turnkey projects combining supply and its own engineering services.
    - Company verification: Telecommunications is expressly included among the company's served commercial sectors.
100. Nosotros - Tronex Industrial
    - Company verification: Tronex Industrial's company-description page identifies a Colombian energy-storage commercial business.
    - Company verification: The page identifies Mtek lead-acid and lithium batteries in its own commercial portfolio.
101. Sobre Nosotros | Especialistas en Soluciones de Litio en Chile - Battery Lithium Chile
    - Company verification: Battery Lithium Chile identifies itself as a Chilean industrial-battery business offering custom packs and nationwide delivery.
    - Company verification: Its company page includes telecommunications among its target sectors but does not establish network-infrastructure storage sales.
102. Telecomunicaciones - Battery Lithium Chile
    - Company verification: The inspected telecom category lists small primary industrial battery products.
    - Company verification: This category does not establish a marketed base-station or telecom-site storage system.
103. Quienes Somos - Usoa Bolivia
    - Company verification: USOA's company page names USOA S.R.L. IMPORT EXPORT and describes a supply business covering telecommunications, AC/DC energy systems and battery banks.
    - Company verification: The record establishes a commercial supply/integration lead but does not name a current telecom battery product.
104. Anycar - Baterías Industriales para montacargas
    - Company verification: Anycar's Ecuadorian industrial portfolio publicly lists Dacar OPzS batteries with telecommunications among their applications.
    - Company verification: The listing establishes a public channel offering, not current customer purchases.
105. Baterías de Respaldo para Energía Ininterrumpida - NEXA
    - Company verification: NEXA offers VRLA and lithium backup-battery solutions and expressly identifies telecommunications and backup infrastructure as applications.
    - Company verification: Its commercial page provides a Costa Rican business contact.

106. La Casa de las Baterías Guatemala | Somos Energía
- Company verification: La Casa de las Baterías describes a battery and integrated backup-energy business operating in Panama, Costa Rica, El Salvador and Guatemala.
- Company verification: The company history establishes regional industrial and energy divisions; the exact telecom DC-package contents remain unresolved.

107. CM Telecomm | Telecomunicaciones, Solar Power e Infraestructura
- Company verification: CM Telecomm's substantive commercial portfolio advertises integrated telecommunications and critical-energy infrastructure from Guatemala.
- Company verification: Lithium batteries are expressly included in its infrastructure offering, without named storage models or corroborated telecom deployments.

108. Industrial Batteries - Monbat
- Company verification: Monbat's industrial battery portfolio explicitly includes telecom applications.
- Company verification: The offered portfolio includes AGM lead-acid reserve-power batteries.

109. MONBAT AD - Consolidated Interim Report on Activities for 2025
- Company verification: The consolidated activity report identifies MONBAT AD and covers the year ended December xx.xx 2025.
- Company verification: The report lists multiple European export markets; its geographic sales disclosures cover the overall business, not telecom storage alone.

110. About Ultracell - Battery Manufacturing Since 1999
- Company verification: Ultracell identifies its United Kingdom origins and markets batteries for telecom networks.
- Company verification: Its commercial portfolio includes lead-acid and lithium battery categories.

111. UPLFT Pure Lead Front Terminal Batteries for Telecom Cabinets
- Company verification: Ultracell publishes a UPLFT pure-lead front-terminal battery range on a page identified for telecom cabinets.

112. TAB STATIONARY BATTERIES - TAB
- Company verification: TAB's official stationary portfolio lists OPzS, OPzV, OGi, TOPzS and UPS battery families.
- Company verification: The page provides a Mežica, Slovenia, business address; the inspected content does not establish a telecom-specific application.

113. BMZ INDUSTRIÆ - Industrial and Commercial Energy Storage Brochure
- Company verification: BMZ's INDUSTRIÆ storage brochure names remote telecom transmission equipment among possible backup applications.
- Company verification: The brochure identifies BMZ Germany GmbH and commercial entities in Poland, France and the United Kingdom.

114. Telecom | CEGASA
- Company verification: CEGASA's telecom business page advertises battery-based energy solutions for telecommunications infrastructure.
- Company verification: The page describes tailored and all-in-one commercial solutions.

115. Contact | CEGASA
- Company verification: CEGASA's contact page identifies CEGASA Energía headquarters and production centers in Vitoria-Gasteiz, Spain.
- Company verification: The page identifies a Cegasa DACH sales office in Aachen, Germany.

116. MIDAC Integrated Solutions - January 2022 Catalog
- Company verification: MIDAC's January 2022 Integrated Solutions catalog identifies LFPblock batteries for telecom applications.
- Company verification: The catalog identifies MIDAC S.p.A. and its headquarters and production facility in Soave, Italy.

117. Teverola 1 and Teverola 2 - FAAM
    - Company verification: FAAM's Teverola project announcement includes telecom among targeted applications for lithium storage solutions.
    - Company verification: The announcement alone does not establish a marketed telecom product or customer sale.
118. Chi siamo - FAAM
    - Company verification: The retrieved company business page establishes FAAM as the observed battery-business identity.
119. MW Power batteries - AGM, gel, carbon, LiFePO4 | MPL Energy
    - Company verification: MPL Energy markets MW Power as an MPL Group battery brand for telecom and other backup applications.
    - Company verification: The portfolio includes AGM, gel, carbon and lithium batteries, with commercial stock and service in Poland.
120. Промышленные АКБ для Телеком | ЭНЕРГОН
    - Company verification: ENERGON offers DELTA and DELTA Xpert lead-acid batteries for telecom cabinets.
    - Company verification: Its telecom portfolio includes DELTA Xpert RTL lithium battery modules.
121. История развития | ЭНЕРГОН
    - Company verification: ENERGON's business history reports a 2023 launch of battery cabinets and modules serving data centers, storage systems and telecom in Russia.
    - Company verification: The history separately identifies telecom lithium backup activity in 2022.
122. Telecom and TowerCos - Pixii
    - Company verification: Pixii markets PowerShaper TC as a combined telecom backup-power and battery-energy-storage offering.
    - Company verification: The page identifies collaboration with Enetek Power and describes both as Eltek Holding companies.
    - Company verification: The page identifies Pixii AS as the commercial entity.
123. Pixii PowerShaper TC ID, Hybrid, LFP - November 12, 2024
    - Company verification: The November xx.xx 2024 PowerShaper TC brochure describes an integrated telecom UPS and battery-energy-storage product.
    - Company verification: The named product is presented for telecom-site applications rather than only general-purpose power conversion.
124. Infrastructure Energy Storage and Power Supply | Celltech Group
    - Company verification: Celltech Group advertises lead-acid and lithium batteries and tailored power solutions for telecom networks.
125. TPL VRLA AGM Battery | Celltech
    - Company verification: Celltech's Finnish catalog offers CSB TPL front-terminal VRLA batteries for telecom and broadband backup.
    - Company verification: This establishes a regional channel offering, not Celltech manufacture of the CSB batteries.
126. Sustainability | Celltech Group
    - Company verification: Celltech Group identifies Addtech as its parent company.
127. BENNING POWER news - Q1 2024
    - Company verification: BENNING's Q1 2024 business publication identifies BENNING Elektrotechnik und Elektronik GmbH & Co. KG.
    - Company verification: It documents battery-equipped telecom outdoor systems supplied for NetCologne's radio network and in use from April 2023.
    - Company verification: The record supports an integration role and a dated customer relationship; it is supplier-issued corroboration.

128. Saft Evolion batteries help Ausonia deliver effective hybrid power solution for off-grid telecom sites - February 2013
    - Company verification: A February 2013 Saft-authored case study documents Evolion lithium batteries supplied for Ausonia's telecom HIM systems.
    - Company verification: The document identifies Saft's French corporate identity and establishes historical participation, not current availability.
    - Company verification: The case study identifies Ausonia's Hybrid Integrated Module as a battery-equipped offering for off-grid cellular base stations.
    - Company verification: The historical system incorporates supplied Saft Evolion batteries.
129. Banner Stand-by Bull SBG Block GEL Batteries - February 2021
    - Company verification: Banner's February 2021 Stand-by Bull SBG brochure identifies mobile-radio and switching-system applications.
    - Company verification: The brochure identifies Banner GmbH in Linz, Austria, and a British commercial contact.
130. Стационарни батерии | Елхит
    - Company verification: Elhit's Bulgarian commercial catalog identifies Elhim-Iskra as the producer of offered OPzS stationary batteries.
    - Company verification: The listed commercial applications include telecommunications systems.
131. EXERON T | IPS
    - Company verification: IPS markets EXERON T as an all-in-one platform for telecom hybrid and off-grid sites.
    - Company verification: The portfolio associates the system with storage batteries but does not conclusively establish battery supply within each commercial package.
132. EXERON - Main Commercial Brochure
    - Company verification: The EXERON commercial brochure identifies IPS as the platform developer and telecommunications as an application.
    - Company verification: It describes a hybrid power platform using battery storage for backup.
133. Литиевые аккумуляторы для телекома и базовых станций · ВИЭС
    - Company verification: The VIES business page advertises lithium battery modules for base stations and communications nodes.
    - Company verification: Its footer identifies the Russian legal name Выпрямительно-инверторные энергосистемы and a Moscow business address.
134. Аккумуляторы телеком-оборудования и ретрансляторов | Run Power
    - Company verification: The Run Power business page advertises batteries for fixed base stations, telecom cabinets and communications nodes, alongside adjacent portable-radio products.
    - Company verification: The footer identifies ООО Энерджи Трейд, a tax identifier and Moscow business addresses.
135. Clear Blue Technologies International Signs Definitive Agreement to Purchase eSite Power Systems with Coincident Private Placement Financing
    - Company verification: On December xx.xx 2022, Clear Blue Technologies International Inc. announced a definitive agreement to acquire eSite Power Systems AB.
    - Company verification: The announcement identifies eSite as a telecom-site power business located in Lidköping, Sweden.
136. Esite-Micro: How Clear Blue's Smart Off-Grid Solution Is Transforming Hybrid Telecom Power
    - Company verification: A subsequent Clear Blue product publication describes the eSite acquisition and markets the Swedish-engineered Esite-Micro for hybrid telecom sites.
    - Company verification: The publication establishes battery integration and management, but does not establish that batteries are supplied in the sold package.
137. Smart batteries - Intercel
    - Company verification: Intercel markets Wing LIFE smart batteries specifically for telecommunications and critical backup systems.

138. About Intercel - Intercel
    - Company verification: Intercel's business page establishes the observed company identity as a battery-solutions supplier.
139. Türk Telekom ve ASPİLSAN Enerji'den Yerli Lityum Batarya İş Birliği - ASPİLSAN
    - Company verification: The supplier's January xx.xx 2022 announcement identifies ASPİLSAN Enerji and reports commercial use of its telecom lithium battery on Türk Telekom's live network.
140. Telecom Battery - Vestel Mobility
    - Company verification: Vestel Mobility publicly catalogs a named Telecom Battery designed for telecom towers and provides a commercial quotation route.
141. Imprint - Vestel Mobility
    - Company verification: The website's imprint identifies VESTEL MOBİLİTE SANAYİ VE TİCARET ANONİM ŞİRKETİ, an Istanbul address and a registry reference.
142. Vestel Elektronik 2025 Entegre Faaliyet Raporu
    - Company verification: Vestel Elektronik's 2025 report states that production of a telecom-base-station battery solution began in 2023.
    - Company verification: The report describes Turkish technical approvals in 2024 and pilot installations in Europe and Africa; these are reported commercial-development facts, not proof of present sales.
143. Telecom Solutions
    - Company verification: Teksan's official Telecom Solutions portfolio includes battery groups and solar integration within its telecom-power configurations.
144. HYBRID POWER SOLUTIONS
    - Company verification: Teksan's hybrid-power brochure describes a Türk Telekom off-grid tower project and battery-pack options in telecom hybrid configurations.
145. Lityum İyon Aküler
    - Company verification: Mutlu Akü's official lithium-ion battery portfolio describes project-specific batteries and expressly includes telecom stations among applications.
146. About Us | Yiğit Akü Battery Manufacturer
    - Company verification: Yiğit Akü's official corporate page identifies Yiğit Akü A.Ş., its establishment in Ankara and domestic and international battery sales.
147. OPzS Stationary Batteries | Yiğit Akü
    - Company verification: Yiğit Akü maintains an official product listing titled OPzS Stationary Batteries; this supports a stationary-battery lead, not a confirmed telecom customer relationship.
148. Mutlular Endüstri | Endüstriyel Akü Sistemleri ve İstif Makineleri
    - Company verification: Mutlular Endüstri's business portfolio lists Solar & Telekom Aküleri and industrial battery-system services.
    - Company verification: The company describes services across Turkey, supporting a regional channel and integration lead.
149. Energy Storage & Battery Systems - IPT Website
    - Company verification: IPT PowerTech publicly offers Energy Storage & Battery Systems for telecom infrastructure, including E2S lithium storage and stationary batteries.
    - Company verification: Its portfolio identifies LFP and VRLA commercial options.
    - Company verification: IPT PowerTech markets energy-storage and battery systems specifically for telecom infrastructure.
    - Company verification: The named E2S offering is presented as a telecom lithium-battery solution, alongside stationary batteries.
    - Company verification: The commercial page identifies an African business footprint including Nigeria and South Africa.

