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Grid-Scale Energy Storage Market Forecasts to 2032 – Global Analysis By Technology (Electrochemical Energy Storage, Mechanical Energy Storage, Chemical Energy Storage, and Thermal Energy Storage), Ownership Model, Business Model, Application, End User, and By Geography

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Abstracts

According to Stratistics MRC, the Global Grid-Scale Energy Storage Market is accounted for $32.5 billion in 2025 and is expected to reach $154.5 billion by 2032, growing at a CAGR of 24.9% during the forecast period. Grid-scale energy storage integrates large batteries, pumped hydro, thermal storage, and other technologies to balance supply and demand across electricity networks. It enables renewables to be dispatchable, improves grid stability, and reduces reliance on peaker plants. Utilities, independent power producers, and system operators use storage to keep the frequency stable, cut down on peak demand, and provide backup power. Falling battery costs, supportive policies, and rising renewable penetration drive investment.

According to the IEA, total installed grid-scale battery storage capacity was close to 28 GW at the end of 2022, with batteries projected to lead storage growth.

Market Dynamics:

Driver:

Rising integration of intermittent renewable energy sources

Rising integration of intermittent renewable energy sources drives demand for grid-scale

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energy storage by balancing supply variability and stabilizing grids. When renewable energy output is at its highest, batteries and other storage systems store the extra energy and release it when output drops. This makes the system more reliable and cuts down on curtailment. This integration enables higher renewable penetration, supports ancillary services, and defers infrastructure upgrades, making storage economically attractive for utilities and system operators. Additionally, policy incentives and falling technology costs further accelerate deployments.

Restraint:

High upfront capital costs and long payback periods

High upfront capital costs and long payback periods limit the adoption of energy storage systems at a grid scale despite operational benefits. Significant investment is required for batteries, installation, and grid interconnection, while revenue streams depend on market structures, tariffs, and capacity factors. Uncertain regulatory frameworks and fragmented incentive schemes can extend payback timelines, deterring conservative utility and investor appetite. Financing mechanisms and value-stacking strategies are evolving but remain uneven across regions, slowing project pipelines in cost-sensitive markets.

Opportunity:

Expansion into emerging markets with growing energy demand

Rapid electrification, rising renewable installations and grid modernization needs create demand for flexibility and reliability services. In many regions, aging infrastructure and transmission constraints make localized storage attractive for peak shaving and deferral of capital-intensive upgrades. Local partnerships, tailored financing, and modular technologies can lower entry barriers, enabling vendors to capture long-term contracts and support sustainable energy transitions. Concessional finance and subsidies will support market growth.

Threat:

Supply chain disruptions for critical materials

Supply chain disruptions for critical materials pose a significant threat to the market for grid-scale energy storage by constraining production and raising costs. Dependence on

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specific minerals for battery chemistries exposes manufacturers to geopolitical risks, export controls, and raw material volatility. Logistics bottlenecks and concentration of processing capacity in a few countries can delay project timelines and increase capital requirements. Manufacturers are diversifying supply sources, recycling initiatives, and alternative chemistries, but these responses require time and investment to scale effectively.

Covid-19 Impact:

Supply chain disruptions for critical materials pose a significant threat to the market for grid-scale energy storage by constraining production and raising costs. Dependence on specific minerals for battery chemistries exposes manufacturers to geopolitical risks, export controls, and raw material volatility. Logistics bottlenecks and concentration of processing capacity in a few countries can delay project timelines and increase capital requirements. Manufacturers are diversifying supply sources, recycling initiatives, and alternative chemistries, but these responses require time and investment to scale effectively.

The utility-owned segment is expected to be the largest during the forecast period

The utility-owned segment is expected to account for the largest market share during the forecast period because utilities can integrate large-scale storage to optimize grid operations and meet regulatory obligations. Utility ownership enables coordinated dispatch for frequency regulation, peak shaving, and deferred transmission investments, capturing multiple revenue streams. Utilities can buy in bulk, use their financial resources effectively, and plan for the long term, which helps them save money and align storage projects with their overall system needs As regulatory frameworks evolve to value flexibility, utilities lead deployments across regions.

