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Energy Storage Systems Market Size Set to Hit USD 569.39 Bn by 2034 Driven by Grid Firming and Renewables

According to Precedence Research, the global energy storage systems market size is worth USD 288.97 billion in 2025 and is forecasted to hit approximately USD 569.39 billion by 2034, expanding at a CAGR of 7.87% from 2025 to 2034. Driven by renewable integration, grid reliability, and EV growth, the market is set for robust expansion through 2034.

August 11, 2025 | Source: [Precedence Research](#)

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Ottawa, Aug. 11, 2025 (GLOBE NEWSWIRE) -- In terms of revenue, the [global energy storage systems market size](#) accounted for USD 266.82 billion in 2024 and is projected to increase from USD 288.97 billion in 2025 to USD 569.39 billion by 2034.

In terms of CAGR, the market is expected to expand at a notable annual rate of 7.87% from 2025 to 2034. Energy storage systems play vital roles in reducing peak demand, enhancing grid reliability, integrating renewable energy sources, resolving power outages, and in many other diverse

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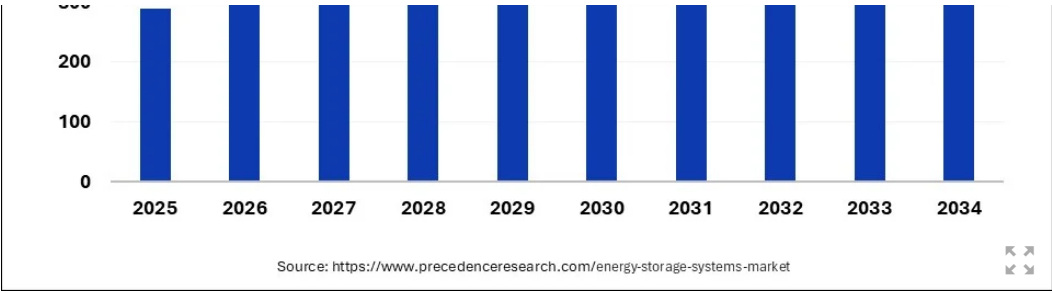
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Key Stats at a Glance:

- Market size (2024): USD 266.82 billion
- 2034 forecast: USD 569.39 billion.
- CAGR (2025–2034): 7.87%.
- Largest region (2024): Asia Pacific (48% revenue share).
- Largest technology (2024): Pumped hydro (95.4% share).
- Fastest-growing technology: Electrochemical storage (14.2% CAGR, 2025–2034).
- Dominant application (2024): Grid storage; Transportation **is projected to grow fastest.**
- Base year / Forecast window: 2024 / 2025–2034.

Energy Storage Systems Market Overview

The energy storage systems refer to batteries utilizing [smart energy](#) management systems for charging and discharging as per the needs. This approach is effective in reducing the energy consumption of the grids.

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energy access, and the [electrification](#) of the transportation sector. Nowadays, energy is stored using advanced methods and technologies, such as compressed air, molten salt, flywheels, thermals, and [batteries](#).

Scope of Energy Storage Systems Market

Report Coverage	Details
Market Size in 2024	USD 266.82 Billion
Market Size in 2025	USD 288.97 Billion
Market Size in 2030	USD 435.32 Billion
Market Size in 2032	USD 502.28 Billion
Market Size by 2034	USD 569.39 Billion
Growth Rate (2025 to 2034)	CAGR of 7.87%
Leading Region in 2024	Asia Pacific
Fastest Growing Region	Middle East & Africa
Base Year	2024
Forecast Period	2025 to 2034
Segments Covered	Technology, Application, End User, and Region
Key Technologies	Lithium-ion Batteries, Lead-acid Batteries, Flow Batteries, Thermal Storage, Flywheel, Compressed Air Energy Storage (CAES), Pumped Hydro
Key Applications	Grid Storage, Transportation, Residential, Commercial, and Industrial
Major End Users	Utilities, Renewable Energy Projects, EV Manufacturers, Commercial Enterprises, Industrial Facilities
Regions Covered	North America, Europe, Asia-Pacific, Latin America, and Middle East & Africa
Top Companies Profiled	LG Chem., Convergent Energy and Power Inc., Eos Energy Storage, Beacon Power, LLC, BYD Company Ltd., ABB Ltd., Greensmith Energy Management Systems, Seeo, Inc., S&C Electric Company, Scheider Electric, SMA Solar Technology AG, Exide Industries Ltd.
	Rapid renewable energv inteagation. falling battery costs.