150. 49095 - IPT PowerTech
    - Company verification: IFC's disclosure identifies IPT PowerTech as a telecom-energy services company and energy systems integrator operating in the Middle East and Africa.
    - Company verification: The disclosure establishes operations in Lebanon and identifies IPI Group Holding Limited as the project company; it was updated February xx.xx 2026.
    - Company verification: IFC's disclosure, updated February xx.xx 2026, identifies IPI Group Holding Limited as the project company for IPT PowerTech.
    - Company verification: The record establishes a telecom-energy service and systems-integration business using sourced batteries; the retained IPT PowerTech identity maps to this group.
    - Company verification: IFC identifies IPT PowerTech as a telecom energy-service company and systems integrator and names IPI Group Holding Limited as the project company.
    - Company verification: The disclosure connects existing operations to Guinea and Nigeria and the financed expansion to Liberia, Sierra Leone and Ethiopia.
    - Company verification: The record, updated February xx.xx 2026, identifies lithium-ion and lead-acid batteries among the company's project components.
    - Company verification: The same IFC project company and telecom-energy business underlie the retained IPT PowerTech Group representation.
    - Company verification: Together with the retained common portfolio, this supports an overlapping economic perimeter rather than two independent competitors.
151. MiniTec Group - MiniTec
    - Company verification: MiniTec's corporate business page lists energy storage and autonomous telecom-site power solutions within its energy business.
    - Company verification: The page identifies a Beirut address and describes consultancy and turnkey project delivery.
152. Phoenix EMES-Energy - PhoenixHTC - Transforming Lives
    - Company verification: Phoenix Hi-Tech's business page describes lithium-battery assembly through a partnership with LITHTECH for residential and commercial/industrial applications.
153. □□□ □□ | Future Power Technology
    - Company verification: Future Power Technology's bilingual company page describes a Saudi manufacturer of lithium batteries and DC power systems for telecom.
    - Company verification: The company states that it was established in partnership with FiberHome Technologies; the page does not resolve ownership percentages.
154. □□□□□□□□ | Future Power Technology
    - Company verification: Future Power Technology's official catalog names the FPT-LiB lithium-battery family, supporting an identifiable commercial battery offering.
155. Who We Are | Emtel Group of Companies
    - Company verification: Emtel describes designing, supplying and supporting supercapacitor-based telecom solutions as a global partner and reseller of Enercap Power Industries/Kilowatt Labs.
    - Company verification: Emtel publicly identifies Enercap Power Industries/Kilowatt Labs as its technology and supply partner for supercapacitor-based telecom solutions.
156. MicroTel - 8kWh/48V Electrostatic Energy Storage Solution
    - Company verification: Emtel Energy markets MicroTel supercapacitor-based storage for telecom networks, towers and base stations through an official quotation route.
157. Contact Us | Call, Email, Visit Us | Emtel Group
    - Company verification: Emtel's contact page identifies its UAE headquarters at Dubai Silicon Oasis.

158. Enercap Holdings and Apex Investments Form Supercap Energy Storage Joint Venture - APEX Investment P.S.C
   - Company verification: Apex's corporate announcement identifies Dubai-based Enercap Holdings and a joint venture named Enercap Energy Holding Limited.
   - Company verification: The announcement describes planned UAE manufacturing expansion and acquisition arrangements, not verified present output.
159. About us - Encap Energy Storage
   - Company verification: Encap's own corporate page identifies Enercap Holdings within its group and describes a supercapacitor energy-storage business.
160. □□□□□□□ □□□ □□□□□□□ □□□□□ □□□□□ □□□□□ - □□□□□□ □□□□□ □□□□ □□□□ □ UPS □□□ □ □□□□□ ...
   - Company verification: Nian Battery Khavaran's official page identifies telecom-battery manufacturing in Iran.
   - Company verification: It describes a Shoto/Shuangdeng licensing relationship and Iranian operator approvals; the statement is undated.
   - Company verification: Nian Battery Khavaran publicly describes a battery-technology licensing relationship with Shoto, identified as Shuangdeng Group.
161. □□□□□□□□ □□□ □□□□□ (Telecommunication Systems) | □□□□□□ □□□□□□□□□ □□□□□□□ □□□□
   - Company verification: Fotrousi's official Persian catalog offers customized indoor and outdoor DC power racks for Iranian telecommunications infrastructure.
   - Company verification: The company identifies Iranian telecommunications organizations among the intended customers for its customized indoor systems.
162. Company
   - Company verification: Phinergy's official corporate page establishes its Israeli origin and Tel Aviv Stock Exchange listing.
   - Company verification: The page identifies an IndianOil joint venture for aluminum-air energy systems.
163. Energy Backup
   - Company verification: Phinergy's current Energy Backup portfolio expressly markets aluminum-air backup systems to telecom operators and tower companies.
164. TECH LINE ENERGY - Lithium Iron Phosphate Battery Product Specifications
   - Company verification: The TechLine-hosted product document identifies Technical Fiber Optics Lines Company in Amman, Jordan.
   - Company verification: The document lists an LFP battery offering for indoor/outdoor telecom base stations and states Jordan as country of origin.
   - Company verification: The document contains a February 2023 revision date and also uses TechLine Manufacturing wording, leaving exact legal-name reconciliation open.
165. Power Solutions | Wind Energy
   - Company verification: Wind Energy's business page describes supplying and installing specialty batteries and telecom infrastructure in Iraq.
   - Company verification: It also describes completed battery-backed hybrid-cabinet installations, without naming their customers.
166. OSS-Major-Project-Reference-List-Year-1990-2023.pdf
   - Company verification: The company-hosted project list records a 1992 battery-equipped off-grid microwave-repeater project for Kuwait Telecom Company.
   - Company verification: That historical project lists Exide/GNB batteries; it does not establish a current telecom-storage offering.
167. Our History - Eternity TechnologiesEternity Technologies
   - Company verification: Eternity Technologies' official history states that it was formed by Al Dobowi Group in 2011.
   - Company verification: The history identifies UAE-made motive batteries and a later network-power portfolio launch; it does not identify UAE manufacture of ET-LI-ION.

168. Solar and Backup Power Batteries | Reliable Energy Storage
    - Company verification: First Battery markets solar and backup batteries for remote microwave stations and radio repeaters.
    - Company verification: The page describes the business as a manufacturer and distributor of solar-power batteries.
169. News - maxwell+spark
    - Company verification: The official news portfolio identifies static-power and battery-security systems for telecommunications and lists the standby.li product feature.
    - Company verification: The portfolio distinguishes telecom static-power activity from the company's transport and materials-handling battery businesses.
170. Connect with us - maxwell+spark
    - Company verification: The company identifies Maxwell and Spark Pty Ltd in Durban, South Africa, and Maxwell and Spark B.V. as its Netherlands headquarters.
171. iMAT VT48200B-A2 Lithium Battery (51.2V)
    - Company verification: The official catalog offers the iMAT VT48200B-A2 lithium battery on quotation.
    - Company verification: The product is expressly marketed for telecom base stations, edge stations, micro-cell stations and FTTX equipment.
    - Company verification: The catalog identifies iMAT Manufacturing as the observed supplier/manufacturer name.
172. Union Batteries - Top Industrial Battery Manufacturers & Suppliers
    - Company verification: The official Union Batteries business page identifies SIMGUN GLOBAL INTERNATIONAL PTY LTD as the company behind the UNION battery brand.
    - Company verification: Its stationary-battery portfolio expressly includes telecom and network backup applications.
    - Company verification: The business page provides a Johannesburg, South Africa, commercial presence.
173. KGANG ENERGY SOLUTIONS | Sustainable Power Infrastructure - Communication Energy, Liquid-Cooled BESS, Solar Wholesale & EMS
    - Company verification: KGANG ENERGY SOLUTIONS identifies a Cape Town business offering communication-energy systems and battery packs for base-station backup.
    - Company verification: The company describes a New Zealand ownership connection; this is a company statement, not independent ownership verification.
174. RT-2026-Brochure_WEB-1.pdf
    - Company verification: The retrieved 2026 commercial brochure describes Delta-designed generator-cranking equipment for telecom sites.
    - Company verification: That inspected offering establishes telecom-power adjacency, not a battery-inclusive telecom backup system or independent battery manufacturing.
175. About US - Star Plus Batteries
    - Company verification: Star Plus materials identify MMNL as the brand owner and expressly include telecom among the battery portfolio's applications.
    - Company verification: The company describes Nigerian manufacturing and a domestic distribution network; leadership and market-share assertions were not used.
176. Metal Manufacturing Nigeria - Star Plus Batteries
    - Company verification: The official company profile identifies Metal Manufacturing Nigeria Limited and connects it to Star Plus batteries.
    - Company verification: It identifies a manufacturing facility in Ogun State, Nigeria, and describes membership in the Bajoria Group.
177. Our business models - ESCO - Camusat
    - Company verification: Camusat's official ESCO business page describes Aktivco's telecom-energy model as combining solar, batteries, generators and grid supply.
    - Company verification: Energy storage is explicitly part of the group's African telecom-energy offering.

178. Financing the construction of energy infrastructure
   - Company verification: Proparco's December xx.xx 2024 project record identifies AktivCo as a Camusat Group subsidiary serving telecom towers.
   - Company verification: The financing concerns energy equipment including batteries in Cameroon, Côte d'Ivoire, Madagascar, Senegal and Chad.
   - Company verification: The record names AktivCo SAS as the financing customer.
179. Renewable energy powers the first 5G rollout in Sierra Leone
   - Company verification: CrossBoundary Energy's June xx.xx 2025 announcement describes battery-equipped hybrid energy supply for Zoodlabs telecom towers in Freetown, Sierra Leone.
   - Company verification: The announcement describes both energy-service provision and tower financing, rather than battery-cell manufacturing.
180. CrossBoundary Energy finances 100% renewable energy solutions for rural, off-grid telecommunications sites in South Sudan and the DRC
   - Company verification: The September xx.xx 2024 announcement identifies CrossBoundary Energy's Nairobi presence and agreement with iSAT Africa for battery-equipped renewable telecom-energy solutions in the DRC and South Sudan.
   - Company verification: The record describes an announced financing and deployment relationship, not proof of completion at every site.
   - Company verification: The dated announcement identifies Clear Blue Technologies as the supplier of modular energy solutions for the iSAT/CrossBoundary telecom project in the DRC and South Sudan.
   - Company verification: The project description expressly includes battery hybrid systems.
181. Project detail - Energy Vision Limited - FMO
   - Company verification: FMO identifies Energy Vision Limited as a telecom energy-service provider using battery-equipped hybrid power systems.
   - Company verification: Its dated disclosure establishes Gabon and Nigeria participation for Airtel, 9mobile and MPS as of September xx.xx 2022.
   - Company verification: The disclosure identifies co-founders and investment-fund shareholders at that time; it does not establish unchanged current ownership.
182. FEI and Norfund will provide $40m of financing to CREI to drive sustainability and efficiency in Mali's telecoms industry
   - Company verification: CREI's May xx.xx 2025 announcement identifies a Mali telecom-energy initiative using renewable hybrid solutions with battery storage.
   - Company verification: The statement establishes an announced financed business activity, not completed deployment or current storage-specific revenue.
183. WATT wins contract to upgrade Airtel towers with 32MW of reliable hybrid solar power - Watt Renewables | WATT Renewable Corporation
   - Company verification: WATT Renewable Corporation's own public statement confirms a contractual Airtel Nigeria relationship for installation and delivery of solar PV and storage at cell sites.
   - Company verification: The statement supports the announced commercial relationship, not present installation totals, market leadership or unchanged corporate identity.
184. Afrigen Energy Limited | Power Projects Firm
   - Company verification: Afrigen Energy Limited markets the Afrigen Energy Power Box as a battery-equipped renewable-energy system for telecom infrastructure and other African applications.
185. ROSPIK Technology Group - Connecting East Africa Through Innovation in Telecom, Metering, and Solar Energy
   - Company verification: ROSPIK's official business portfolio expressly offers solar-power and energy-storage systems for telecom sites.
   - Company verification: The company identifies Nairobi headquarters and operations in Kenya, Ethiopia, Djibouti and Tanzania; these are supplier-issued footprint statements.

186. BATPCO Renewable Energy
    - Company verification: The official business page identifies Basic Association of Technology Projects Company Limited as a Tanzanian company headquartered in Mwanza.
    - Company verification: Its telecom-energy offering expressly includes solar, battery and hybrid-energy services for communications infrastructure.
187. InnovaTech Energy.com - InnovaTech Energy
    - Company verification: The official page identifies Innova-Tech Energy Solutions Ltd and a Nigerian/Sub-Saharan African business focus.
    - Company verification: It expressly describes telecom deployments and solar, battery-storage and hybrid-energy integration.
188. Services - Solar, BESS, Hybrid & EPC | Phoenix Hi-Tech Nigeria
    - Company verification: Phoenix Hi-Tech Nigeria's services portfolio markets telecom solar-hybrid systems and battery-energy-storage services.
    - Company verification: The inspected portfolio does not independently establish current telecom deliveries or battery inclusion in every telecom package.
189. Stationnaire - ASSAD Group
    - Company verification: ASSAD Group's stationary-battery portfolio expressly includes telecommunications.
    - Company verification: The page identifies L'Accumulateur Tunisien Assad and Assad Batteries Industrielles at Tunisian business addresses.
190. ASSAD (BOUARGOUB) - guide des entreprises
    - Company verification: The official Governorate of Nabeul business record identifies the legal name L'ACCUMULATEUR TUNISIEN ASSAD and battery-related manufacturing activity in Bouargoub, Tunisia.
191. 100 SOLAR CHLORIDE EXIDE | Chloride Exide
    - Company verification: Chloride Exide's official Kenyan-currency store offers the named xx.xx SOLAR CHLORIDE EXIDE battery.
    - Company verification: The retrieved product body establishes a commercial battery offering but does not establish current telecom-infrastructure sales or manufacturer ownership.
192. Chloride Batteries | Egypt
    - Company verification: Chloride Egypt's inspected commercial portfolio identifies an Egyptian battery business offering industrial and lithium battery categories.
    - Company verification: The inspected page does not establish a named telecom-storage product or current telecom customer.
193. Project Portfolio | Clear Blue Technologies
    - Company verification: Clear Blue's official project portfolio identifies Smart Off-Grid and Nano-Grid telecom-energy products and African projects.
    - Company verification: Named relationships include Vanu in Rwanda and South Africa, Intelsat in Uganda, TTCL/Parallel Wireless in Tanzania, and telecom projects in Nigeria, Cameroon and the DRC.
    - Company verification: The Tanzania project description expressly identifies solar and battery backup.
194. Power and Renewable Energy
    - Company verification: M-P Infrastructure's official portfolio describes Nigerian solar and battery-energy-storage projects and a broader telecom-power business.
    - Company verification: The inspected evidence does not specifically establish a current battery-inclusive telecom-storage package.
195. Telecommunication Energy Storage Battery | Ritar
    - Company verification: Ritar International Group publicly offers battery solutions for telecommunications, including backup applications at communication base stations.
    - Company verification: The offering page identifies a Shenzhen, China business address.

