



# US Energy Storage Monitor

Q4 2024 Executive Summary

Wood Mackenzie Power & Renewables/American Clean Power  
Association | December 2024



## About this report

**The US Energy Storage Monitor** is a quarterly publication of Wood Mackenzie Power & Renewables and the American Clean Power Association (ACP). Each quarter, new industry data is compiled into this report to provide the most comprehensive, timely analysis of energy storage in the US.

### Notes:

- All forecasts are from Wood Mackenzie Power & Renewables; ACP does not predict future pricing, costs or deployments.
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- For more information or to purchase the full report, visit <https://www.woodmac.com/industry/power-and-renewables/us-energy-storage-monitor/>.

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# Executive summary

## 1 3.8 GW of storage was installed in the US in Q3 2024, an 80% increase compared to Q3 2023

- 3,431 MW/9,188 MWh were deployed in the grid-scale segment, the largest capacity installed in a Q3 on record. Texas and California are responsible for 93% of MW and MWh total capacity.
- A record-breaking 346 MW of residential storage was installed in Q3 2024, a 63% increase over the previous quarter. California, Arizona, and North Carolina led growth, installing 56%, 73% and 100% more residential storage in Q3 than in Q2 – despite residential battery supply shortages.
- The CCI market remained flat. California failed to surpass Q2 2024's 14.4 MW installation, despite 10 NBT projects being installed each quarter.

## 2 Across all segments, 2024 is expected to deploy 11.9 GW/34.4 GWh, a slight decrease over last quarter's forecast

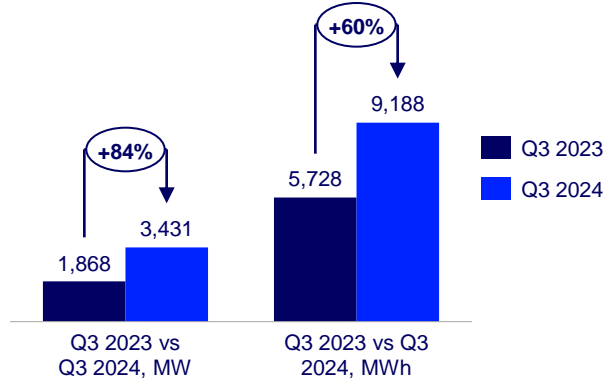
- The total grid-scale capacity forecast over the 5-year period increased 2% compared to Q2. The 2024 volume decreased by 5% but consistent growth is expected from 2025 onwards, driven by new volumes in the Woodmac project database and previous delayed project capacity.
- Over 12 GW of Distributed storage is forecasted over the 5-year forecast period. The residential segment will install 80% of this capacity as financial value streams open across the country, interest in backup power intensifies, and costs come down. Community, Commercial and Industrial storage will grow 294% over the forecast period. Interconnection challenges in the Northeast could continue to hamper growth.

## 3 The industry is evaluating the impacts of November's election; BESS costs may increase >10% by 2026 with potential tariffs

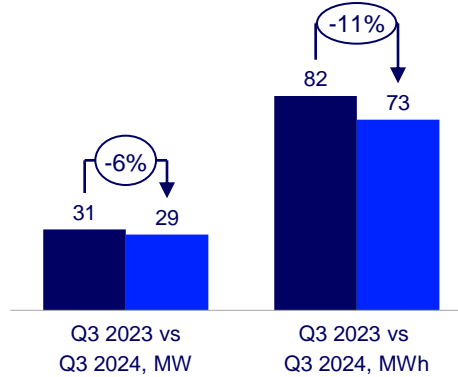
- While there is not expected to be a full repeal of the Investment Tax Credit, ITC adders could be at risk. We present possible downside risk in this ESM but new base case numbers will be forecasted in Q1 2025 as elected officials take office and continue to develop their plans.
- Section 301 tariffs on lithium batteries from China will increase from 7.5% to 25% starting in 2026. President-elect Trump has proposed a 60% tariff on all imports from China. If executed, turnkey grid-scale storage costs for Chinese systems could be US\$ 1,084 – 1,204 / kW. With 45X and the domestic content adder, U.S.-based turnkey systems would be more competitively priced but domestic availability falls well short of demand.