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Which are the Principal Factors Shaping the Technological Industry?

• **Implementation of Standards and R&D Initiatives:**

There are strict rules and regulations regarding carbon and greenhouse gas emissions and the growing demand for energy in underdeveloped and developing regions present globally. However, the supportive R&D initiatives for the development of advanced systems for energy storage are driving the market’s growth globally. In addition, the major market players are focusing on renewable energy sources for electricity generation, which supports the growing demand for energy storage systems in the market.

• **Regional Development and Government Regulations:**

The developed regions such as North America and Europe are contributing greatly to the expansion of the market globally. Furthermore, the reduced costs of batteries is enabling the surge in [demand for advanced energy storage systems globally](#).

However, the favorable government regulations of developing regions such as Asia-Pacific and Latin America are also boosting the market’s growth globally. The demand for power supply is higher in underdeveloped regions that have inadequate resources for [power generation](#). In addition, the collaborations between governments and market players on rural development projects foster the market’s expansion.

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Growth Factors in the Energy Storage Systems Market

- **Government Activities:** To avoid load-shedding situations, the governments of countries like India, Pakistan, and Bangladesh are taking favorable initiatives in required areas.
- **Increased Need for Energy Storage:** Due to energy depletion, the need for energy storage is growing at a rapid pace. The industries such as manufacturing, oil and gas, and transportation need large amounts of energy. This results in high demand for battery-based energy storage

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time data and historical data.

AI can also predict peak demand, which allows energy storage systems to improve charging and discharging and ensure the availability of energy in complex situations. AI improves the charging cycles of [lithium-ion batteries](#), which reduces the strain on the system and extends battery life.

It also helps to cost savings by optimizing the efficiency of energy storage systems. With the help of AI, the smart grids can automatically adjust the energy flow based on real-time supply and demand. This helps to enhance the efficiency of grids and reduce power outages.

Which are the Significant Achievements of the Leading Industrial Firms?

- In **January 2025**, energy storage companies secured **\$19.9 billion** in corporate funding based on the data provided by Mercom Capital Group through investments, public market funding, and debt financing. This corporate funding for energy storage firms increased to **\$19.9 billion** in **116** deals in 2024, which was **\$19 billion** in **120** deals in 2023.
- In **May 2025**, the clean energy sector of Australia experienced remarkable success in clean energy investments and battery storage due to a rapid growth in Battery Energy Storage Systems (BESS) in Q1 2025. It has achieved AUD **3.6 billion** in funding, which was a **56%** increase from 2024, which showcases better progress towards a stronger and renewable energy grid.
- In **February 2025**, **Genera PR and Tesla** announced the signing of a contract for the acquisition of **430 megawatts (MW)** in Tesla Megapack, an energy storage system to improve the reliability of the electrical system on the island.

How Does IoT Acts as an Opportunity for the Energy Storage Systems Market?

The [Internet of Things \(IoT\) in energy presents a significant opportunity](#) in the energy storage systems market, enhancing performance, safety, and profitability. Connected ESS units act as virtual power plants (VPPs), helping balance supply-demand and supporting grid frequency control. IoT integration allows utilities to store excess solar energy midday and discharge during evening peaks, e.g., California's grid now meets **26% of peak demand** via battery discharge.

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What are the Potential Concerns related to Economic Stability?

