# Battery Energy Storage News

*By John Benson*

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## 1. Introduction

I came across three articles regarding significant events in the title market. All of these were significant, but none were sufficient news for a complete article for Energy Central, so I decided to combine them into a single paper, and this is it.

## 2. U.S. Energy Storage Systems Set New Record

*The U.S. energy storage market hit a record 18.9 gigawatts of battery energy storage system installations in 2025, a 52% increase over 2024, according to the latest U.S. Energy Storage Monitor report released today by the American Clean Power Association (ACP) and Wood Mackenzie.*[1]

*In a year of record growth, Q4 of 2025 closed with the strongest quarterly totals on record with 5.8 GW installed. Utility scale installations accounted for 4.9 GW of the Q4 total, a 31% increase over the previous year. New activity was spread across 13 different states, demonstrating market diversification outside of California and Texas, which have historically dominated utility-scale battery energy storage deployment.*

*The U.S. residential storage market also hit a quarterly milestone in Q4 with 1 gigawatt-hour (GWh) installed as tax incentive expiration dates accelerated demand. The residential market installed a total of more than 800 megawatts (MW) in 2025, a 75% year-over-year increase. California led in growth, installing 700 MW more in 2025 than it did in 2024, driven by high retail electricity rates and a net billing tariff incentivizing battery discharge during peak energy usage hours. Puerto Rico, Texas, Arizona, and Illinois rounded out the top five markets for storage growth in 2025.*

*The Community, Commercial and Industrial (CCI) market also saw record growth with 77 MW installed in Q4 2025 as state policies boosted deployments.*

### 2.1. U.S. Installations to Surpass 28 GW by 2031

*Momentum will continue for the battery energy storage market, according to Wood Mackenzie's five-year outlook. The report projects that the U.S. will install half a TWh (500,000 Megawatt-hours (MWh)) of storage between 2026-2031, a 250% increase over the previous five-year period. Annual utility additions will lead the way, doubling between 2025 and 2030 in GWh installed. A previously anticipated near-term market contraction for utility installations is also no longer expected, as a record-breaking number of projects started construction in 2025 to lock in the previous federal Investment Tax Credit (ITC) requirements. Demand for residential storage rose in 2025 as consumers took advantage of the expiring Section 25D ITC, but the residential market is expected to contract by 2% in 2026 with the expiration of the tax credit. Annual Community, Commercial and Industrial (CCI) storage installations are also expected to grow by 39% between 2025 and 2030 as continued system costs declines and further policy support expand profitable business cases.*

[1] Hannah Fuller, Manager, Communications, American Clean Power, "2025 U.S. Energy Storage Installations Set New Record, Surpass 2024 by 52%, March 24, 2026, https://cleanpower.org/news/report-2025-u-s-energy-storage-installations-set-new-record-surpass-2024-by-52/

*"2025 was a banner year for the energy storage market," said Allison Feeney, research analyst at Wood Mackenzie. "Declining system costs, supportive policies and growing revenue opportunities have all contributed to impressive growth over the last six years. We expect this momentum to continue as the technology becomes even more proven and widely adopted."*

### 2.2. Despite Continued Growth, 52 GW Hangs in Balance

*Wood Mackenzie assessed high-case and low-case five-year outlook scenarios for battery energy storage deployment in the report. The high-case would result in approximately 36 GW of new battery energy storage deployed in 2031, assuming higher demand growth, federal permitting relief, and that storage technology retains easier access to tax credits in the One Big Beautiful Bill Act (OBBBA) through workable Foreign Entity of Concern (FEOC) guidance increasing domestic system and cell supply. However, the low case results in 17% less capacity than the base case. This scenario assumes an increase in protectionist trade barriers that raise system costs and a lower level of load growth.*

*Allison Weis, Global Head of Storage at Wood Mackenzie, said, "The market trajectory is strongly upward, but large load buildout and federal policy will determine whether we reach the high case of 26 GW by 2031 or something more conservative."*