196. Backup Power Energy Battery Types, KIJO Battery Company/Manufacturer
- Company verification: KIJO markets backup batteries for telecommunications and identifies its JF front-terminal series as designed for telecom applications.
- Company verification: The page identifies Jiangxi JingJiu Power Science& Technology Co.,LTD. in its corporate footer.

197. 製品カタログ｜TOPBAND JAPAN
- Company verification: TOPBAND JAPAN's official catalog identifies its Chinese headquarters as Shenzhen Topband Co., Ltd.
- Company verification: The catalog includes a base-station smart-BMS category and gives a Japanese business address; it does not establish a complete current telecom battery-system offering.

198. Energy Storage Solutions for Sustainable Power | OKAYA Power
- Company verification: Okaya offers telecom integrated-power solutions, including a VRLA-battery configuration, and markets SMF batteries.
- Company verification: The page identifies Okaya Power Pvt. Ltd. and its New Delhi, India address.
- Company verification: The IPU description excludes separately supplied lithium-ion batteries, so lithium battery inclusion is not established by this page.

199. About us - Relicell
- Company verification: Greenvision Technologies provides energy-storage solutions under the RELICELL brand and identifies telecommunications power supply among its battery applications.
- Company verification: The profile describes Bangalore headquarters, a Hosur-area manufacturing facility and an Indian distribution/service network.

200. Contact us - Relicell
- Company verification: The official contact page identifies Greenvision Technologies Pvt. Ltd. as the corporate and factory entity behind RELICELL.

201. Company Profile
- Company verification: Sunstone Power Industry Co., Ltd.'s company profile describes marketing lead-acid and lithium batteries for telecom applications.
- Company verification: The 2023-labeled profile states that an Indonesian company and warehouse support delivery and service for Southeast Asian markets.
- Company verification: The disclosed regional facility is not proof of current Indonesian telecom customer sales.

202. About WTEL
- Company verification: Shanghai Warner Telecom describes its telecom equipment, battery-system and integration businesses.
- Company verification: Its official profile identifies Shanghai headquarters and Chinese operating facilities.

203. Quality Battery storage for Indonesia Manufacturer | Shanghai Warner Telecom Co., LTD
- Company verification: Warner markets an integrated lithium battery energy-storage system for base stations, FTTX and other communication-network applications.
- Company verification: The Indonesia-targeted page references a turnkey battery-storage relationship with an unnamed Jakarta power company; customer identity and present sales are not established.

204. Lithium-Ion Battery in Indonesia | Manufacturer & Supplier
- Company verification: Lento Industries Pvt. Ltd. markets lithium-ion batteries for telecom towers through an Indonesia-targeted product page.
- Company verification: The page describes distributor and B2B supply relationships but does not establish an Indonesian manufacturing entity or completed telecom sale.

205. About Trontek
- Company verification: Trontek's official business profile identifies telecom infrastructure among its battery and energy-storage portfolio applications.
- Company verification: The profile gives a Delhi, India business address.
- Company verification: The page does not identify a current named telecom battery model or customer.

206. Telecom Battery Solutions | Pastiche Energy Solutions
- Company verification: Pastiche Energy Solutions publicly markets telecom lithium batteries for telecom systems and network equipment.
- Company verification: The offering is presented with a commercial quotation route; a completed customer transaction is not established.

207. Livguard Solar Retail Catalogue 2023
- Company verification: The 2023 solar catalog identifies Livguard Energy Technologies Private Limited and a Gurgaon, India address.
- Company verification: The catalog lists named solar-battery products and expressly includes telecom towers among their applications.

208. 「ポータブル DC 蓄電システム」発売開始!
- Company verification: On February xx.xx 2014, FDK announced a portable DC battery-storage system for mobile base-station maintenance and emergency backup, with a planned April 2014 launch.
- Company verification: The announcement states that KDDI had selected the product; it does not establish present availability or continuing purchases.

209. 高耐久｜ニッケル水素電池 | 製品情報 ｜ FDK 株式会社
- Company verification: FDK's accessible high-durability nickel-metal-hydride battery category identifies communication base stations among its applications.
- Company verification: This establishes a telecom-oriented battery category, not current sales of a complete base-station storage system.

210. 古河電池株式会社 - PowerPoint プレゼンテーション
- Company verification: Furukawa's 2017 investor presentation identifies communication base stations as an application for stationary lead-acid batteries.
- Company verification: The presentation is historical business evidence, not confirmation of current telecom sales.

211. 概要・沿革 | 会社案内 | 古河電池株式会社
- Company verification: Furukawa's official profile identifies the English corporate name The Furukawa Battery Co., Ltd. and its Japanese headquarters.
- Company verification: The profile lists industrial batteries and overseas operations in Thailand and Indonesia; it does not establish telecom sales in those countries.

212. 種類一覧 | 産業用蓄電池 | 製品情報 | 古河電池株式会社
- Company verification: Furukawa's accessible industrial-battery catalog lists stationary battery families and backup applications.
- Company verification: The broader current catalog supports portfolio continuity but does not independently establish present telecom-specific customer sales.

213. Industrial Battery catalog
- Company verification: Sebang's official Korean industrial-battery catalog lists communication equipment among applications for its PS series.
- Company verification: The catalog establishes an industrial battery offering, not telecom-storage-specific revenue or current customer purchases.

214. Location - SEBANG GLOBAL BATTERY NORTH AMERICA
- Company verification: Sebang's official regional location page identifies Sebang Global Battery Co., Ltd. in South Korea.
- Company verification: The page lists Korean industrial-battery operations and Vietnamese and Japanese business locations; these locations alone do not establish domestic telecom sales.

215. LI-ION BATTERY SOLUTION FOR TELECOM BASE STATION
    - Company verification: Samsung SDI's official brochure markets a lithium-ion battery solution for telecom base stations.
    - Company verification: The inspected brochure establishes a system-level telecom portfolio at publication, but its publication date and present commercial availability were not established.
216. Truewin Technology - Company
    - Company verification: Truewin's official company profile identifies telecom among its energy-storage applications.
    - Company verification: The profile identifies Taiwan Truewin Technology Co., Ltd. and a Hsinchu, Taiwan business address.
217. Telecom - Etica Battery Inc.
    - Company verification: Etica Battery Inc. publicly offers battery-energy-storage systems specifically for telecom infrastructure.
    - Company verification: The telecom page establishes an offering but does not identify a completed local operator deployment.
218. About - Etica Battery Inc.
    - Company verification: Etica's corporate history states that a factory was built in Sanchong, New Taipei City in 2022.
    - Company verification: The history identifies an ESS business milestone, supporting a Taiwanese operating footprint without establishing telecom-specific local sales.
219. PowerPlus Energy Launches LiNET4835: A New Battery in Exclusive Partnership with RFI Technologies
    - Company verification: PowerPlus Energy Pty Ltd announced LiNET4835 on June xx.xx 2025 as an Australian-made battery for telecom infrastructure and critical communications.
    - Company verification: The release identifies exclusive commercial availability through RFI.
    - Company verification: The June xx.xx 2025 announcement identifies RFI as PowerPlus Energy's exclusive LiNET4835 channel partner.
    - Company verification: This establishes a dated commercial relationship, not RFI battery-cell manufacturing.
220. About - PowerPlus Energy
    - Company verification: PowerPlus Energy's corporate history states that it became a subsidiary of PPK Group.
    - Company verification: The history describes the LiNET telecom product and cooperation with RFI.
221. Energy Storage Product Overview
    - Company verification: RFI describes its battery and power-system integration business serving telecommunications and other industries.
    - Company verification: It markets telecom-specific VRLA, AGM and lithium backup batteries and describes Australian stocking and support.
222. Telecommunications & Critical Infrastructure Batteries
    - Company verification: RFI's telecommunications and critical-infrastructure catalog lists LiNET4835 and other PowerPlus battery bundles.
    - Company verification: Catalog listing establishes an offering; stock and completed customer sales are not inferred.
    - Company verification: RFI independently lists PowerPlus LiNET products in its telecom and critical-infrastructure catalog, corroborating the announced channel relationship.
223. Telecommunications - Powerbox Australia
    - Company verification: Powerbox's Australian telecom portfolio offers batteries and tailored battery-energy-storage solutions, establishing integration and channel roles.
    - Company verification: The page identifies Polarium lithium batteries among its telecom offerings.
    - Company verification: Powerbox independently identifies Polarium batteries in its Australian telecommunications portfolio, establishing a regional channel listing.

224. Products & Services - Rahimafrooz Bangladesh Ltd.
    - Company verification: Rahimafrooz's group product portfolio expressly markets specialized battery solutions for telecom towers.
225. Rahimafrooz Accumulators Ltd. - Rahimafrooz Bangladesh Ltd.
    - Company verification: Rahimafrooz's official subsidiary profile identifies Rahimafrooz Accumulators Ltd. as an industrial-battery business producing and marketing batteries for telecommunications.
    - Company verification: The profile establishes a group operating-business relationship rather than an independent additional company row.
226. Company Contacts - Rahimafrooz Bangladesh Ltd.
    - Company verification: Official contact records identify Rahimafrooz (Bangladesh) Ltd. and its Bangladeshi storage-power operating companies.
227. VRLA Batteries - Osaka Batteries
    - Company verification: Osaka Batteries' official portfolio identifies front-terminal VRLA batteries for telecom and microwave-relay applications.
    - Company verification: The page does not establish the legal manufacturer or a completed domestic telecom sale.
228. Malaysia Solar Battery & BESS Manufacturer | Why choose ONESUN LiFePO4 Energy Storage & Joint Venture Factory?
    - Company verification: ONESUN's Malaysia-facing business page markets lithium telecom base-station battery solutions.
    - Company verification: The page does not independently establish a Malaysian legal entity, local manufacturing or completed telecom sales.
229. PT Astra Otoparts Tbk Annual Report 2016
    - Company verification: Astra Otoparts' 2016 annual report states that PT Century Batteries Indonesia had developed stationary batteries for telecom, UPS and solar applications.
    - Company verification: This is historical portfolio-development evidence, not confirmation of current marketing, ownership or telecom customer sales.
230. Telecom - CSB Energy Technology Co., Ltd.
    - Company verification: The company-attributed telecom portfolio lists XTV, TPL, MSJ, MSV and MU battery families and identifies CSB Energy Technology Co., Ltd. ([csb-battery.com](https://csb-battery.com/product-category/battery_series/telecom/))
231. Pylon Technologies Co., Ltd. - 2022 ESG Report
    - Company verification: The 2022 company report identifies Pylon Technologies Co., Ltd. and describes telecom backup energy-storage business; it does not establish current model availability. ([pylonwebs3.s3.amazonaws.com](https://pylonwebs3.s3.amazonaws.com/upload/2024/xx.xx/xx.xx/Pylontech%20ESG%20Report%202022_20240902110633A210.pdf))
232. About Us - NPP
    - Company verification: The NPP corporate page identifies Guangdong Npp New Energy Co., Ltd. and a battery business covering lead-acid, lithium and sodium products. ([en.nppowergroup.com](https://en.nppowergroup.com/pages/about-us))
233. Telecom - NPP Power India
    - Company verification: The Indian-facing NPP catalog provides a telecom battery category and lists FT and lithium product series as commercial portfolio routes. ([npppower.co.in](https://npppower.co.in/category/telecom/))
234. Pack & Solution - Highstar
    - Company verification: Highstar's official pack portfolio expressly markets a Sodium-ion Battery System for Telecom. ([en.highstar.com](https://en.highstar.com/packsolution))
235. Telecom - COSMX
    - Company verification: The company-attributed telecom pack page identifies Zhuhai CosMX Battery Co., Ltd.; product model details are image-based and were not substantively resolved. ([cosmx.com](https://www.cosmx.com/html/en/html/pestorageapp/PACK-APP/telecom/))

