# 2H 2025 Energy Storage Market Outlook

October 20, 2025

BloombergNEF

# Contents

# Section 1. Executive summary

**23.0%**

Energy storage market's compound annual growth rate in gigawatts from 2025 to 2035

**92GW/ 247GWh**

BNEF's estimate for global energy storage additions in 2025

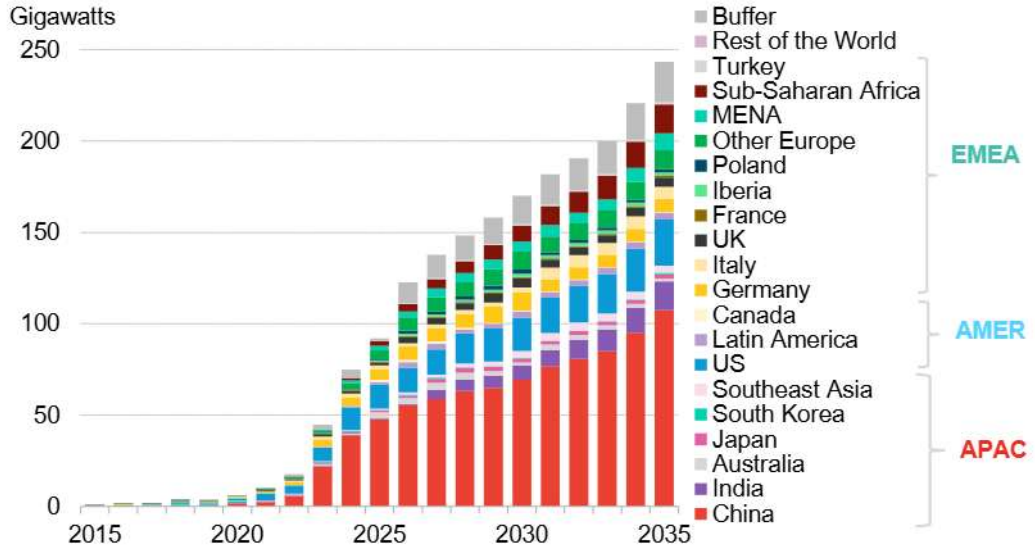
**22.7%**

Year-on-year growth in global energy storage additions in 2025

The global energy storage market remains on track for a record year in 2025, though a bit short of BloombergNEF's earlier expectations after US tariff dispute disruptions and policy changes shook confidence, with knock-on effects worldwide. Meanwhile, China looks rosier, with a new target partially offsetting policy changes earlier in the year. Other markets such as Australia, Saudi Arabia, Italy, Sub-Saharan Africa and Southeast Asia are accelerating deployment through policy, utilities' procurement and power market dynamics.

- BNEF expects 92 gigawatts (GW) or 247 gigawatt-hours (GWh) of annual energy storage additions globally in 2025, excluding pumped hydro, 23% higher than in 2024 in gigawatts. Besides China and the US, markets such as Germany, the UK, Australia, Canada, Saudi Arabia and Sub-Saharan Africa are also contributing to growth this year and next. Global deployment grows to 123GW/360GWh in 2026, 33% higher year-on-year.
- Cumulatively, energy storage adds 1.9 terawatts (TW) or 6.9 terawatt-hours (TWh) of new capacity between 2025 and 2035, compared to 8.7TW and 2.0TW of new solar and wind added in the same period. In China and the US, recent policy changes will slow new solar and wind build, but storage deployment will remain strong as market players adapt to new market environments. In the late 2020s, deployment starts scaling in markets like India, Southeast Asia, Italy and Latin America. By the end of 2035, BNEF expects cumulative capacity to reach 2.0TW/7.3TWh, 12 times the cumulative build in 2024.

**Figure 1: Global gross energy storage additions by market**




*Source: BloombergNEF. Note: Excludes pumped hydro plants. Buffer is estimated capacity not explicitly allocated to any specific region or application. EMEA is Europe, the Middle East and Africa. AMER is the Americas. APAC is Asia Pacific. MENA is the Middle East and North Africa.*