- **Challenges associated with Investments and Supply Chain:** Energy storage systems usually require high investments that can present economic challenges in their deployment. The financial barriers for their large-scale implementation include high costs of batteries and other storage technologies along with the required infrastructure and installation expenses.
- **Increased Burden of Implementation of Guidelines:** There are strict guidelines for energy storage systems in some nations due to which the nation faces a burden of expanding the industry. There is a high cost of modernized technologies and tools which hampers their adoption among potential end users. There are lots of issues regarding load shedding in some countries of the Asia Pacific region, including India, Bangladesh, etc.

Case Study: Delhi Utility Uses a 10 MW Battery to Ease the Evening Peak.



A Delhi distribution utility deployed a 10 MW / 10 MWh lithium-iron-phosphate (LFP) battery energy storage system (BESS) at a congested substation to shave the 7–10 pm peak, stabilize voltage for nearby hospitals and housing colonies, and defer a transformer upgrade. In the first year, the BESS consistently reduced feeder peaks by 6–9%, cut diesel-genset run hours at critical facilities, and pushed a planned ₹60–₹80 crore capex out by two years.

The challenge

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- System: Containerized 10 MW / 10 MWh BESS (LFP), UL-9540A tested, HVAC and fire-suppression integrated.
- Controls: EMS tied to SCADA, day-ahead forecasts, automated discharge targeting the 30-minute billing peak.
- Use cases: Peak shaving, voltage support, fast frequency response readiness, black-start for the substation.
- Delivery: Six months from NTP to commissioning, including civil works, interconnection, and site acceptance tests.

We ran joint drills with the local fire brigade, issued a one-page safety card for operators, and set up a “peak watch” dashboard so the control room could track savings in real time.

Results (first 12 months)

- **Peak shaved:** Average 8.2 MW during the top ten peak evenings each month; 6–9% feeder-peak reduction on the busiest days.
- **Reliability:** SAIDI improved by ~11 minutes on affected feeders; nuisance trips during peak fell materially.
- **Customer impact:** The nearby hospital reported ~70% fewer diesel-genset starts tied to voltage dips and brief outages.
- **Cost avoidance:** Internal finance estimated ₹60–₹80 crore in capex deferral (postponed transformer and cable upgrades ~24 months).
- **Opex & market value:** Demand-charge savings plus limited ancillary participation covered ~18–22% of annualized BESS costs.
- **Carbon benefit:** Off-peak charging (higher renewables) + reduced diesel use avoided ~1,500–1,900 tCO₂e/year (location-based estimate).

Lessons learned

1. Right node, right size: A targeted 10 MW at the worst bottleneck beat spreading smaller systems thinly.
2. Dispatch to the tariff: Optimizing for the 30-minute billing peak delivered outsized savings.
3. Safety first, visibly: Early walkthroughs with first responders sped approvals and built confidence.
4. Simple comms work: A one-pager for large customers reduced rumors and resistance.