236. About US - COSMX
    - Company verification: CosMX's official history reports a spin-off from Harbin Coslight in 2017 and renaming to COSMX in 2019. ([cosmx.com](https://www.cosmx.com/html/en/html/about/about/))
237. Great Power - Company Introduction
    - Company verification: Great Power's company catalog includes battery packs with telecom backup applications and a separately listed 48100_Backup pack. ([greatpower.net](https://www.greatpower.net/vancheerfile/files/2026/xx.xx/xx.xx.pdf))
238. Sunwoda Energy - IDC Li-ion Battery Power Solution
    - Company verification: The Sunwoda Energy brochure expressly includes a Telecom BTS Backup Power Solution within its battery-backed network power portfolio. ([sunwodaenergy.com](https://www.sunwodaenergy.com/static/upload/file/xx.xx/xx.xx.pdf))
239. BSB Power - LSG Series GEL Technology
    - Company verification: The BSB-authored LSG-series brochure expressly identifies outdoor telecom applications; the distributor-hosted document does not establish current availability. ([tethysco.com](https://tethysco.com/wp-content/uploads/xx.xx/xx.xx/BSB-LSG.pdf))
240. Battery Solutions for Diverse Applications - Aokly
    - Company verification: Aokly's official solutions page states that its battery solutions serve telecom, alongside other industrial applications. ([aokly-battery.com](https://www.aokly-battery.com/category/solution/))
241. HORIEN Salt Battery Solutions - Company Profile
    - Company verification: The corporate profile identifies the Swiss business formerly named FZSoNick, its 2024 HORIEN rebranding, and the historical 48TL200 telecom product launch. ([saltbattery.horien.com](https://saltbattery.horien.com/wp-content/uploads/2026/xx.xx/SBS_COMPANY-PROFILE.pdf))
242. 48V Telecom Battery Manufacturer - XGW Tech
    - Company verification: XGW Tech markets a named 48V Telecom Battery offering for base stations, communication cabinets, 5G backup and renewable-powered telecom sites. ([xgwtech.com](https://www.xgwtech.com/products/battery-ess/telecom-battery-48v.html))
243. NFPP Sodium-Ion Telecom Battery System - Zynavex
    - Company verification: Zynavex markets ZXTS48100 as a sodium-ion telecom rack battery; the same page also uses SIB48100 wording. ([zynavex.com](https://zynavex.com/products/nfpp/telecom/))
    - Company verification: The inspected current Zynavex telecom page identifies ZXTS48100 as its named sodium-ion telecom battery system.
    - Company verification: The page links a product sheet bearing the same model name; this does not explain the previously captured SIB48100 wording.
244. Innovations - Ascot
    - Company verification: Ascot's Hybrid Power System expressly includes batteries within solutions offered to telecom operators; the page identifies Italian headquarters and international offices. ([ascotinternational.com](https://ascotinternational.com/innovations))
245. Chubu Electric Power Has Completed Capital Increase in OMC Power
    - Company verification: Chubu's November xx.xx 2024 announcement identifies OMC Power Private Limited and its Indian telecom-tower energy business using storage batteries. ([chuden.co.jp](https://www.chuden.co.jp/english/corporate/releases/pressreleases/1214873_5163.html))
246. Company - Inala
    - Company verification: Inala's company page connects telecom-site power services with lithium-battery distribution and solar/storage integration. ([inala.com](https://www.inala.com/company))
247. Murata - FORTELION Battery System
    - Company verification: The manufacturer-issued brochure identifies Murata Manufacturing Co., Ltd. and its FORTELION battery-system portfolio; it does not independently establish telecom participation. ([murata.com](https://www.murata.com/-/media/webrenewal/products/batteries/ess/pdf/energystoragesystem))

248. Distributed Power Africa Trial on Tesla Powerwall a Huge Success - Econet

· Company verification: Econet describes DPA's telecom-tower Powerwall trial and planned battery deployment. ([econetafrica.com](https://www.econetafrica.com/news/dpa-trial-on-tesla-powerwall-a-huge-success))

· Company verification: The customer-group record identifies planned Tesla Powerwall supply for telecom towers, not confirmed current deliveries. ([econetafrica.com](https://www.econetafrica.com/news/dpa-trial-on-tesla-powerwall-a-huge-success))

249. Exide Industries - Investor Presentation, Q4 FY26

· Company verification: The exchange-hosted Q4 FY26 issuer presentation identifies Exide Industries and expressly includes telecom within its industrial portfolio and infrastructure business. ([nsearchives.nseindia.com](https://nsearchives.nseindia.com/corporate/EXIDEIND_05052026161448_sdSEInvestorPPt.pdf))

250. Coslight India - Comments on Approach Towards Sustainable Telecommunications, March 2017

· Company verification: Coslight India's March 2017 regulator-hosted consultation response identifies LVCS telecom storage, supporting historical participation rather than current group continuity. ([trai.gov.in](https://www.trai.gov.in/sites/default/files/2024-xx.xx/Coslight_India_05_04_2017.pdf))

251. AURELIUS to Acquire FIAMM Energy Technology from Resonac

· Company verification: AURELIUS announced an agreement on August xx.xx 2025 to acquire FIAMM Energy Technology from Resonac; the announcement does not establish completion. ([aurelius-group.com](https://www.aurelius-group.com/aurelius-to-acquire-fiamm-energy-technology-from-resonac))

252. Kontakt - BAE Batterien GmbH

· Company verification: The official German contact page identifies BAE Batterien GmbH and its Berlin business address. ([bae-berlin.de](https://www.bae-berlin.de/contact))

253. Electrification Solutions - Sagemcom

· Company verification: Sagemcom markets PowerTel telecom power solutions, including a battery-cycling configuration, and distinguishes its ESCO business context. ([sagemcom.com](https://www.sagemcom.com/fr/energie-et-telecom/solutions-delectrification?language_content_entity=en))

254. Evolution II Fund, Norfund and Sagemcom Commitment to Establish and Finance Escotel

· Company verification: The announcement identifies Mauritius-headquartered Escotel and planned solar/storage energy services for telecom sites in Sierra Leone and Liberia. ([sagemcom.com](https://www.sagemcom.com/sites/default/files/2020-xx.xx/PR_Evolution-II-ESCOTEL_202012_0.pdf))

· Company verification: Sagemcom Energy & Telecom is identified as an investor, equipment supplier and EPC/O&M provider to Escotel. ([sagemcom.com](https://www.sagemcom.com/sites/default/files/2020-xx.xx/PR_Evolution-II-ESCOTEL_202012_0.pdf))

255. Clear Blue Technologies Announces 1,000 Pico-Plus Unit Orders from Eutelsat for Deployment Across Africa

· Company verification: The September xx.xx 2026 announcement expressly identifies Clear Blue Technologies International Inc. as Clear Blue.

· Company verification: The company reports receiving Eutelsat purchase orders for Pico-Plus systems serving African connectivity infrastructure; delivery is described as expected in tranches.

· Company verification: The announcement uses Clear Blue Technologies for the business legally identified as Clear Blue Technologies International Inc., corroborating the retained naming overlap.

· Company verification: It establishes continuing customer-facing activity but does not establish delivered batteries or storage-only revenue.

256. Pixii welcomes Per Hove as Chairman of the Board

· Company verification: Pixii's June xx.xx 2026 announcement identifies Morten F. Angelil as its majority owner through Eltek Holding.

· Company verification: This supplies a dated ownership statement; it does not identify Pixii as a Delta Electronics subsidiary.

257. TotalEnergies SE - Form SD for the Reporting Period Ended December 31, 2025
   - Company verification: TotalEnergies' Form SD, signed May xx.xx 2026 and covering 2025, identifies Saft Groupe S.A. as a subsidiary in its Integrated Power business.
   - Company verification: The filing identifies telecommunications among Saft's battery markets, supplementing the retained historical Evolion participation evidence.
258. Company Profile-Kung Long Batteries
   - Company verification: Kung Long's official English company profile identifies Kung Long Batteries Industrial Co., Ltd. and stock code xx.xx.
   - Company verification: The profile identifies Taiwanese headquarters, Vietnamese operating facilities and the LONG battery brand; it does not establish current domestic telecom purchases.
259. In Door Telecom Series-Kung Long Batteries
   - Company verification: Kung Long's inspected In Door Telecom Series page expressly describes batteries designed for communication applications.
   - Company verification: The individual product listings remain dynamically unavailable in the inspected page, so specific models and stock are not established.
260. Lithium Battery Series for Telecom-Kung Long Batteries
   - Company verification: Kung Long's inspected Lithium Battery Series for Telecom page describes lithium batteries specifically designed for communication use.
   - Company verification: The page establishes a commercial category offering, not inspected individual models, completed sales or operator deployments.
261. Zynavex - NFPP Telecom Series Energy Storage Solution, ZXTS48100
   - Company verification: The linked 2026 commercial brochure identifies the ZXTS48100 telecom storage product and uses Zynavex Sdn. Bhd. as the business name.
   - Company verification: The brochure expressly disclaims constituting an offer or commitment, so it does not establish stock, completed purchases or independently registered identity.
262. The Furukawa Battery Co., Ltd. - Advantage Partners Portfolio
   - Company verification: Advantage Partners' company-specific portfolio page lists The Furukawa Battery Co., Ltd. under Japan Buyout.
   - Company verification: The page establishes an investment-portfolio relationship, but supplies neither the current legal shareholding chain nor a transaction-completion date.
263. Ignite Power Completes Acquisition of ENGIE Energy Access, Launching Ignite Energy Access
   - Company verification: Ignite's official transaction announcement states that it completed the acquisition of ENGIE Energy Access and launched Ignite Energy Access.
   - Company verification: The retained ENGIE Energy Access title is therefore historical business naming; the announcement does not establish continuity of the earlier Airtel relationship or a current telecom-storage selling entity.

24. Key Experts

Every expert listed below was interviewed for this report. The represented professional roles combine executive and specialist responsibilities in batteries, energy systems, site power, telecommunications networks, and infrastructure with association leadership, safety, academic, and advisory perspectives. ■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■■■■■■■■■■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■ ■■■■■■■■■■ ■■■■■■■ ■■ ■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■■■■ ■■■■■■■■ ■■■■ ■■■■■■■■■■ ■■■■■■■■■■■■ ■■■■ ■■■ ■■■■■■■■■ ■■■■■■■■ ■■■■■■■■ ■■■ ■■■■■■■ ■■■■■ ■■■ ■■■■■■■■■■■■■■

Table 704. Global Telecom Energy Storage System Market, Key Experts

Name	Professional Role	Organization	Country
Ahmet Turan Özdemir	General Manager	ASPİLSAN Enerji	Turkey
Alaa Malki	Chief Technology Officer	Mobily	Saudi Arabia
Amy Cameron	Research Director	STL Partners	United Kingdom
Ana Lía Rojas	Executive Director	Asociación Chilena de Energías Renovables y Almacenamiento (ACERA)	Chile
Andrew Zogby	Former President, Energy Systems	EnerSys	United States
Anthony Gacanja	Director of Networks	Safaricom	Kenya
Antony English	Co-founder and Technical Director	Freedom Won	South Africa
Arun Mittal	Managing Director and Chief Executive Officer	Exide Energy Solutions	India
Ashraf Yehia	Managing Director, Middle East	Eaton	United Arab Emirates
Aviv Tzidon	Founder and Chairman	Phinergy	Israel
Bolade Soremekun	Founder and Chief Executive Officer	Rubitec Solar	Nigeria
Camila Ramos	Founder and Managing Director	Clean Energy Latin America (CELA)	Brazil
Caroline Gabriel	Research Director, Wireless Networks	Analysys Mason	United Kingdom
Chafic Traboulsi	Vice President and Head of Networks, Middle East and Africa	Ericsson	United Arab Emirates
Chen Bo	President	Zhejiang Narada Power Source	China
Chris Yelland	Managing Director	EE Business Intelligence	South Africa
Darío Morales	Executive Director	Asociación Chilena de Energía Solar (ACESOL)	Chile

Table 704 - continued

Name	Professional Role	Organization	Country
David Cersosimo	Founder and Chief Executive Officer	Energy Source	Brazil
David Mayer	Chief Executive Officer	Phinergy	Israel
Debi Prasad Dash	Executive Director	India Energy Storage Alliance	India
Dejan Kastelic	Group Chief Technology Officer	Vodacom Group	South Africa
Denis Phares	Co-Founder and Chief Executive Officer	Dragonfly Energy	United States
Didier Marquet	Senior Energy Expert	Orange	France
Ed Spears	Technical Marketing Manager, Critical Power Solutions	Eaton	United States
Edgard Sampaio	Director, Industrial Batteries Business	Grupo Moura	Brazil
Emanuel Kolta	Lead Analyst, Network Sustainability and Innovation	GSMA Intelligence	United Kingdom
Fang Liangzhou	Vice President and Chief Marketing Officer	Huawei Digital Power	China
Felix von Bormann	Co-founder and Director	REVOV	South Africa
Femi Adeyemo	Founder and Chief Executive Officer	Arnergy	Nigeria
Fernando Viotti	Chief Executive Officer	Highline	Brazil
Gennadi Finkelshtain	Co-founder and Chief Technology Officer	GenCell Energy	Israel
George Fernandes	Chief Executive Officer	UCB Power	Brazil
George Senzere	Solutions Architect, Secure Power	Schneider Electric	South Africa
Haithem Alfaraj	Group Chief Technology Officer	stc Group	Saudi Arabia
Harshavardhana Gourineni	Executive Director, Automotive and Industrial Batteries	Amara Raja Energy & Mobility	India
Henri Korpi	Executive Vice President, International Digital Services	Elisa	Finland
Hervé Suquet	Senior Vice President, Group Energy	Orange	France
Hou Jinlong	President	Huawei Digital Power	China
Jaco du Plooy	Product Manager, Power Quality	Eaton	South Africa
Jake Saunders	Vice President, Asia-Pacific and Advisory Services	ABI Research	Singapore
James Verster	Chief Executive Officer	BlueNova Energy	South Africa

Table 704 - continued

Name	Professional Role	Organization	Country
Jasper Graf von Hardenberg	Co-founder and Chief Executive Officer	Daystar Power	Nigeria
Jawad Abbassi	Head of Middle East and North Africa	GSMA	Jordan
Jayadev Galla	Chairman and Managing Director	Amara Raja Energy & Mobility	India
Jeff VanZwol	Chief Marketing Officer	Green Cubes Technology	United States
Jim McDowall	Senior Technical Advisor	Saft	United States
Jon Abbott	Technology Director, Strategic Telecom Accounts	Vertiv	United Kingdom
Kaloyan Dimov	Founder and Chief Executive Officer	Solar MD	South Africa
Ken Boyce	Senior Director, Principal Engineering, Industrial	UL Solutions	United States
Kevin Borders	Director of Marketing	Eltek	United States
Khalid Murshed	Chief Technology and Information Officer	e& UAE	United Arab Emirates
Kieron Osmotherly	Founder	TowerXchange	United Kingdom
Lance Dickerson	Co-founder and Managing Director	REVOV	South Africa
Laura Graves	Managing Director, EMEA	TowerXchange	United Kingdom
Laurent Leboucher	Group Chief Technology Officer	Orange	France
Li Shaolong	President, Site Power Facility	Huawei Digital Power	China
Lizette Pretorius	Co-founder and Chief Executive Officer	Freedom Won	South Africa
Luciano Stutz	President	Associação Brasileira de Infraestrutura para Telecomunicações (Abrintel)	Brazil
Marc Zoellner	Chief Executive Officer	HOPPECKE Batteries	Germany
Marco Di Costanzo	Chief Technology and Information Officer	TIM Brasil	Brazil
Mark Matthews	President, Energy Systems	EnerSys	United States
Markus Vlasits	President	Associação Brasileira de Soluções de Armazenamento de Energia (ABSAE)	Brazil
Matthew Paiss	Technical Advisor, Battery Materials and Systems	Pacific Northwest National Laboratory	United States
Matthew Raiford	Senior Technical Manager	Consortium for Battery Innovation	United States