- Utility-scale projects account for 84% of annual gigawatt-hour build in 2025. The share of short-duration energy storage for energy shifting, specifically projects with less than 6-hour duration, accounts for about 80% of the total until 2028 in gigawatt-hours. Later this decade, long-duration energy storage (LDES), or projects with more than six hours of duration, will slowly start taking a larger share as many LDES projects come online in markets like Australia, the US, Canada, the UK, Japan, South Korea and Italy. Notably, lithium-ion battery storage systems are now being extended to projects of six to eight hours in these markets, competing against other novel LDES technologies.
- Lithium iron phosphate (LFP) continues to dominate the market share over the next 10 years due to lower cost and higher cycle life, squeezing the share of nickel-based battery chemistries. Still, LFP's share peaks at 93% in 2027 and then starts falling as a mix of unidentified technologies including long-duration energy storage are deployed starting in the late 2020s. Falling LFP prices will constraint sodium-ion batteries' growth.
- The **Asia-Pacific (APAC)** region continues to lead installations through the forecast period. In China, where a lion's share of projects will be installed, growth will shift from policy mandates to more market-driven projects that will eye new compensation mechanisms and opening spot markets. In India, installations will accelerate next year on the back of rising utility and federal procurements. Australia's continued investor appetite for large-scale projects and new support for small-scale batteries will lift deployments too. Capacity additions will scale across other markets, anchored by auction programs in Japan, South Korea and Malaysia and a combination of high retail tariffs, mandates or targets in the Philippines and Vietnam. Cumulative deployment in APAC reaches 1,067GW/3,951GWh in 2035.
- In the **Americas (AMER)**, growth will continue for the next 10 years despite policy hurdles in the US, the largest market in the region. In the US, market players are adapting to a changing market environment by rushing construction this year and eyeing procurement of domestically sourced equipment in the near term. Canada's annual deployment will reach a gigawatt-scale for the first time this year. In Latin America, deployment is taking off due to strong project pipelines in Chile, new auction programs in Brazil and Argentina and Mexico's ambitious battery storage plan. By the end of 2035, cumulative capacity in AMER hits 276GW/1,110GWh.
- **Europe, Middle East and Africa (EMEA)**'s annual installation is set to overtake the AMER region starting from 2026. In Europe, incumbent markets such as Germany and the UK continue expansion while Italy's new auction program will drive capacity additions after 2030. In the Middle East, Saudi Arabia is scaling installations, driven by state utility procurement and falling energy storage costs. Meanwhile, Africa is seeing large battery imports, supporting uptake. Cumulative deployment in EMEA reaches 516GW/1,564GWh in 2035.

**Figure 2: Annual global energy storage installations by region based on power output**

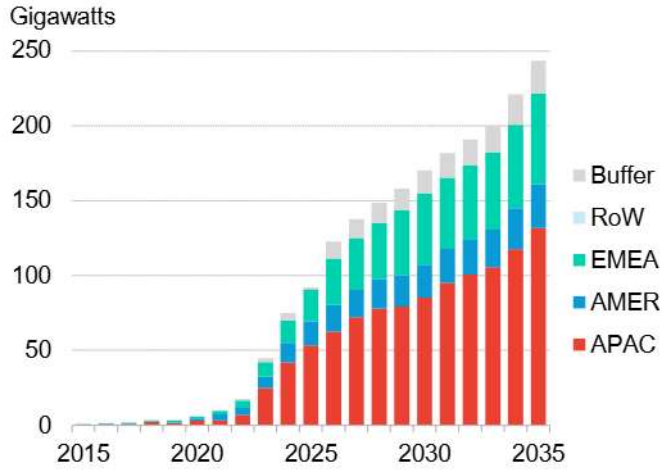
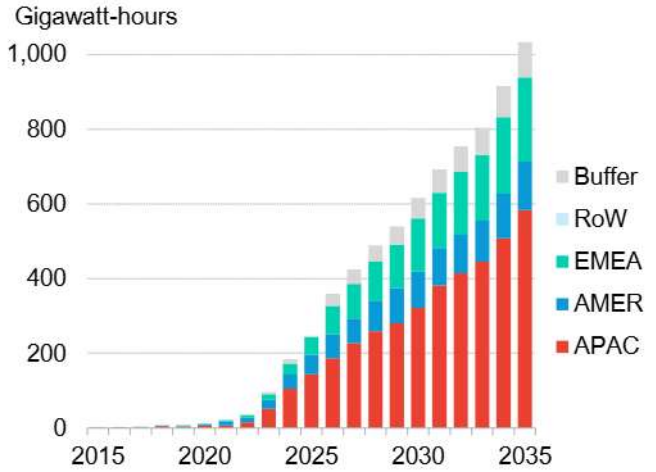



**Figure 3: Annual global energy storage installations by region based on energy capacity**




*Source: BloombergNEF. Note: RoW is Rest of World. EMEA is Europe, the Middle East and Africa. AMER is the Americas. APAC is Asia Pacific. Buffer is estimated capacity not explicitly allocated to any specific region or application.*

- Our global buffer addresses uncertainties such as markets where we lack visibility and where more ambitious policies may develop that we haven't predicted. For historical capacity, BNEF has based the buffer on battery shipment analysis, where gaps in historical and near-term battery demand were identified. BNEF analysis assumed 5.1GWh in 2023 and 12.0GWh in 2024, which is 12% and 16%, respectively, of the GWh demand outside China in each of these years (excluding buffers). BNEF added a 10% buffer based on global forecast gigawatt-hour capacity each year after that from 2025 to 2035.
- (Units were corrected in the fifth paragraph of the executive summary and on page 17. The changes were made on October 21, 2025.)