What’s next

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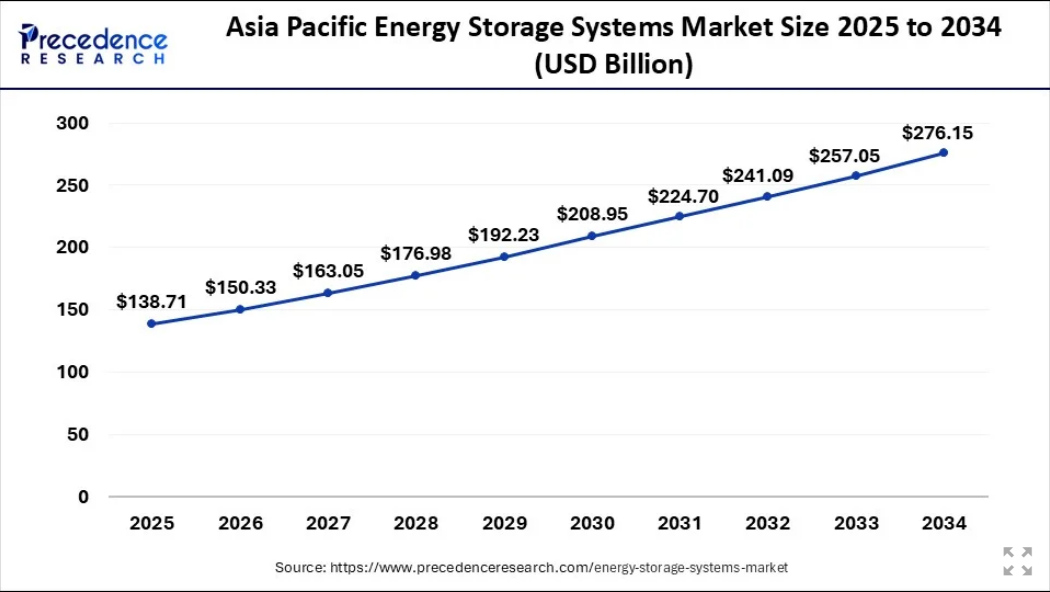
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According to Precedence Research, the Asia Pacific energy storage systems market size has been estimated at USD 138.71 billion in 2025 and is anticipated to reach over USD 276.15 billion by 2034. The APAC market is growing at a solid CAGR of 7.99% from 2025 to 2034.



How Did Asia Pacific Dominate the Energy Storage Systems Market in 2024?

Asia Pacific dominated the energy storage systems market in 2024. The Asia Pacific region is leading with the high spending in residential, commercial, and industrial sectors in developing countries like China and Indonesia will accelerate the regional market’s growth. The increased adoption of electric vehicles requiring the use of [advanced battery](#) technologies also drives the market’s expansion in this region. The stringent government regulations, rapid urbanization, and industrialization are expected to boost the market’s growth in this region.

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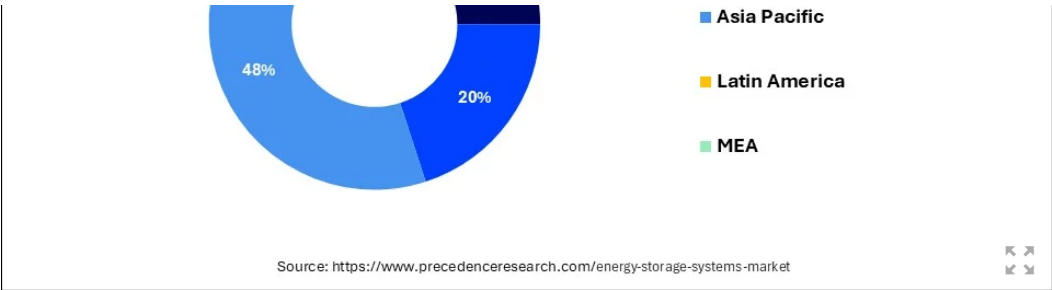
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How Battery Energy Storage Serves as a Key to the Future of Renewable Energy in India?

There is a growing integration of variable solar and wind power in the energy mix in India. [Battery energy storage systems](#) are the principal factors in filling the gap between generation and consumption while

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What to Expect from North America’s Energy Storage System Market?

North America is expected to grow at the fastest rate in the energy storage systems market during the forecast period. North America increased its focus towards the integration of renewable energy sources and the modernization of grid infrastructure. The favorable government policies and incentives aimed at reducing carbon emissions and promoting clean energy further boost the regional growth of the market. The presence of prominent industries and ongoing technological advancements in energy storage solutions also contribute to the regional market’s growth.

How does Energy Storage Present Opportunities to the U.S. Department of Energy?

The U.S. Department of Energy selected 11 projects to achieve advancements in domestic manufacturing of next-generation batteries. It has launched a new facility for advanced energy storage research and testing. It has taken new initiatives for energy storage to achieve developments related to grid stability, storage manufacturing, and long-duration energy storage.