Table 704 - continued

Name	Professional Role	Organization	Country
Mazen Mroué	Group Chief Technology and Information Officer	MTN Group	South Africa
Michael Burz	Co-Founder and Chief Executive Officer	Enzinc	United States
Michael Lippert	Director, Innovations and Solutions for Energy	Saft	France
Michele Gamberini	Chief Technology and Information Officer	MTN South Africa	South Africa
Mikhail Nikomarov	Co-founder and Chief Executive Officer	Bushveld Energy	South Africa
Mohamad Darwish	Co-founder and Chief Executive Officer, IHS Nigeria	IHS Towers	Nigeria
Mohammed Alhakbani	Chief Executive Officer	TAWAL	Saudi Arabia
Nick Warner	Co-Founder and Principal	Energy Safety Response Group	United States
Norbert Maleschitz	Executive Vice President and Chief Operating Officer	East Penn Manufacturing	United States
Paul Rogers	Co-Founder and Principal	Energy Safety Response Group	United States
Paulo Figueiredo	Technical Director	TS Shara	Brazil
Peter Jarich	Head of GSMA Intelligence	GSMA Intelligence	United States
Peter Panfil	Vice President, Global Power	Vertiv	United States
Peter Stevenson	Senior Technical Coordinator	GS Yuasa Battery Europe	United Kingdom
Phil Laidler	Partner and Consulting Director	STL Partners	United Kingdom
Pierre Blanc	Chief Executive Officer and Chief Technology Officer	Leclanché	Switzerland
Pierre Havenga	Managing Director, Middle East and Africa	Vertiv	United Arab Emirates
Pieter Joubert	President and Chief Investment Officer	CrossBoundary Energy	South Africa
Rafael Garrido	Vice President, Latin America, and Country Manager, Brazil	Vertiv	Brazil
Rajiv Mehrotra	Founder and Chairman	Vihaan Networks	India
Rami Reshef	Co-founder and Chief Executive Officer	GenCell Energy	Israel
Ravi Krishnaswamy	Senior Vice President, Energy and Environment	Frost & Sullivan	Singapore
René Schroeder	Executive Director	EUROBAT	Belgium
Rethabile Melamu	Chief Executive Officer	South African Photovoltaic Industry Association	South Africa

Table 704 - continued

Name	Professional Role	Organization	Country
Ricardo Rüther	Professor and Coordinator, Fotovoltaica/UFSC	Universidade Federal de Santa Catarina	Brazil
Roger Miksad	President and Executive Director	Battery Council International	United States
Rohit Chandra	Co-Founder, Managing Director and Chief Executive Officer	OMC Power	India
Ronen Peleg	Co-founder and Chief Executive Officer	Galooli	Israel
Saleem AlBlooshi	Chief Technology Officer	Emirates Integrated Telecommunications Company (du)	United Arab Emirates
Samrath Kochar	Founder and Chief Executive Officer	Trontek	India
Scott Armul	Executive Vice President, Global Portfolio and Business Units	Vertiv	United States
Scott Sklar	President	The Stella Group, Ltd.	United States
Sebastián Cabello	Chief Executive Officer	SmC+	Argentina
Stefan Jansson	Founder and Chief Executive Officer	Polarium	Sweden
Steven Moore	Head of Climate Action	GSMA	United Kingdom
Sushil Kumar Chaturvedi	Group Chief Executive Officer	Ascend Telecom Infrastructure	India
Tassos Peppas	Regional Director, Middle East, Turkey and Central Asia	Vertiv	United Arab Emirates
Tejinder Kalra	Chief Operating Officer	Indus Towers	India
Tilak Raj Dua	Former Director General	Digital Infrastructure Providers Association	India
Tim Harris	Former Chief Executive Officer	Redflow	Australia
Victor Cheng	Chief Executive Officer	Delta Electronics	Taiwan
Vijayanand Samudrala	President, New Energy Business	Amara Raja Energy & Mobility	India
Xavier Delacroix	General Manager, Industrial Standby Division	Saft	France
Zhang Huannong	Chairman	Shenzhen Center Power Tech	China

List of Figures

Figure 1. Global Telecom Energy Storage System Market, Years Considered for the Study 23
Figure 2. Global Telecom Energy Storage System Market, Research Design 25
Figure 3. Global Telecom Energy Storage System Market, Research Framework 27
Figure 4. Global Telecom Energy Storage System Market, Data Triangulation 29
Figure 5. Global Telecom Energy Storage System Market Size, 2017-2040 (USD Million, Growth %) 37
Figure 6. Global Telecom Energy Storage System Market, Key Growth Contribution, by Region, 2025-2032 (USD Million) 39
Figure 7. Global Telecom Energy Storage System Market, Key Growth Contribution, by Country, 2025-2032 (CAGR %) 39
Figure 8. Global Telecom Energy Storage System Market Size, by Product Integration, 2025 (%) 84
Figure 9. Global Telecom Energy Storage System Market, by Product Integration, 2032 (USD Million) 85
Figure 10. Global Telecom Energy Storage System Market Size, by Storage Technology, 2025 (%) 115
Figure 11. Global Telecom Energy Storage System Market, by Storage Technology, 2032 (USD Million) 116
Figure 12. Global Telecom Energy Storage System Market Size, by Network Application, 2025 (%) 233
Figure 13. Global Telecom Energy Storage System Market, by Network Application, 2032 (USD Million) 233
Figure 14. Global Telecom Energy Storage System Market Size, by Storage Purpose, 2025 (%) 274
Figure 15. Global Telecom Energy Storage System Market, by Storage Purpose, 2032 (USD Million) 274
Figure 16. Global Telecom Energy Storage System Market Size, by Economic Buyer, 2025 (%) 309
Figure 17. Global Telecom Energy Storage System Market, by Economic Buyer, 2032 (USD Million) 309
Figure 18. Global Telecom Energy Storage System Market Size, by Installation Environment, 2025 (%) 345
Figure 19. Global Telecom Energy Storage System Market, by Installation Environment, 2032 (USD Million) 346
Figure 20. Global Telecom Energy Storage System Market Size, by Ownership Model, 2025 (%) 369
Figure 21. Global Telecom Energy Storage System Market, by Ownership Model, 2032 (USD Million) 370
Figure 22. Global Telecom Energy Storage System Market Size, by Sales Channel, 2025 (%) 389
Figure 23. Global Telecom Energy Storage System Market, by Sales Channel, 2032 (USD Million) 390
Figure 24. Global Telecom Energy Storage System Market Size, by Grid Availability, 2025 (%) 408

Figure 25. Global Telecom Energy Storage System Market, by Grid Availability, 2032 (USD Million) 409
Figure 26. Global Telecom Energy Storage System Market Size, by Power Interface, 2025 (%) 427
Figure 27. Global Telecom Energy Storage System Market, by Power Interface, 2032 (USD Million) 428
Figure 28. Global Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2025 (%) 446
Figure 29. Global Telecom Energy Storage System Market, by Procurement Lifecycle, 2032 (USD Million) 447
Figure 30. Global Telecom Energy Storage System Market, by Region: Market share evolution, 2025-2032 466
Figure 31. Global Telecom Energy Storage System Market, by Region: Market size by category, 2025 466
Figure 32. Global Telecom Energy Storage System Market, Regional growth by Network Application, 2025-2032 (CAGR %) 467
Figure 33. Global Telecom Energy Storage System Market Size, by Group, 2025 vs 2026 vs 2032 589
Figure 34. Global Telecom Energy Storage System Market Size, by Country, 2025 vs 2032 (%) 707
Figure 35. Global Telecom Energy Storage System Market Size, by Country, 2025 vs 2026 vs 2032 708
Figure 36. Global Telecom Energy Storage System Market Share, by Key Player, 2025 974

List of Tables

Table 1. Global Telecom Energy Storage System Market Segmentation & Coverage 10
Table 2. Global Telecom Energy Storage System Market Size, 2017-2040 (USD Million, Growth %) 37
Table 3. Global Telecom Energy Storage System Market, Key Growth Contribution, 2025-2032 40
Table 4. Global Telecom Energy Storage System Market, by Product Integration growth contribution, 2025-2032 85
Table 5. Global Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 86
Table 6. Global Telecom Energy Storage System Market Size, by Battery Cells and Monoblocs, by Region, 2017-2032 (USD Million) 88
Table 7. Global Telecom Energy Storage System Market Size, by Battery Cells and Monoblocs, by Group, 2017-2032 (USD Million) 88
Table 8. Global Telecom Energy Storage System Market Size, by Battery Cells and Monoblocs, by Country, 2017-2032 (USD Million) 89
Table 9. Global Telecom Energy Storage System Market Size, by Integrated Storage and Power Conversion Systems, by Region, 2017-2032 (USD Million) 93
Table 10. Global Telecom Energy Storage System Market Size, by Integrated Storage and Power Conversion Systems, by Group, 2017-2032 (USD Million) 93
Table 11. Global Telecom Energy Storage System Market Size, by Integrated Storage and Power Conversion Systems, by Country, 2017-2032 (USD Million) 94
Table 12. Global Telecom Energy Storage System Market Size, by Storage Banks and Racks, by Region, 2017-2032 (USD Million) 98
Table 13. Global Telecom Energy Storage System Market Size, by Storage Banks and Racks, by Group, 2017-2032 (USD Million) 98
Table 14. Global Telecom Energy Storage System Market Size, by Storage Banks and Racks, by Country, 2017-2032 (USD Million) 99
Table 15. Global Telecom Energy Storage System Market Size, by Storage Modules and Packs, by Region, 2017-2032 (USD Million) 103
Table 16. Global Telecom Energy Storage System Market Size, by Storage Modules and Packs, by Group, 2017-2032 (USD Million) 103
Table 17. Global Telecom Energy Storage System Market Size, by Storage Modules and Packs, by Country, 2017-2032 (USD Million) 104
Table 18. Global Telecom Energy Storage System Market Size, by Storage-Integrated Telecom Power Systems, by Region, 2017-2032 (USD Million) 108
Table 19. Global Telecom Energy Storage System Market Size, by Storage-Integrated Telecom Power Systems, by Group, 2017-2032 (USD Million) 108
Table 20. Global Telecom Energy Storage System Market Size, by Storage-Integrated Telecom Power Systems, by Country, 2017-2032 (USD Million) 109
Table 21. Global Telecom Energy Storage System Market, by Storage Technology growth contribution, 2025-2032 116
Table 22. Global Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 117

Table 23. Global Telecom Energy Storage System Market, by Lead-Acid Batteries growth contribution, 2025-2032 120
Table 24. Global Telecom Energy Storage System Market Size, by Lead-Acid Batteries, by Region, 2017-2032 (USD Million) 120
Table 25. Global Telecom Energy Storage System Market Size, by Lead-Acid Batteries, by Group, 2017-2032 (USD Million) 121
Table 26. Global Telecom Energy Storage System Market Size, by Lead-Acid Batteries, by Country, 2017-2032 (USD Million) 121
Table 27. Global Telecom Energy Storage System Market, by Valve-Regulated Lead-Acid Batteries growth contribution, 2025-2032 125
Table 28. Global Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, by Region, 2017-2032 (USD Million) 126
Table 29. Global Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, by Group, 2017-2032 (USD Million) 126
Table 30. Global Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, by Country, 2017-2032 (USD Million) 127
Table 31. Global Telecom Energy Storage System Market Size, by Absorbent Glass Mat Batteries, by Region, 2017-2032 (USD Million) 131
Table 32. Global Telecom Energy Storage System Market Size, by Absorbent Glass Mat Batteries, by Group, 2017-2032 (USD Million) 131
Table 33. Global Telecom Energy Storage System Market Size, by Absorbent Glass Mat Batteries, by Country, 2017-2032 (USD Million) 132
Table 34. Global Telecom Energy Storage System Market Size, by Gel Batteries, by Region, 2017-2032 (USD Million) 136
Table 35. Global Telecom Energy Storage System Market Size, by Gel Batteries, by Group, 2017-2032 (USD Million) 136
Table 36. Global Telecom Energy Storage System Market Size, by Gel Batteries, by Country, 2017-2032 (USD Million) 137
Table 37. Global Telecom Energy Storage System Market Size, by Flooded Lead-Acid Batteries, by Region, 2017-2032 (USD Million) 141
Table 38. Global Telecom Energy Storage System Market Size, by Flooded Lead-Acid Batteries, by Group, 2017-2032 (USD Million) 141
Table 39. Global Telecom Energy Storage System Market Size, by Flooded Lead-Acid Batteries, by Country, 2017-2032 (USD Million) 142
Table 40. Global Telecom Energy Storage System Market, by Lithium-Ion Batteries growth contribution, 2025-2032 146
Table 41. Global Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, by Region, 2017-2032 (USD Million) 146
Table 42. Global Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, by Group, 2017-2032 (USD Million) 146
Table 43. Global Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, by Country, 2017-2032 (USD Million) 147
Table 44. Global Telecom Energy Storage System Market Size, by Phosphate-Cathode Lithium-Ion Batteries, by Region, 2017-2032 (USD Million) 151