# Q3 2024 comparison of energy storage deployments

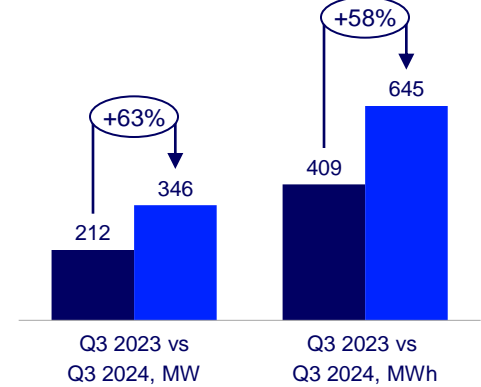
## Grid-scale segment, yoy changes



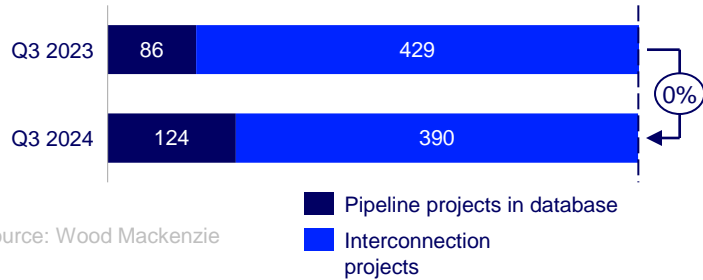
## CCI segment, yoy changes



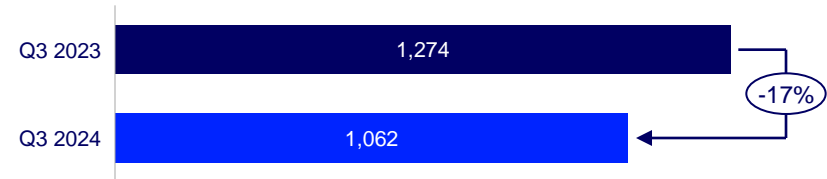
## Residential segment, yoy changes



## Grid-scale segment pipeline (GW), yoy changes



## Grid-scale battery system price (US\$/kW), yoy changes

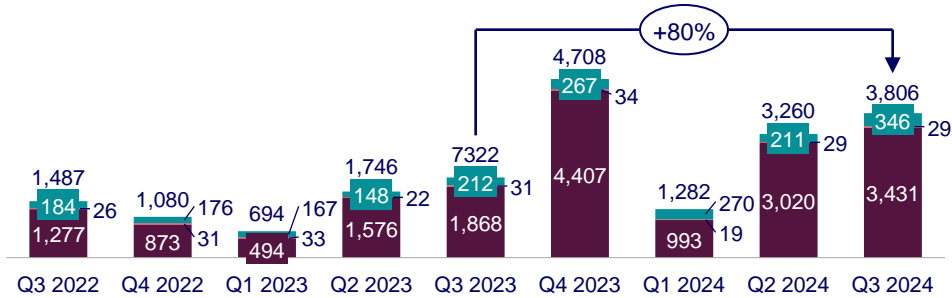


Source: Wood Mackenzie

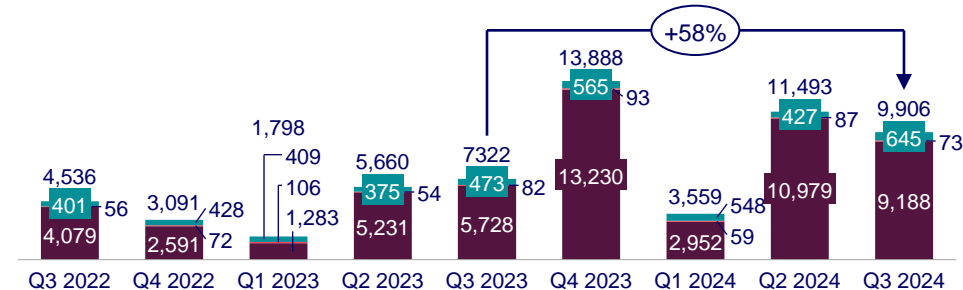
# The US energy storage market quarterly installations

Q3 set the highest record for third quarter installations, with Texas leading storage deployments.