## 3. Peak Picks Sacramento for First Sodium-Ion Factory

*Peak Energy, a U.S. leader in low-cost, giga-scale grid storage, today announced it has selected Sacramento, California as the home of its new manufacturing facility, becoming America's first dedicated to grid-scale sodium-ion energy storage systems. The 183,000-square-foot facility will produce up to 4 GWh of battery systems annually, enough to power nearly four million homes per year. Peak announced the milestone alongside regional and state leaders, marking a major investment in California manufacturing and America's energy future.*[2]

*With more than 6 GWh of customer commitments already in place, Peak's Sacramento facility will help the United States meet the rapidly increasing energy storage demand, fueled by the expansion of AI and data centers, while advancing energy security and domestic manufacturing. Peak's passively cooled sodium-ion battery energy storage systems, which reduce the cost of energy storage by 20% and have a 99% guaranteed uptime, are expected to enter production and begin shipments in Q1 2027.*

*"America needs energy storage that is lower cost, more affordable, more reliable and purpose-built to meet the demand coming onto the grid," said Landon Mossburg, CEO and Co-Founder of Peak Energy. "This facility is proof that America can lead not only in inventing the technology, but in building it at scale. With our manufacturing facility in Sacramento, we're enabling American energy innovation to lower electric bills while creating high quality jobs."*

[2] PR Newswire via Yahoo Finance, "Peak Energy Selects Sacramento to Build America's First Sodium-Ion Grid Storage Factory," July 8, 2026, https://finance.yahoo.com/energy/articles/peak-energy-selects-sacramento-build-200000225.html

## 3.1. Advancing California's Energy Economy

*Located in Sacramento's Metro Air Park, the new facility represents up to $71 million in capital investment and will create 239 new local jobs over the next 18 months, with an average annual wage of more than $90,000. The project is also expected to generate additional economic activity for local suppliers, contractors, logistics providers and service businesses throughout the Sacramento region, while expanding the local tax base and supporting long-term community investment. Together with Peak's broader growth in California, the company is expected to create 348 net new jobs across Sacramento and Burlingame, where it is headquartered, by 2030.*

*Peak chose Sacramento following a competitive nationwide site selection process, citing the region's manufacturing talent, proximity to California's growing energy storage market, strong state and local support, and the Greater Sacramento Economic Council's leadership in bringing together workforce, utility and economic development partners. Peak's growth in California is supported by a $10.5 million CalCompetes tax credit, which was awarded in May 2026.*

*"The future of energy is being built in California," said Dee Dee Myers, Senior Advisor to Governor Newsom and Director of the Governor's Office of Business and Economic Development (GO-Biz). "This state has always been the country's center of energy innovation, and Peak's investment in Sacramento is proof that we're also the best place to manufacture those new technologies at scale, bringing good jobs, economic opportunity and critical infrastructure to our state. With the help of CalCompetes' investment in this project, we are making sure that California's energy transition is made in California, by California workers."*

*"Peak Energy's decision to select Sacramento is exactly the kind of advanced manufacturing investment that reflects the strengths of our region," said Barry Broome, President and CEO of the Greater Sacramento Economic Council. "Sacramento has become a destination for innovative companies looking to grow, manufacture and invest for the long term. This project will create opportunities for our local businesses, working families and communities while ensuring the benefits of California's energy transformation are felt right here in Sacramento for generations to come."*

### 3.1.1. Next Generation of Grid Storage Systems

*Peak is commercializing the world's first fully passive grid-scale energy storage system, engineered to operate for more than 20 years without scheduled maintenance and designed as a drop-in replacement for today's battery energy storage systems. In California alone, eliminating battery cooling costs could save ratepayers an average of $100 million annually while helping lower the overall cost of energy storage and deliver more affordable electricity.*

**Author's comment:** Note the "…fully passive…eliminating battery cooling costs…" in the prior paragraph. I believe that this need some additional comments.

Thermal management is not a universal solution; it's a precision-engineered response to specific cell chemistry. In 2026, the dominance of Lithium Iron Phosphate (LFP) is being complemented by the rise of Sodium-ion (SIB) technologies.