Table 45. Global Telecom Energy Storage System Market Size, by Phosphate-Cathode Lithium-Ion Batteries, by Group, 2017-2032 (USD Million) 152
Table 46. Global Telecom Energy Storage System Market Size, by Phosphate-Cathode Lithium-Ion Batteries, by Country, 2017-2032 (USD Million) 152
Table 47. Global Telecom Energy Storage System Market Size, by Metal-Oxide-Cathode Lithium-Ion Batteries, by Region, 2017-2032 (USD Million) 156
Table 48. Global Telecom Energy Storage System Market Size, by Metal-Oxide-Cathode Lithium-Ion Batteries, by Group, 2017-2032 (USD Million) 157
Table 49. Global Telecom Energy Storage System Market Size, by Metal-Oxide-Cathode Lithium-Ion Batteries, by Country, 2017-2032 (USD Million) 157
Table 50. Global Telecom Energy Storage System Market Size, by Multi-Technology Storage Systems, by Region, 2017-2032 (USD Million) 161
Table 51. Global Telecom Energy Storage System Market Size, by Multi-Technology Storage Systems, by Group, 2017-2032 (USD Million) 161
Table 52. Global Telecom Energy Storage System Market Size, by Multi-Technology Storage Systems, by Country, 2017-2032 (USD Million) 162
Table 53. Global Telecom Energy Storage System Market, by Nickel-Based Batteries growth contribution, 2025-2032 166
Table 54. Global Telecom Energy Storage System Market Size, by Nickel-Based Batteries, by Region, 2017-2032 (USD Million) 166
Table 55. Global Telecom Energy Storage System Market Size, by Nickel-Based Batteries, by Group, 2017-2032 (USD Million) 167
Table 56. Global Telecom Energy Storage System Market Size, by Nickel-Based Batteries, by Country, 2017-2032 (USD Million) 167
Table 57. Global Telecom Energy Storage System Market Size, by Nickel-Cadmium Batteries, by Region, 2017-2032 (USD Million) 172
Table 58. Global Telecom Energy Storage System Market Size, by Nickel-Cadmium Batteries, by Group, 2017-2032 (USD Million) 172
Table 59. Global Telecom Energy Storage System Market Size, by Nickel-Cadmium Batteries, by Country, 2017-2032 (USD Million) 173
Table 60. Global Telecom Energy Storage System Market Size, by Nickel-Metal Hydride Batteries, by Region, 2017-2032 (USD Million) 177
Table 61. Global Telecom Energy Storage System Market Size, by Nickel-Metal Hydride Batteries, by Group, 2017-2032 (USD Million) 177
Table 62. Global Telecom Energy Storage System Market Size, by Nickel-Metal Hydride Batteries, by Country, 2017-2032 (USD Million) 178
Table 63. Global Telecom Energy Storage System Market Size, by Nickel-Zinc Batteries, by Region, 2017-2032 (USD Million) 182
Table 64. Global Telecom Energy Storage System Market Size, by Nickel-Zinc Batteries, by Group, 2017-2032 (USD Million) 182
Table 65. Global Telecom Energy Storage System Market Size, by Nickel-Zinc Batteries, by Country, 2017-2032 (USD Million) 183
Table 66. Global Telecom Energy Storage System Market Size, by Nickel-Iron Batteries, by Region, 2017-2032 (USD Million) 187

Table 67. Global Telecom Energy Storage System Market Size, by Nickel-Iron Batteries, by Group, 2017-2032 (USD Million) 187
Table 68. Global Telecom Energy Storage System Market Size, by Nickel-Iron Batteries, by Country, 2017-2032 (USD Million) 188
Table 69. Global Telecom Energy Storage System Market, by Sodium-Based Batteries growth contribution, 2025-2032 192
Table 70. Global Telecom Energy Storage System Market Size, by Sodium-Based Batteries, by Region, 2017-2032 (USD Million) 192
Table 71. Global Telecom Energy Storage System Market Size, by Sodium-Based Batteries, by Group, 2017-2032 (USD Million) 193
Table 72. Global Telecom Energy Storage System Market Size, by Sodium-Based Batteries, by Country, 2017-2032 (USD Million) 193
Table 73. Global Telecom Energy Storage System Market Size, by Sodium-Ion Batteries, by Region, 2017-2032 (USD Million) 197
Table 74. Global Telecom Energy Storage System Market Size, by Sodium-Ion Batteries, by Group, 2017-2032 (USD Million) 198
Table 75. Global Telecom Energy Storage System Market Size, by Sodium-Ion Batteries, by Country, 2017-2032 (USD Million) 198
Table 76. Global Telecom Energy Storage System Market Size, by Sodium-Nickel Chloride Batteries, by Region, 2017-2032 (USD Million) 202
Table 77. Global Telecom Energy Storage System Market Size, by Sodium-Nickel Chloride Batteries, by Group, 2017-2032 (USD Million) 202
Table 78. Global Telecom Energy Storage System Market Size, by Sodium-Nickel Chloride Batteries, by Country, 2017-2032 (USD Million) 203
Table 79. Global Telecom Energy Storage System Market Size, by Sodium-Sulfur Batteries, by Region, 2017-2032 (USD Million) 207
Table 80. Global Telecom Energy Storage System Market Size, by Sodium-Sulfur Batteries, by Group, 2017-2032 (USD Million) 207
Table 81. Global Telecom Energy Storage System Market Size, by Sodium-Sulfur Batteries, by Country, 2017-2032 (USD Million) 208
Table 82. Global Telecom Energy Storage System Market Size, by Metal-Air Batteries, by Region, 2017-2032 (USD Million) 212
Table 83. Global Telecom Energy Storage System Market Size, by Metal-Air Batteries, by Group, 2017-2032 (USD Million) 212
Table 84. Global Telecom Energy Storage System Market Size, by Metal-Air Batteries, by Country, 2017-2032 (USD Million) 213
Table 85. Global Telecom Energy Storage System Market Size, by Flow Batteries, by Region, 2017-2032 (USD Million) 217
Table 86. Global Telecom Energy Storage System Market Size, by Flow Batteries, by Group, 2017-2032 (USD Million) 217
Table 87. Global Telecom Energy Storage System Market Size, by Flow Batteries, by Country, 2017-2032 (USD Million) 218
Table 88. Global Telecom Energy Storage System Market Size, by Flywheel Storage, by Region, 2017-2032 (USD Million) 222

Table 89. Global Telecom Energy Storage System Market Size, by Flywheel Storage, by Group, 2017-2032 (USD Million) 222
Table 90. Global Telecom Energy Storage System Market Size, by Flywheel Storage, by Country, 2017-2032 (USD Million) 223
Table 91. Global Telecom Energy Storage System Market Size, by Supercapacitor Storage, by Region, 2017-2032 (USD Million) 227
Table 92. Global Telecom Energy Storage System Market Size, by Supercapacitor Storage, by Group, 2017-2032 (USD Million) 227
Table 93. Global Telecom Energy Storage System Market Size, by Supercapacitor Storage, by Country, 2017-2032 (USD Million) 228
Table 94. Global Telecom Energy Storage System Market, by Network Application growth contribution, 2025-2032 234
Table 95. Global Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 234
Table 96. Global Telecom Energy Storage System Market Size, by Wireless Access Networks, by Region, 2017-2032 (USD Million) 237
Table 97. Global Telecom Energy Storage System Market Size, by Wireless Access Networks, by Group, 2017-2032 (USD Million) 237
Table 98. Global Telecom Energy Storage System Market Size, by Wireless Access Networks, by Country, 2017-2032 (USD Million) 238
Table 99. Global Telecom Energy Storage System Market Size, by Customer-Premises Network Equipment, by Region, 2017-2032 (USD Million) 242
Table 100. Global Telecom Energy Storage System Market Size, by Customer-Premises Network Equipment, by Group, 2017-2032 (USD Million) 242
Table 101. Global Telecom Energy Storage System Market Size, by Customer-Premises Network Equipment, by Country, 2017-2032 (USD Million) 243
Table 102. Global Telecom Energy Storage System Market Size, by Fixed Access Networks, by Region, 2017-2032 (USD Million) 247
Table 103. Global Telecom Energy Storage System Market Size, by Fixed Access Networks, by Group, 2017-2032 (USD Million) 247
Table 104. Global Telecom Energy Storage System Market Size, by Fixed Access Networks, by Country, 2017-2032 (USD Million) 248
Table 105. Global Telecom Energy Storage System Market Size, by Core and Switching Facilities, by Region, 2017-2032 (USD Million) 252
Table 106. Global Telecom Energy Storage System Market Size, by Core and Switching Facilities, by Group, 2017-2032 (USD Million) 252
Table 107. Global Telecom Energy Storage System Market Size, by Core and Switching Facilities, by Country, 2017-2032 (USD Million) 253
Table 108. Global Telecom Energy Storage System Market Size, by Transport Networks, by Region, 2017-2032 (USD Million) 257
Table 109. Global Telecom Energy Storage System Market Size, by Transport Networks, by Group, 2017-2032 (USD Million) 257
Table 110. Global Telecom Energy Storage System Market Size, by Transport Networks, by Country, 2017-2032 (USD Million) 258

Table 111. Global Telecom Energy Storage System Market Size, by Telecom Edge Computing, by Region, 2017-2032 (USD Million) 262
Table 112. Global Telecom Energy Storage System Market Size, by Telecom Edge Computing, by Group, 2017-2032 (USD Million) 262
Table 113. Global Telecom Energy Storage System Market Size, by Telecom Edge Computing, by Country, 2017-2032 (USD Million) 263
Table 114. Global Telecom Energy Storage System Market Size, by Shared Network Facilities, by Region, 2017-2032 (USD Million) 267
Table 115. Global Telecom Energy Storage System Market Size, by Shared Network Facilities, by Group, 2017-2032 (USD Million) 267
Table 116. Global Telecom Energy Storage System Market Size, by Shared Network Facilities, by Country, 2017-2032 (USD Million) 268
Table 117. Global Telecom Energy Storage System Market, by Storage Purpose growth contribution, 2025-2032 275
Table 118. Global Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 275
Table 119. Global Telecom Energy Storage System Market Size, by Service Continuity Backup, by Region, 2017-2032 (USD Million) 277
Table 120. Global Telecom Energy Storage System Market Size, by Service Continuity Backup, by Group, 2017-2032 (USD Million) 277
Table 121. Global Telecom Energy Storage System Market Size, by Service Continuity Backup, by Country, 2017-2032 (USD Million) 278
Table 122. Global Telecom Energy Storage System Market Size, by On-Site Generation Integration, by Region, 2017-2032 (USD Million) 282
Table 123. Global Telecom Energy Storage System Market Size, by On-Site Generation Integration, by Group, 2017-2032 (USD Million) 282
Table 124. Global Telecom Energy Storage System Market Size, by On-Site Generation Integration, by Country, 2017-2032 (USD Million) 283
Table 125. Global Telecom Energy Storage System Market Size, by Multipurpose Operation, by Region, 2017-2032 (USD Million) 287
Table 126. Global Telecom Energy Storage System Market Size, by Multipurpose Operation, by Group, 2017-2032 (USD Million) 287
Table 127. Global Telecom Energy Storage System Market Size, by Multipurpose Operation, by Country, 2017-2032 (USD Million) 288
Table 128. Global Telecom Energy Storage System Market Size, by Electricity Cost Management, by Region, 2017-2032 (USD Million) 292
Table 129. Global Telecom Energy Storage System Market Size, by Electricity Cost Management, by Group, 2017-2032 (USD Million) 292
Table 130. Global Telecom Energy Storage System Market Size, by Electricity Cost Management, by Country, 2017-2032 (USD Million) 293
Table 131. Global Telecom Energy Storage System Market Size, by Peak Power Support, by Region, 2017-2032 (USD Million) 297
Table 132. Global Telecom Energy Storage System Market Size, by Peak Power Support, by Group, 2017-2032 (USD Million) 297

Table 133. Global Telecom Energy Storage System Market Size, by Peak Power Support, by Country, 2017-2032 (USD Million) 298
Table 134. Global Telecom Energy Storage System Market Size, by Grid Services, by Region, 2017-2032 (USD Million) 302
Table 135. Global Telecom Energy Storage System Market Size, by Grid Services, by Group, 2017-2032 (USD Million) 302
Table 136. Global Telecom Energy Storage System Market Size, by Grid Services, by Country, 2017-2032 (USD Million) 303
Table 137. Global Telecom Energy Storage System Market, by Economic Buyer growth contribution, 2025-2032 310
Table 138. Global Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 310
Table 139. Global Telecom Energy Storage System Market Size, by Telecommunications Network Operators, by Region, 2017-2032 (USD Million) 313
Table 140. Global Telecom Energy Storage System Market Size, by Telecommunications Network Operators, by Group, 2017-2032 (USD Million) 313
Table 141. Global Telecom Energy Storage System Market Size, by Telecommunications Network Operators, by Country, 2017-2032 (USD Million) 314
Table 142. Global Telecom Energy Storage System Market Size, by Shared Telecommunications Infrastructure Owners, by Region, 2017-2032 (USD Million) 318
Table 143. Global Telecom Energy Storage System Market Size, by Shared Telecommunications Infrastructure Owners, by Group, 2017-2032 (USD Million) 318
Table 144. Global Telecom Energy Storage System Market Size, by Shared Telecommunications Infrastructure Owners, by Country, 2017-2032 (USD Million) 319
Table 145. Global Telecom Energy Storage System Market Size, by Customer-Premises Owners, by Region, 2017-2032 (USD Million) 323
Table 146. Global Telecom Energy Storage System Market Size, by Customer-Premises Owners, by Group, 2017-2032 (USD Million) 324
Table 147. Global Telecom Energy Storage System Market Size, by Customer-Premises Owners, by Country, 2017-2032 (USD Million) 324
Table 148. Global Telecom Energy Storage System Market Size, by Telecom Energy-Service Companies, by Region, 2017-2032 (USD Million) 329
Table 149. Global Telecom Energy Storage System Market Size, by Telecom Energy-Service Companies, by Group, 2017-2032 (USD Million) 329
Table 150. Global Telecom Energy Storage System Market Size, by Telecom Energy-Service Companies, by Country, 2017-2032 (USD Million) 330
Table 151. Global Telecom Energy Storage System Market Size, by Private Network Owners, by Region, 2017-2032 (USD Million) 334
Table 152. Global Telecom Energy Storage System Market Size, by Private Network Owners, by Group, 2017-2032 (USD Million) 334
Table 153. Global Telecom Energy Storage System Market Size, by Private Network Owners, by Country, 2017-2032 (USD Million) 335
Table 154. Global Telecom Energy Storage System Market Size, by Equipment Leasing Companies, by Region, 2017-2032 (USD Million) 339