# Section 2. Global outlook

Globally, cumulative capacity reaches 2,030GW/7,250GWh in 2035, nearly 12 times the capacity at the end of 2024 (165GW/375GWh), and 12% higher than our previous estimate in gigawatts. Higher expectations reflect increased confidence in robust growth across China and the US, despite recent policy shifts, as well as in emerging markets such as Australia, Southeast Asia, Saudi Arabia and Africa. China leads with 43% of cumulative capacity in 2035 on a gigawatt basis, followed by 12% in the US. Other leading markets include Sub-Saharan Africa, Germany, India, Middle East and North Africa, Italy, the UK, and Australia (Figure 4, Figure 5).

**Figure 4: Region ranking based on cumulative energy storage capacity by power output**

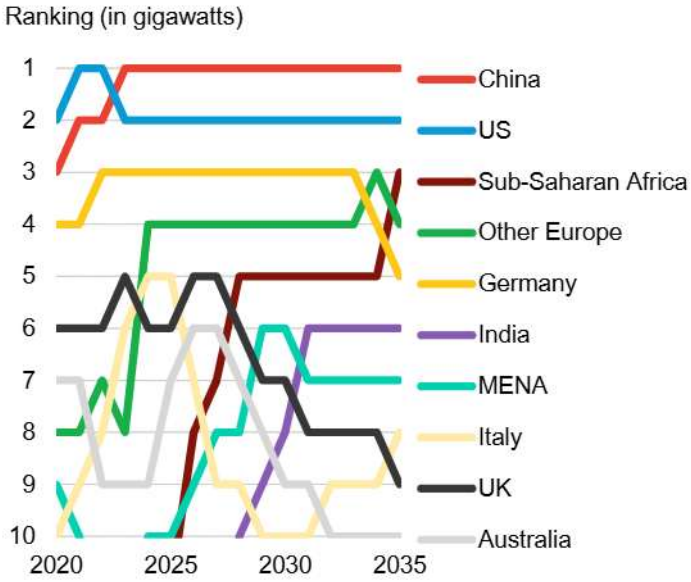
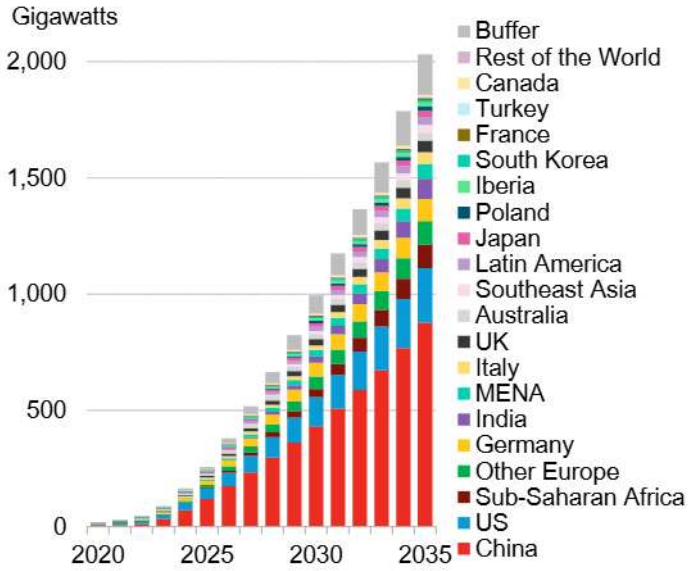



**Figure 5: Global gross cumulative energy storage capacity by power output and key markets**




*Source: BloombergNEF. Note: BNEF orders countries according to their region group. 'Other Europe' includes Czech Republic, Hungary, Slovenia, Slovakia, Denmark, Estonia, Finland, Lithuania, Latvia, Norway, Sweden, Bulgaria, Cyprus, Greece, Croatia, Malta, Romania, Austria, Belgium, Ireland, Luxembourg, Netherlands, Switzerland, and North Macedonia. Buffer is an estimate that is not explicitly allocated to any specific region or application. MENA is Middle East and North Africa.*

**China** remains the world's largest energy storage market (ranked here in gigawatt terms) and is set to hit a record 47.6GW/130.4GWh in 2025, 22% higher compared to 2024 additions. With China's continued commitment to energy storage and forthcoming power market reforms including spot markets launching across China and the provincial compensation schemes for energy storage, cumulative capacity reaches 877GW/3,322GWh in 2035.