Each chemistry presents unique thermodynamic challenges that dictate the design of utility scale battery cooling systems. While LFP (Lithium-Ion batteries' Lithium Ferro-Phosphate) Batteries require aggressive heat extraction to maintain its safety profile in high-density blocks, Sodium-ion can generally use a lower-cost thermal architecture.

High-density LFP modules, often utilizing 314 Ah or 560 Ah prismatic cells, generate concentrated heat during rapid discharge, and frequently require active cooling.

Best (lowest-cost) case for LFP batteries is that active (read fans) air-cooling can be used. Worst-Case for LFP is that they might require liquid-cooling with external liquid-to-air heat dissipation via radiators or cooling towers.

Sodium-Ion batteries can frequently use passive air cooling (no fans) and worst case is that only fans blowing across the batteries' surfaces (perhaps with shrouds) are required.

*To date, Peak has secured customer agreements with Jupiter Power, Energy Vault and RWE Americas and recently announced a strategic partnership with General Motors, including an investment from GM Ventures, to pair GM's next-generation sodium-ion cell technology with Peak's proprietary energy storage platform. Together, these milestones underscore growing confidence in Peak's sodium-ion technology as a scalable solution for grid storage.*

# 4. Grid-Scale Battery Energy Storage

*Large grid battery storage systems are massive energy storage installations that store excess electricity from renewable sources and release it on demand to stabilize and optimize the power grid.*[3]

*Grid-scale battery storage systems, also known as utility-scale or large-scale battery energy storage systems (BESS), are designed to operate at capacities ranging from tens of megawatts to multiple gigawatts, far exceeding residential or commercial battery systems*

*They are directly connected to transmission or distribution networks and serve as critical infrastructure for balancing electricity supply and demand, stabilizing grid frequency, and integrating variable renewable energy sources like solar and wind.*

## 4.1. How They Work

*These systems function similarly to industrial-grade rechargeable batteries and typically involve three key stages*

***Absorption (Charging):*** *Excess electricity, often from solar or wind, is stored as direct current (DC) during off-peak periods.*

***Conversion:*** *A Power Conversion System (PCS) and transformers convert grid AC to DC for storage and back to AC when discharging.*

[3] Bing Browser Copilot Search for the string: "Large Grid Battery Energy Storage Systems," on August 6, 2026.

***Intelligent Control:*** *An Energy Management System (EMS) monitors grid conditions in real time and controls charging and discharging to respond instantly to grid needs.*

## 4.2. Key Benefits

*Grid-scale battery storage provides essential services to modern power grids, including*

***Frequency regulation:*** *Rapid response to maintain stable grid frequency.*

***Peak shaving:*** *Reducing demand spikes by supplying stored energy during high-load periods.*

***Capacity reserve:*** *Acting as backup power during transmission outages or low generation periods.*

***Renewable smoothing:*** *Storing intermittent renewable energy and releasing it when generation is low, reducing curtailment.*

## 4.3. Examples of Large Installations

*Some of the largest battery storage systems in the world include:*

***Moss Landing Energy Storage Facility, California:*** *3,000 MWh capacity and 750 MW power using lithium-ion batteries, storing excess solar and wind energy.*

***Crimson Energy Storage, Riverside County, California:*** *1,400 MWh capacity and 350 MW power, supplying around 47,000 households and reducing $CO_2$ emissions by 275,000 tons annually.*

***Remote installations in Finland:*** *60 MWh capacity in Arctic conditions, demonstrating deployment in extreme environments.*

## 4.4. Market Growth and Future Outlook

*The grid-scale battery storage market is expanding rapidly. In the first nine months of 2025, 49.4 GW / 136.5 GWh of grid-scale BESS came online, a 36% increase compared to the same period in 2024*

*Falling battery costs, modular containerized designs, and improved technology are accelerating adoption globally. These systems are increasingly essential as renewable energy penetration grows and traditional fossil fuel plants retire, ensuring a resilient and reliable electricity supply*

## 4.5. Conclusion

*Large grid battery storage systems are a cornerstone of modern energy infrastructure, enabling the integration of renewable energy, enhancing grid stability, and providing flexible, rapid-response energy solutions. Their continued deployment is critical for achieving a sustainable, low-carbon energy future.*