Table 155. Global Telecom Energy Storage System Market Size, by Equipment Leasing Companies, by Group, 2017-2032 (USD Million) 339
Table 156. Global Telecom Energy Storage System Market Size, by Equipment Leasing Companies, by Country, 2017-2032 (USD Million) 340
Table 157. Global Telecom Energy Storage System Market, by Installation Environment growth contribution, 2025-2032 346
Table 158. Global Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 346
Table 159. Global Telecom Energy Storage System Market Size, by Uncontrolled Enclosures, by Region, 2017-2032 (USD Million) 348
Table 160. Global Telecom Energy Storage System Market Size, by Uncontrolled Enclosures, by Group, 2017-2032 (USD Million) 348
Table 161. Global Telecom Energy Storage System Market Size, by Uncontrolled Enclosures, by Country, 2017-2032 (USD Million) 349
Table 162. Global Telecom Energy Storage System Market Size, by Climate-Controlled Enclosures, by Region, 2017-2032 (USD Million) 353
Table 163. Global Telecom Energy Storage System Market Size, by Climate-Controlled Enclosures, by Group, 2017-2032 (USD Million) 353
Table 164. Global Telecom Energy Storage System Market Size, by Climate-Controlled Enclosures, by Country, 2017-2032 (USD Million) 354
Table 165. Global Telecom Energy Storage System Market Size, by Sheltered Installations, by Region, 2017-2032 (USD Million) 358
Table 166. Global Telecom Energy Storage System Market Size, by Sheltered Installations, by Group, 2017-2032 (USD Million) 358
Table 167. Global Telecom Energy Storage System Market Size, by Sheltered Installations, by Country, 2017-2032 (USD Million) 359
Table 168. Global Telecom Energy Storage System Market Size, by Weather-Exposed Installations, by Region, 2017-2032 (USD Million) 363
Table 169. Global Telecom Energy Storage System Market Size, by Weather-Exposed Installations, by Group, 2017-2032 (USD Million) 363
Table 170. Global Telecom Energy Storage System Market Size, by Weather-Exposed Installations, by Country, 2017-2032 (USD Million) 364
Table 171. Global Telecom Energy Storage System Market, by Ownership Model growth contribution, 2025-2032 370
Table 172. Global Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 370
Table 173. Global Telecom Energy Storage System Market Size, by User-Owned Equipment, by Region, 2017-2032 (USD Million) 372
Table 174. Global Telecom Energy Storage System Market Size, by User-Owned Equipment, by Group, 2017-2032 (USD Million) 373
Table 175. Global Telecom Energy Storage System Market Size, by User-Owned Equipment, by Country, 2017-2032 (USD Million) 373
Table 176. Global Telecom Energy Storage System Market Size, by Provider-Owned Managed Energy, by Region, 2017-2032 (USD Million) 378

Table 177. Global Telecom Energy Storage System Market Size, by Provider-Owned Managed Energy, by Group, 2017-2032 (USD Million) 378
Table 178. Global Telecom Energy Storage System Market Size, by Provider-Owned Managed Energy, by Country, 2017-2032 (USD Million) 379
Table 179. Global Telecom Energy Storage System Market Size, by Equipment Leasing, by Region, 2017-2032 (USD Million) 383
Table 180. Global Telecom Energy Storage System Market Size, by Equipment Leasing, by Group, 2017-2032 (USD Million) 383
Table 181. Global Telecom Energy Storage System Market Size, by Equipment Leasing, by Country, 2017-2032 (USD Million) 384
Table 182. Global Telecom Energy Storage System Market, by Sales Channel growth contribution, 2025-2032 390
Table 183. Global Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 390
Table 184. Global Telecom Energy Storage System Market Size, by Direct Supply, by Region, 2017-2032 (USD Million) 392
Table 185. Global Telecom Energy Storage System Market Size, by Direct Supply, by Group, 2017-2032 (USD Million) 392
Table 186. Global Telecom Energy Storage System Market Size, by Direct Supply, by Country, 2017-2032 (USD Million) 393
Table 187. Global Telecom Energy Storage System Market Size, by OEM and Project-Integrator Supply, by Region, 2017-2032 (USD Million) 397
Table 188. Global Telecom Energy Storage System Market Size, by OEM and Project-Integrator Supply, by Group, 2017-2032 (USD Million) 398
Table 189. Global Telecom Energy Storage System Market Size, by OEM and Project-Integrator Supply, by Country, 2017-2032 (USD Million) 398
Table 190. Global Telecom Energy Storage System Market Size, by Distributor and Reseller Supply, by Region, 2017-2032 (USD Million) 402
Table 191. Global Telecom Energy Storage System Market Size, by Distributor and Reseller Supply, by Group, 2017-2032 (USD Million) 402
Table 192. Global Telecom Energy Storage System Market Size, by Distributor and Reseller Supply, by Country, 2017-2032 (USD Million) 403
Table 193. Global Telecom Energy Storage System Market, by Grid Availability growth contribution, 2025-2032 409
Table 194. Global Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 409
Table 195. Global Telecom Energy Storage System Market Size, by Reliable Grid, by Region, 2017-2032 (USD Million) 411
Table 196. Global Telecom Energy Storage System Market Size, by Reliable Grid, by Group, 2017-2032 (USD Million) 411
Table 197. Global Telecom Energy Storage System Market Size, by Reliable Grid, by Country, 2017-2032 (USD Million) 412
Table 198. Global Telecom Energy Storage System Market Size, by Weak Grid, by Region, 2017-2032 (USD Million) 416

Table 199. Global Telecom Energy Storage System Market Size, by Weak Grid, by Group, 2017-2032 (USD Million) 416
Table 200. Global Telecom Energy Storage System Market Size, by Weak Grid, by Country, 2017-2032 (USD Million) 417
Table 201. Global Telecom Energy Storage System Market Size, by Off-Grid, by Region, 2017-2032 (USD Million) 421
Table 202. Global Telecom Energy Storage System Market Size, by Off-Grid, by Group, 2017-2032 (USD Million) 421
Table 203. Global Telecom Energy Storage System Market Size, by Off-Grid, by Country, 2017-2032 (USD Million) 422
Table 204. Global Telecom Energy Storage System Market, by Power Interface growth contribution, 2025-2032 428
Table 205. Global Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 428
Table 206. Global Telecom Energy Storage System Market Size, by DC Interface, by Region, 2017-2032 (USD Million) 429
Table 207. Global Telecom Energy Storage System Market Size, by DC Interface, by Group, 2017-2032 (USD Million) 430
Table 208. Global Telecom Energy Storage System Market Size, by DC Interface, by Country, 2017-2032 (USD Million) 430
Table 209. Global Telecom Energy Storage System Market Size, by AC Interface, by Region, 2017-2032 (USD Million) 434
Table 210. Global Telecom Energy Storage System Market Size, by AC Interface, by Group, 2017-2032 (USD Million) 435
Table 211. Global Telecom Energy Storage System Market Size, by AC Interface, by Country, 2017-2032 (USD Million) 435
Table 212. Global Telecom Energy Storage System Market Size, by Combined AC/DC Interfaces, by Region, 2017-2032 (USD Million) 440
Table 213. Global Telecom Energy Storage System Market Size, by Combined AC/DC Interfaces, by Group, 2017-2032 (USD Million) 440
Table 214. Global Telecom Energy Storage System Market Size, by Combined AC/DC Interfaces, by Country, 2017-2032 (USD Million) 441
Table 215. Global Telecom Energy Storage System Market, by Procurement Lifecycle growth contribution, 2025-2032 447
Table 216. Global Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 447
Table 217. Global Telecom Energy Storage System Market Size, by Replacement and Retrofit, by Region, 2017-2032 (USD Million) 449
Table 218. Global Telecom Energy Storage System Market Size, by Replacement and Retrofit, by Group, 2017-2032 (USD Million) 449
Table 219. Global Telecom Energy Storage System Market Size, by Replacement and Retrofit, by Country, 2017-2032 (USD Million) 450
Table 220. Global Telecom Energy Storage System Market Size, by First Deployment, by Region, 2017-2032 (USD Million) 454

Table 221. Global Telecom Energy Storage System Market Size, by First Deployment, by Group, 2017-2032 (USD Million) 455
Table 222. Global Telecom Energy Storage System Market Size, by First Deployment, by Country, 2017-2032 (USD Million) 455
Table 223. Global Telecom Energy Storage System Market Size, by Capacity Expansion, by Region, 2017-2032 (USD Million) 459
Table 224. Global Telecom Energy Storage System Market Size, by Capacity Expansion, by Group, 2017-2032 (USD Million) 459
Table 225. Global Telecom Energy Storage System Market Size, by Capacity Expansion, by Country, 2017-2032 (USD Million) 460
Table 226. Global Telecom Energy Storage System Market, by Region growth contribution, 2025-2032 467
Table 227. Global Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million) 467
Table 228. Asia-Pacific Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 472
Table 229. Asia-Pacific Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million) 472
Table 230. Asia-Pacific Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 473
Table 231. Asia-Pacific Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 473
Table 232. Asia-Pacific Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 473
Table 233. Asia-Pacific Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 474
Table 234. Asia-Pacific Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 474
Table 235. Asia-Pacific Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 474
Table 236. Asia-Pacific Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 474
Table 237. Asia-Pacific Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 475
Table 238. Asia-Pacific Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 475
Table 239. Asia-Pacific Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 476
Table 240. Asia-Pacific Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 476
Table 241. Asia-Pacific Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 476
Table 242. Asia-Pacific Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 477

Table 243. Asia-Pacific Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 477
Table 244. Asia-Pacific Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 477
Table 245. Asia-Pacific Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 477
Table 246. Europe Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 492
Table 247. Europe Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million) 493
Table 248. Europe Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 493
Table 249. Europe Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 494
Table 250. Europe Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 494
Table 251. Europe Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 494
Table 252. Europe Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 495
Table 253. Europe Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 495
Table 254. Europe Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 495
Table 255. Europe Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 496
Table 256. Europe Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 496
Table 257. Europe Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 497
Table 258. Europe Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 497
Table 259. Europe Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 497
Table 260. Europe Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 498
Table 261. Europe Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 498
Table 262. Europe Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 498
Table 263. Europe Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 498
Table 264. North America Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 511

Table 265. North America Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million) 512
Table 266. North America Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 512
Table 267. North America Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 512
Table 268. North America Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 513
Table 269. North America Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 513
Table 270. North America Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 513
Table 271. North America Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 513
Table 272. North America Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 514
Table 273. North America Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 514
Table 274. North America Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 514
Table 275. North America Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 515
Table 276. North America Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 515
Table 277. North America Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 515
Table 278. North America Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 516
Table 279. North America Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 516
Table 280. North America Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 516
Table 281. North America Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 516
Table 282. Africa Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 530
Table 283. Africa Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million) 530
Table 284. Africa Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 530
Table 285. Africa Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 531
Table 286. Africa Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 531

Table 287. Africa Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 531
Table 288. Africa Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 532
Table 289. Africa Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 532
Table 290. Africa Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 532
Table 291. Africa Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 533
Table 292. Africa Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 533
Table 293. Africa Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 534
Table 294. Africa Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 534
Table 295. Africa Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 534
Table 296. Africa Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 535
Table 297. Africa Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 535
Table 298. Africa Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 535
Table 299. Africa Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 535
Table 300. Middle East Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 549
Table 301. Middle East Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million) 549
Table 302. Middle East Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 549
Table 303. Middle East Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 550
Table 304. Middle East Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 550
Table 305. Middle East Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 550
Table 306. Middle East Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 551
Table 307. Middle East Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 551
Table 308. Middle East Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 551

Table 309. Middle East Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 552
Table 310. Middle East Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 552
Table 311. Middle East Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 553
Table 312. Middle East Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 553
Table 313. Middle East Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 553
Table 314. Middle East Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 554
Table 315. Middle East Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 554
Table 316. Middle East Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 554
Table 317. Middle East Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 554
Table 318. Latin America Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 568
Table 319. Latin America Telecom Energy Storage System Market Size, by Region, 2017-2032 (USD Million) 568
Table 320. Latin America Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 568
Table 321. Latin America Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 569
Table 322. Latin America Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 569
Table 323. Latin America Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 569
Table 324. Latin America Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 570
Table 325. Latin America Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 570
Table 326. Latin America Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 570
Table 327. Latin America Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 571
Table 328. Latin America Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 571
Table 329. Latin America Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 572
Table 330. Latin America Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 572

Table 331. Latin America Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 572
Table 332. Latin America Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 573
Table 333. Latin America Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 573
Table 334. Latin America Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 573
Table 335. Latin America Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 573
Table 336. Global Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million) 589
Table 337. BRICS Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 591
Table 338. BRICS Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million) 591
Table 339. BRICS Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 592
Table 340. BRICS Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 592
Table 341. BRICS Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 592
Table 342. BRICS Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 593
Table 343. BRICS Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 593
Table 344. BRICS Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 593
Table 345. BRICS Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 593
Table 346. BRICS Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 594
Table 347. BRICS Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 594
Table 348. BRICS Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 595
Table 349. BRICS Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 595
Table 350. BRICS Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 595
Table 351. BRICS Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 596
Table 352. BRICS Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 596

Table 353. BRICS Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 596
Table 354. BRICS Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 596
Table 355. NATO Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 610
Table 356. NATO Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million) 612
Table 357. NATO Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 613
Table 358. NATO Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 613
Table 359. NATO Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 613
Table 360. NATO Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 614
Table 361. NATO Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 614
Table 362. NATO Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 614
Table 363. NATO Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 614
Table 364. NATO Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 615
Table 365. NATO Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 615
Table 366. NATO Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 616
Table 367. NATO Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 616
Table 368. NATO Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 616
Table 369. NATO Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 617
Table 370. NATO Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 617
Table 371. NATO Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 617
Table 372. NATO Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 617
Table 373. G7 Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 631
Table 374. G7 Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million) 631