Energy Storage Systems Market Segmentation Analysis

By Technology Analysis:

What made Pumped Hydro the Dominant Segment in the Energy Storage Systems Market in 2024?

By technology, the pumped hydro segment dominated the energy storage systems market in 2024. By harnessing the power of pumped hydro storage, the gap between intermittent renewable energy and the electricity demand can be resolved. Pumped hydro storage helps to achieve net-zero

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offer several significant advantages over other surface modification technologies.

By Application Analysis:

How Grid Management Segment Dominated the Energy Storage Systems Market in 2024?

By application, the grid management segment dominated the energy storage systems market in 2024. This segmental rise is attributed to the increased need to enhance grid stability and reliability. The integration of renewable energy sources like solar energy and wind power also contributes to the segmental growth in the market. The potential of grid storage solutions like large-scale batteries and pumped hydro storage in balancing supply and demand drives the growth of grid storage. They favor the storage of excess energy during times of low demand and its release during peak times surges the expansion of grid storage systems.

By application, the transportation segment is expected to grow at the fastest rate in the energy storage systems market during the forecast period due to the [huge adoption of electric vehicles](#) and the rising demand for efficient energy storage solutions to support operations. The growing shift towards eco-friendly and sustainable transportation solutions drives the growth of this segment. The rising investments in advanced [battery technologies boost the performance and range of electric vehicles](#).

Moreover, the supportive government policies, the development of charging infrastructure, and incentives for electric vehicle adoption propel the growth of this segment.

By End User Analysis:

Why did the Residential Segment Dominate the Energy Storage Systems Market in 2024?

By end user, the residential segment dominated the energy storage systems market in 2024. The availability of common forms of residential energy storage such as on-grid and off-grid residential storage systems

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dependency on the grid.

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Energy Storage Systems Market Top Companies

- **Tesla** – Industry leader with its Powerwall and Megapack systems, driving large-scale residential and utility storage adoption globally.
- **Fluence** – Joint venture of Siemens and AES, offering AI-driven grid-scale energy storage and digital optimization platforms.
- **Samsung SDI** – Supplies high-density lithium-ion battery modules for

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- **Sonnen** – Pioneer in smart home battery systems, enabling decentralized energy sharing via its virtual power plant platform.
- **ABB Ltd** – Delivers modular, grid-connected storage solutions with strong integration into smart grids and industrial automation.
- **Siemens Energy** – Offers comprehensive energy management systems combining ESS with renewable power and grid infrastructure.
- **Enphase Energy** – Specializes in residential microinverter-based solar-plus-storage systems with integrated monitoring and control.
- **General Electric (GE)** – Focuses on hybrid power systems combining gas, renewables, and energy storage for flexible power delivery.
- **AES Corporation** – Co-founder of Fluence and a key developer of grid-scale ESS projects and digital energy platforms.
- **Aquion Energy** – Developed sustainable, non-toxic aqueous hybrid ion (AHI) battery technology for long-duration stationary storage.
- **EnerSys** – Supplies industrial batteries and turnkey ESS solutions for telecom, utility, and motive power applications.

What is Going Around the Globe?

- In **July 2024**, **Toshiba Corporation** and the **Industrial Technology Research Institute (ITRI)** of Taiwan signed a memorandum aiming to understand and explore the collaboration in the virtual power plant business in Taiwan. (**Source:** <https://www.global.toshiba>)
- In **April 2024**, **Siemens Ltd.** announced the launch of electrification X to facilitate the seamless digital transformation of electrification infrastructure across commercial, residential, industrial, and utility applications. This launch strengthens the Xcelerator portfolio of Siemens across buildings, grids, and electrification. (**Source:** <https://press.siemens.com>)

Energy Storage Systems Market Segments Covered in the Report

By Technology

- Pumped Hydro-dominated
- Electro-Chemical-Fastest-growing

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