## Quarterly storage deployments (MW)



## Quarterly storage deployments (MWh)



## The grid-scale segment grows further, easily outstripping last year's Q3 installation numbers

- Installation additions of 3,431 MW in the grid-scale segment represent a 63% increase over Q3 of 2023.
- Texas and California installed 93% of total Q3 capacity. Although Texas installations tripled compared to previous quarter, California produced the highest MWh installations with 5,992 MWh, followed by Texas with 2,283 MWh.
- Arizona (180MW), Colorado (37.4 MW), Florida (15 MW), Massachusetts (5 MW), and Vermont (3 MW) also saw installations in Q3.

## National residential storage market installed record-breaking 346 MW of storage with record-high national attachment rate of 28%

- California was responsible for 62% of installations and grew 56% quarter over quarter.
- Other high growth markets include Arizona and North Carolina, where deployments grew 73% and 100% in installations compared to Q2 2024. Declining battery installation costs and solar export compensation rates boosted the Arizona market, while North Carolina benefits from Duke's PowerPair incentive program.

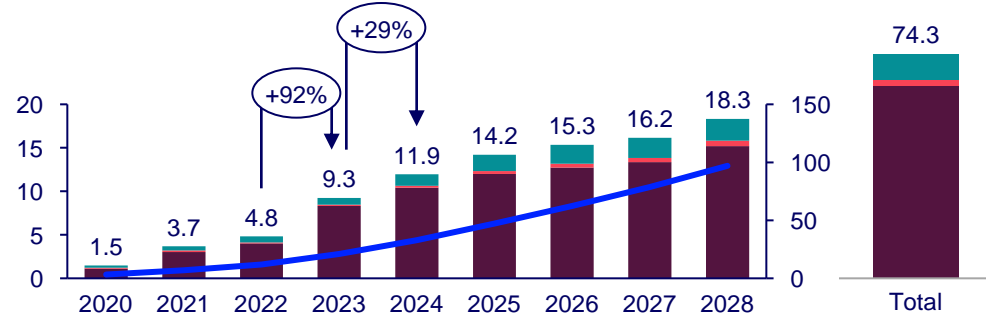
## The CCI segment held steady with 29 MW installed in Q3

- California failed to set a new quarterly install record, installing 10 MW in Q3 2024 compared to 14.4 MW in Q2 2024. Only 9% of installed storage capacity were Net Billing Tariff projects.

# US energy storage five-year market outlook

Storage installations will grow just under 30% in 2024, but between 2025 and 2028 an annual average growth rate of 10% is expected as early-stage development constraints continue.

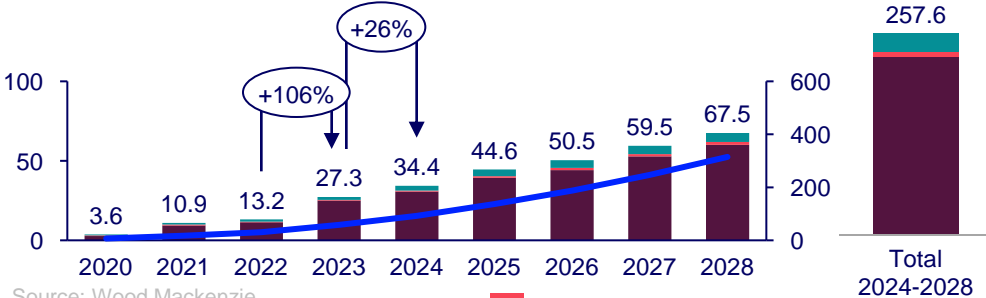
## Annual and cumulative market outlook (GW)



## Forecasted grid-scale capacity less than 11 GW for 2024

- A 25% yoy increase is projected for the grid-scale segment with 10.4 GW/30.6 GWh deployed by year-end, reaching a total cumulative installed volume of 63.7 GW/222 GWh across the 5 year outlook. The reduced 2024 projected capacity, compared to last quarter's forecast corresponds to the 600 MW that are now expected to COD in 2025.
- The consistent expected growth from 2025 onwards considers delays in project capacity previously pushed into later years of the forecast and new volumes added to Woodmac's project database, but growth rates are at risk after November's election.