The **US** energy storage market is set to grow despite recent policy changes. With the current pause in the US-China tariff war and the upcoming restriction on Chinese equipment for projects starting construction in 2026 and onward, market players seeking to qualify for tax credits are rushing to start construction, leading to 13.3GW/34.5GWh of annual build in 2025, up 8% from the 2024 level. The expansion of domestic cell manufacturing capacity, led primarily by Korean battery manufacturers, is driving additional growth, bringing cumulative capacity to 235.1GW/947.8GWh in 2035.

**Sub-Saharan Africa's** annual additions are set to more than double in 2025 to 2.6GW/8.6GWh, compared to last year. South Africa accounts for about a third of the installations. The region's battery imports have been growing, supporting the uptake. Cumulative capacity reaches 15.9GW/61.3GWh in 2035 – 29 times cumulative installations in 2024.

**Other European** countries (excluding Germany, Italy, Spain, Portugal, France, the UK and Poland) are scaling utility-scale projects to accommodate more renewables and offering grid flexibility. The group is set to add 5.0GW/8.7GWh of projects in 2025, up 51% year-on-year. Cumulative capacity reaches 100.4GW/255.1GWh in 2035 – 15 times cumulative build in 2024.

**Germany**'s annual build is set to hit a record of 5.7GW/9.8GWh in 2025, driven again by strong uptake of residential storage. The country's strong interest in residential storage and growing utility-scale battery demand will drive installations over the next 10 years. Cumulative capacity reaches 95GW/235GWh in 2035.

In **India**, annual installations are a mere 534MW/958MWh in 2025. Still, beginning in 2027, the country is posed to leapfrog its peers as energy storage projects awarded in the country's auction programs come online. Cumulative capacity reaches 86.9GW/312.8GWh in 2035.

**Middle East and North Africa**'s energy storage market will quickly scale, especially driven by rapid growth in Saudi Arabia. The region is set to add 4.4GW/16.2GWh in 2025, doubling 2024 installations. Saudi Arabia accounts for half of that capacity due to the state utility's large-scale procurement. The region's cumulative installation reaches 62.9GW/215.6GWh in 2035.

**Italy** is set to add 2.2GW/5.7GWh in 2025 due to uptake in ancillary-services projects and residential storage. Despite a near-term slowdown in the country's energy storage market, annual additions will exceed 6GW after 2030, especially driven by utility-scale projects awarded in the MACSE auction program, the first round of which just concluded in September. Cumulative capacity reaches 50.8GW/188.6GWh in 2035.

The **UK** is set to add 1.5GW/2.8GWh of storage in 2025. The country's capacity market auction and cap-and-floor scheme for long-duration energy storage will support the uptake in coming years. Cumulative capacity reaches 50.4GW/147.1GWh in 2035.

In **Australia**, annual addition is set to reach a record 3.4GW/7.4GWh in 2025, more than quadrupling uptake in 2024, driven primarily by a combination of elevated power market volatility, supportive government policies, and looming coal power plant retirements. Australia's cumulative energy storage fleet grows to 34.1GW/90.8GWh in 2035 – nearly 11 times cumulative installation in 2024.

## Updates from 1H 2025 Energy Storage Market Outlook

From BNEF's 1H 2025 Energy Storage Market Outlook, the most notable updates to this edition applying to global capacity numbers include:

- **New markets split out:** Energy storage forecasts are now available at a country level for Saudi Arabia. See the Europe, Middle East, and Africa section for more details.
- **New application split out:** The 'energy shifting' application in our previous energy storage forecasts is now broken to 'energy shifting – short-duration' and 'energy shifting – long-duration' applications. We refer to technologies that can extend duration by at least six hours as long-duration energy storage (LDES) or take market-specific definitions if these are set. See the Long-duration energy storage section for more details.
- Regional-specific changes are explained in the regional sections throughout the report.

## 2.1. Applications

The energy storage outlook segments six main applications for energy storage and estimates a buffer. In this iteration of the energy storage market outlook, we split our previous energy shifting application to '**energy shifting – short duration**' and '**energy shifting – long duration**' applications (Table 1).