Table 375. G7 Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 631
Table 376. G7 Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 632
Table 377. G7 Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 632
Table 378. G7 Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 632
Table 379. G7 Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 633
Table 380. G7 Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 633
Table 381. G7 Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 633
Table 382. G7 Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 634
Table 383. G7 Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 634
Table 384. G7 Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 635
Table 385. G7 Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 635
Table 386. G7 Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 635
Table 387. G7 Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 636
Table 388. G7 Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 636
Table 389. G7 Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 636
Table 390. G7 Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 636
Table 391. European Union Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 649
Table 392. European Union Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million) 650
Table 393. European Union Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 651
Table 394. European Union Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 651
Table 395. European Union Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 651
Table 396. European Union Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 652

Table 397. European Union Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 652
Table 398. European Union Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 652
Table 399. European Union Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 652
Table 400. European Union Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 653
Table 401. European Union Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 653
Table 402. European Union Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 654
Table 403. European Union Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 654
Table 404. European Union Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 654
Table 405. European Union Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 655
Table 406. European Union Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 655
Table 407. European Union Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 655
Table 408. European Union Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 655
Table 409. ASEAN Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 669
Table 410. ASEAN Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million) 669
Table 411. ASEAN Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 670
Table 412. ASEAN Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 670
Table 413. ASEAN Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 670
Table 414. ASEAN Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 671
Table 415. ASEAN Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 671
Table 416. ASEAN Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 671
Table 417. ASEAN Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 671
Table 418. ASEAN Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 672

Table 419. ASEAN Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 672
Table 420. ASEAN Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 673
Table 421. ASEAN Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 673
Table 422. ASEAN Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 673
Table 423. ASEAN Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 674
Table 424. ASEAN Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 674
Table 425. ASEAN Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 674
Table 426. ASEAN Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 674
Table 427. GCC Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 687
Table 428. GCC Telecom Energy Storage System Market Size, by Group, 2017-2032 (USD Million) 687
Table 429. GCC Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 687
Table 430. GCC Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 688
Table 431. GCC Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 688
Table 432. GCC Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 688
Table 433. GCC Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 689
Table 434. GCC Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 689
Table 435. GCC Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 689
Table 436. GCC Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 690
Table 437. GCC Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 690
Table 438. GCC Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 691
Table 439. GCC Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 691
Table 440. GCC Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 691

Table 441. GCC Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 692
Table 442. GCC Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 692
Table 443. GCC Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 692
Table 444. GCC Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 692
Table 445. Global Telecom Energy Storage System Market, by Country growth contribution, 2025-2032 709
Table 446. Global Telecom Energy Storage System Market Size, by Country, 2017-2032 (USD Million) 710
Table 447. China Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 713
Table 448. China Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 713
Table 449. China Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 714
Table 450. China Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 714
Table 451. China Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 714
Table 452. China Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 715
Table 453. China Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 715
Table 454. China Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 715
Table 455. China Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 716
Table 456. China Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 716
Table 457. China Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 717
Table 458. China Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 717
Table 459. China Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 717
Table 460. China Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 718
Table 461. China Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 718
Table 462. China Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 718
Table 463. China Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 718

Table 464. United States Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 731
Table 465. United States Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 731
Table 466. United States Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 731
Table 467. United States Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 732
Table 468. United States Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 732
Table 469. United States Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 732
Table 470. United States Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 732
Table 471. United States Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 733
Table 472. United States Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 733
Table 473. United States Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 733
Table 474. United States Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 734
Table 475. United States Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 734
Table 476. United States Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 734
Table 477. United States Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 735
Table 478. United States Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 735
Table 479. United States Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 735
Table 480. United States Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 735
Table 481. India Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 749
Table 482. India Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 749
Table 483. India Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 749
Table 484. India Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 750
Table 485. India Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 750
Table 486. India Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 750

Table 487. India Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 750
Table 488. India Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 751
Table 489. India Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 751
Table 490. India Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 751
Table 491. India Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 752
Table 492. India Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 752
Table 493. India Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 752
Table 494. India Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 753
Table 495. India Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 753
Table 496. India Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 753
Table 497. India Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 753
Table 498. Russia Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 766
Table 499. Russia Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 766
Table 500. Russia Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 766
Table 501. Russia Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 767
Table 502. Russia Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 767
Table 503. Russia Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 767
Table 504. Russia Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 767
Table 505. Russia Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 768
Table 506. Russia Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 768
Table 507. Russia Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 768
Table 508. Russia Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 769
Table 509. Russia Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 769

Table 510. Russia Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 769
Table 511. Russia Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 770
Table 512. Russia Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 770
Table 513. Russia Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 770
Table 514. Russia Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 770
Table 515. Germany Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 783
Table 516. Germany Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 783
Table 517. Germany Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 783
Table 518. Germany Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 784
Table 519. Germany Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 784
Table 520. Germany Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 784
Table 521. Germany Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 784
Table 522. Germany Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 785
Table 523. Germany Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 785
Table 524. Germany Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 785
Table 525. Germany Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 786
Table 526. Germany Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 786
Table 527. Germany Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 786
Table 528. Germany Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 787
Table 529. Germany Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 787
Table 530. Germany Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 787
Table 531. Germany Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 787
Table 532. Mexico Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 800

Table 533. Mexico Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 800
Table 534. Mexico Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 800
Table 535. Mexico Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 801
Table 536. Mexico Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 801
Table 537. Mexico Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 801
Table 538. Mexico Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 801
Table 539. Mexico Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 802
Table 540. Mexico Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 802
Table 541. Mexico Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 802
Table 542. Mexico Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 803
Table 543. Mexico Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 803
Table 544. Mexico Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 803
Table 545. Mexico Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 804
Table 546. Mexico Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 804
Table 547. Mexico Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 804
Table 548. Mexico Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 804
Table 549. Brazil Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 817
Table 550. Brazil Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 817
Table 551. Brazil Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 817
Table 552. Brazil Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 818
Table 553. Brazil Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 818
Table 554. Brazil Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 818
Table 555. Brazil Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 818

Table 556. Brazil Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 819
Table 557. Brazil Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 819
Table 558. Brazil Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 819
Table 559. Brazil Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 820
Table 560. Brazil Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 820
Table 561. Brazil Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 820
Table 562. Brazil Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 821
Table 563. Brazil Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 821
Table 564. Brazil Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 821
Table 565. Brazil Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 821
Table 566. France Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 835
Table 567. France Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 835
Table 568. France Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 835
Table 569. France Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 836
Table 570. France Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 836
Table 571. France Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 836
Table 572. France Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 836
Table 573. France Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 837
Table 574. France Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 837
Table 575. France Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 837
Table 576. France Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 838
Table 577. France Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 838
Table 578. France Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 838

Table 579. France Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 839
Table 580. France Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 839
Table 581. France Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 839
Table 582. France Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 839
Table 583. Japan Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 852
Table 584. Japan Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 852
Table 585. Japan Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 852
Table 586. Japan Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 853
Table 587. Japan Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 853
Table 588. Japan Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 853
Table 589. Japan Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 853
Table 590. Japan Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 854
Table 591. Japan Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 854
Table 592. Japan Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 854
Table 593. Japan Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 855
Table 594. Japan Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 855
Table 595. Japan Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 855
Table 596. Japan Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 856
Table 597. Japan Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 856
Table 598. Japan Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 856
Table 599. Japan Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 856
Table 600. United Kingdom Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 869
Table 601. United Kingdom Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 869

Table 602. United Kingdom Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 869
Table 603. United Kingdom Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 870
Table 604. United Kingdom Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 870
Table 605. United Kingdom Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 870
Table 606. United Kingdom Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 870
Table 607. United Kingdom Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 871
Table 608. United Kingdom Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 871
Table 609. United Kingdom Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 871
Table 610. United Kingdom Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 872
Table 611. United Kingdom Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 872
Table 612. United Kingdom Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 872
Table 613. United Kingdom Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 873
Table 614. United Kingdom Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 873
Table 615. United Kingdom Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 873
Table 616. United Kingdom Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 873
Table 617. Canada Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 886
Table 618. Canada Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 886
Table 619. Canada Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 886
Table 620. Canada Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 887
Table 621. Canada Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 887
Table 622. Canada Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 887
Table 623. Canada Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 887
Table 624. Canada Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 888

Table 625. Canada Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 888
Table 626. Canada Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 888
Table 627. Canada Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 889
Table 628. Canada Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 889
Table 629. Canada Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 889
Table 630. Canada Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 890
Table 631. Canada Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 890
Table 632. Canada Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 890
Table 633. Canada Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 890
Table 634. Italy Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 903
Table 635. Italy Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 903
Table 636. Italy Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 903
Table 637. Italy Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 904
Table 638. Italy Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 904
Table 639. Italy Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 904
Table 640. Italy Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 904
Table 641. Italy Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 905
Table 642. Italy Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 905
Table 643. Italy Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 905
Table 644. Italy Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 906
Table 645. Italy Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 906
Table 646. Italy Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 906
Table 647. Italy Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 907

Table 648. Italy Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 907
Table 649. Italy Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 907
Table 650. Italy Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 907
Table 651. Spain Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 920
Table 652. Spain Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 920
Table 653. Spain Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 920
Table 654. Spain Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 921
Table 655. Spain Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 921
Table 656. Spain Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 921
Table 657. Spain Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 921
Table 658. Spain Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 922
Table 659. Spain Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 922
Table 660. Spain Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 922
Table 661. Spain Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 923
Table 662. Spain Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 923
Table 663. Spain Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 923
Table 664. Spain Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 924
Table 665. Spain Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 924
Table 666. Spain Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 924
Table 667. Spain Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 924
Table 668. South Korea Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 937
Table 669. South Korea Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 937
Table 670. South Korea Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 937

Table 671. South Korea Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 938
Table 672. South Korea Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 938
Table 673. South Korea Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 938
Table 674. South Korea Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 938
Table 675. South Korea Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 939
Table 676. South Korea Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 939
Table 677. South Korea Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 939
Table 678. South Korea Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 940
Table 679. South Korea Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 940
Table 680. South Korea Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 940
Table 681. South Korea Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 941
Table 682. South Korea Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 941
Table 683. South Korea Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 941
Table 684. South Korea Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 941
Table 685. Australia Telecom Energy Storage System Market Size, 2017-2032 (USD Million) 954
Table 686. Australia Telecom Energy Storage System Market Size, by Product Integration, 2017-2032 (USD Million) 954
Table 687. Australia Telecom Energy Storage System Market Size, by Storage Technology, 2017-2032 (USD Million) 954
Table 688. Australia Telecom Energy Storage System Market Size, by Lead-Acid Batteries, 2017-2032 (USD Million) 955
Table 689. Australia Telecom Energy Storage System Market Size, by Valve-Regulated Lead-Acid Batteries, 2017-2032 (USD Million) 955
Table 690. Australia Telecom Energy Storage System Market Size, by Lithium-Ion Batteries, 2017-2032 (USD Million) 955
Table 691. Australia Telecom Energy Storage System Market Size, by Nickel-Based Batteries, 2017-2032 (USD Million) 955
Table 692. Australia Telecom Energy Storage System Market Size, by Sodium-Based Batteries, 2017-2032 (USD Million) 956
Table 693. Australia Telecom Energy Storage System Market Size, by Network Application, 2017-2032 (USD Million) 956

Table 694. Australia Telecom Energy Storage System Market Size, by Storage Purpose, 2017-2032 (USD Million) 956
Table 695. Australia Telecom Energy Storage System Market Size, by Economic Buyer, 2017-2032 (USD Million) 957
Table 696. Australia Telecom Energy Storage System Market Size, by Installation Environment, 2017-2032 (USD Million) 957
Table 697. Australia Telecom Energy Storage System Market Size, by Ownership Model, 2017-2032 (USD Million) 957
Table 698. Australia Telecom Energy Storage System Market Size, by Sales Channel, 2017-2032 (USD Million) 958
Table 699. Australia Telecom Energy Storage System Market Size, by Grid Availability, 2017-2032 (USD Million) 958
Table 700. Australia Telecom Energy Storage System Market Size, by Power Interface, 2017-2032 (USD Million) 958
Table 701. Australia Telecom Energy Storage System Market Size, by Procurement Lifecycle, 2017-2032 (USD Million) 958
Table 702. Global Telecom Energy Storage System Market Share, by Key Player, 2025 974
Table 703. Global Telecom Energy Storage System Market, Companies Covered 1028
Table 704. Global Telecom Energy Storage System Market, Key Experts 1062

Contributors

Meet the Experts

Our reports are shaped by experienced analysts and industry specialists whose expertise ensures every insight is backed by rigorous research, deep industry knowledge, and thorough validation.



Shikha Sachan

Chief Executive Officer

A transformational leader with a strong focus on integrating new technology frameworks into market research. She focuses on reshaping business models in line with evolving technologies and geopolitical shifts, while actively engaging with decision-makers and experts to deliver trustworthy insights, strategic clarity, and lasting business value.



Shraddha Bhirud

Research Manager

With extensive experience in market intelligence, leads complex client engagements by overseeing research projects from initiation to delivery. Strengthens research operations through standardized methods, process optimization, and cross-functional collaboration. Her commitment to quality and client success ensures the delivery of actionable insights.

Monika Pillai

Research Analyst

Conducts in-depth industry assessments by analyzing market dynamics, business trends, and competitive developments. Applies structured research methodologies to generate accurate insights that support market evaluation, opportunity identification, and strategic business planning.



360iResearch

Founded in 2017, 360iResearch is a market research and business consulting company headquartered in India, with clients and focus markets spanning the globe.

We are a dynamic, nimble company that believes in carving ambitious, purposeful goals and achieving them with the backing of our greatest asset - our people.

Quick on our feet, we have our ear to the ground when it comes to market intelligence and volatility. Our market intelligence is diligent, real-time and tailored to your needs, and arms you with all the insight that empowers strategic decision-making.

Our clientele encompasses about 80% of the Fortune Global 500, and leading consulting and research companies and academic institutions that rely on our expertise in compiling data in niche markets. Our meta-insights are intelligent, impactful and infinite, and translate into actionable data that support your quest for enhanced profitability, tapping into niche markets, and exploring new revenue opportunities.

Global Information | RESEARCH AND MARKETS THE WORLD'S LARGEST MARKET RESEARCH STORE | Market Research.com

© 360iResearch 2026

All Rights Reserved. This document contains highly confidential information and is the sole property of 360iResearch. No part of it may be circulated, copied, quoted, or otherwise reproduced without the written approval of 360iResearch.