## Annual and cumulative market outlook (GWh)



## 12 GW of distributed storage will be deployed over the next 5-years.

- The residential segment will install 10 GW of storage between 2024 and 2028 as new value-add opportunities emerge. The CCI segment is expected to install 2.1 GW of storage between 2024 and 2028, a modest reduction from our previous forecast.
- Near-term growth in the residential segment is expected but may be slightly tempered due to supply chain shortages. Some installers are needing to install storage weeks or even months after the rooftop solar is installed.
- November's election results increases the uncertainty around the residential and CCI forecasts. Potential increases in battery costs could hit the CCI market particularly hard as many of these projects are already on the margin.

Source: Wood Mackenzie

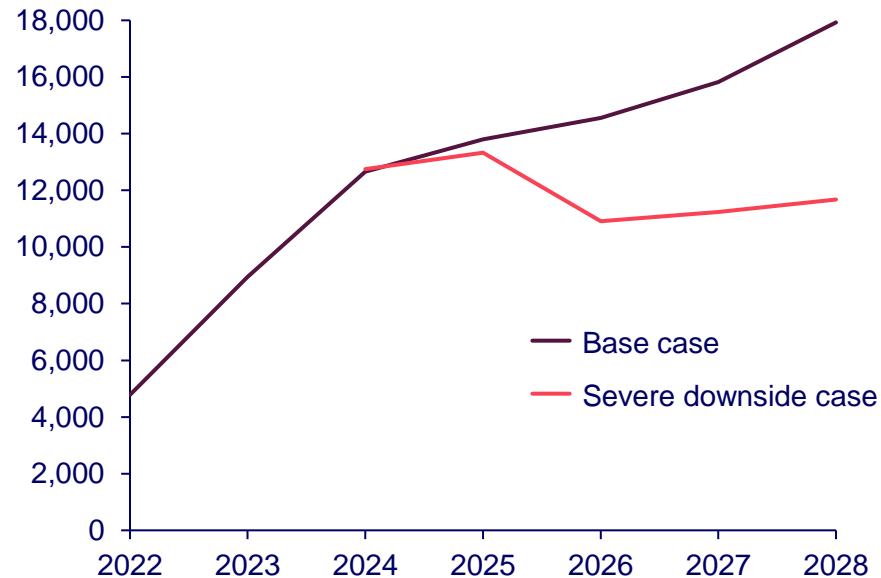


— Cumulative  
■ CCI  
■ Residential  
■ Grid-Scale

## Policy shifts with the new administration present risk for storage project development but also potential opportunities for domestic manufacturing

Even in the severe downside case, significant storage continues to be installed each year

### Base case vs severe downside case annual storage capacity additions (MW)



### Prior to the election, we mapped out an extreme downside scenario including:

- ITC & PTC phase out in 2029 rather than 2032 and the GHG emission target is removed
- Elimination of bonus adders, transferability and direct pay
- Protectionist measures increasing the cost of storage imports
- Manufacturing tax credits begin to phase out in 2028 rather than 2030

### This scenario results in 20% less US storage over the next 5 years

- It remains highly uncertain what elements of this scenario will play out, but it provides a helpful benchmark for the risk present in the market. Wood Mackenzie will provide an updated base case forecast view in the Q1 ESM.
- With the majority of ESS battery supply coming from countries potentially at risk for increased tariffs, these tariffs and any repeal of domestic manufacturing incentives would create significant price increases, contributing to stark declines in annual installations after the first year.

# Nina Rangel

Senior Research Analyst, Energy Storage

## Biography

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Nina is a Senior Research Energy Storage Analyst at Wood Mackenzie. She focuses on US grid-scale battery storage. Before joining Wood Mackenzie in 2024, Nina was a postgraduate researcher at the University of Leeds, where she worked with hybrid microgrid optimization and biofuel projects.

Nina holds a PhD in Chemical and Process Engineering from the University of Leeds, a MSc In Sustainable Energy Engineering from Reykjavik University and a BS in Mechanical Engineering from Tecnológico de Monterrey.

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## Biography

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Hanna holds a M.S. in Environmental Sciences and Policy from Johns Hopkins University and a B.A. in International Affairs and Economics from Northeastern University.

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