The energy storage-as-a-service (ESaaS) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the energy storage-as-a-service (ESaaS) segment is predicted to witness the highest growth rate as customers increasingly prefer operational flexibility and lower upfront costs. ESaaS allows aggregators to pool assets for market participation, monetizing services like frequency response and demand charge management. Technology standardization, sophisticated control software, and evolving tariff structures enhance the business case for service-based offerings. Consequently, ESaaS can unlock new customer segments and geographic markets with tailored

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commercial arrangements and managed performance guarantees.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, driven by rapid renewable deployment, industrial electrification, and strong utility investment. China, Japan, South Korea, and Australia lead in capacity additions and procurement programs that prioritize storage to integrate variable generation. Large-scale grid upgrades and supportive policy frameworks, including capacity markets and incentive schemes, attract both domestic and international suppliers. Growing manufacturing capability and localized project pipelines further consolidate the region's market dominance.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, as expanding energy demand and policy support drive rapid storage uptake. Rising electrification, increasing renewables, and investment in grid resilience create strong market tailwinds across Southeast Asia, India, and China. Cost reductions in batteries and growing local manufacturing improve project economics, while international vendors partner with local players to scale deployments. These dynamics position the region for accelerated growth relative to mature markets.

Key players in the market

Some of the key players in Grid-Scale Energy Storage Market include Fluence, Tesla, Inc., LG Energy Solution, Ltd., Contemporary Amperex Technology Co. Limited, BYD Company Limited, Siemens Energy AG, ABB Ltd, General Electric Company, W?rtsil? Corporation, Hitachi Energy, Mitsubishi Power, Ltd., Toshiba Energy Systems & Solutions Corporation, TotalEnergies SE, Eos Energy Enterprises, Inc., ESS Inc., Invinity Energy Systems plc, Enel X Global Retail (Enel X), NextEra Energy, Inc., Black & Veatch Corporation, and NEC Corporation.

Key Developments:

In August 2025, Global energy storage technology and energy software services provider Fluence and ACE Engineering have opened a new automated battery storage manufacturing facility in Vietnam's Bac Giang Province. The facility, which boasts an annual manufacturing capacity of 35GWh, will produce Fluence's Gridstack Pro and

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Smartstack energy storage systems using fully automated production processes designed to enhance productivity and quality control.

In August 2025, CATL, a global leader in innovative energy storage solutions, unveiled its latest technologies in its debut at the Smarter E South America 2025, the largest energy storage exhibition on the continent. TENER Stack currently the World's first stackable, 9MWh ultra-large capacity energy storage system is adaptable to CATL's different cell technologies, offering either up to five years of zero degradation or high-temperature resistance. It is suitable for South America's varied climates, underscoring CATL's commitment to sustainable energy development throughout the region.

In March 2025, LG Energy Solution announced today that it has signed an agreement with PGE, Poland’s largest energy sector company, to supply 981MWh of grid-scale ESS batteries between 2026 and 2027. Both companies will collaborate to establish a battery energy storage facility in ?arnowiec, Poland. PGE plans to commence the project’s commercial operation in 2027.

Technologies Covered:

- Electrochemical Energy Storage
- Mechanical Energy Storage
- Chemical Energy Storage
- Thermal Energy Storage

Ownership Models Covered:

- Utility-Owned
- Independent Power Producer (IPP) / Developer-Owned
- Third-Party Owned

Business Models Covered:

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- Build-Own-Operate (BOO)
- Build-Transfer-Operate (BTO)
- Energy Storage-as-a-Service (ESaaS)
- Leasing Models

Applications Covered:

- Energy Shifting & Arbitrage
- Frequency Regulation (FR)
- Peak Capacity / Capacity Firming
- Black Start Services
- Transmission & Distribution (T&D) Deferral
- Renewables Integration
- Microgrids and Self-Consumption
- Electric Energy Time-Shift (EETS)
- Voltage Support / Reactive Power Control

End Users Covered:

- Utilities
- Independent Power Producers (IPPs) & Renewable Energy Developers
- Commercial & Industrial (C&I) Entities
- Community Storage & Microgrid Aggregators

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- System Operators (ISOs/RTOs)
- Residential

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia

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New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends

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- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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