**Table 1: Energy storage applications in BNEF's Energy Storage Market Outlook**

| Sub-category | | Description |
|---|---|---|
| **Energy shifting** | **Short duration** | Mostly involves using utility-scale energy storage to perform arbitrage and provide reliable capacity to meet peak system demand. |
| | **Long duration** | 'Long duration' is intended to capture energy storage designed to deliver six hours or longer of stored energy (excluding pumped hydro), separating it from 'short duration'. If a specific market or procurement defines LDES differently, BNEF follows the higher duration threshold set by the market instead. This category is technology-agnostic and may indeed include lithium-ion battery energy storage, depending on market definitions. As of 2H 2025, we included long-duration energy storage capacity for the US, Canada, UK, Saudi Arabia, Japan, South Korea and Australia in this category. |
| **Ancillary services** | | Using energy storage to provide operating reserves (frequency regulation, fast response, contingency reserves and others) through absorption or injection of short bursts of power. This is often procured by the system operator in the form of frequency regulation or reserves. |
| **Grid replacement** | **Transmission** | Energy storage can be installed at specific locations on the grid to better utilize existing transmission and distribution assets or defer reinforcement investment. For instance, storage assets can be located at grid congestion points and perform as "virtual power lines". They can also be used to provide an instantaneous response during peaking hours when an existing substation is overloaded. |
| | **Distribution** | |
| **Customer-sited** | **Residential** | Integrated at household (low voltage) and at commercial or industrial facilities (low/medium voltage). They can offer peak shaving (reducing peak demand in kW) and time-of-use optimization (shifting consumption of kWh from expensive peak time to less-expensive off-peak time). When combined with solar, can be used to increase the rate of self-consumption and serve as backup energy. We consider solar-plus-storage for both residential and C&I segments. We additionally consider standalone batteries in the C&I segment. |
| | **Commercial and industrial** | |
| **Other** | | Includes applications not covered in the major applications listed above, such as microgrids, virtual power plants (VPPs), EV charging and technology testing projects. We also include projects without an announced application type in this category. |
| **Buffer** | | Capacity is an estimate/headroom not explicitly allocated to any specific application. |

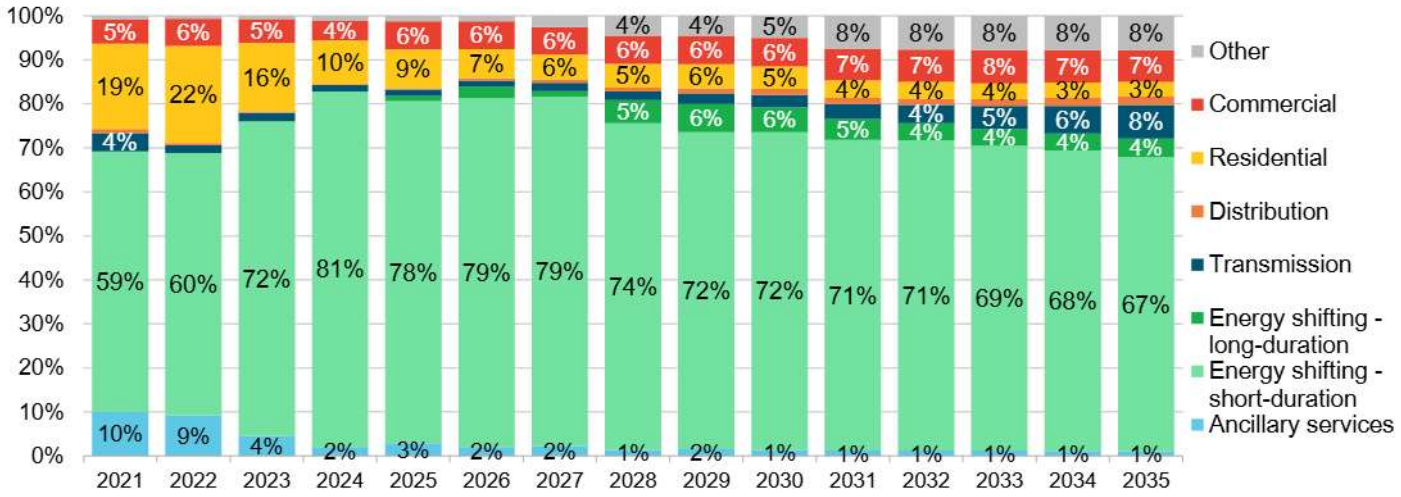
*Source: BloombergNEF. Note: Commercial and industrial (C&I) has been grouped together in this report and labeled 'commercial.'*

Energy shifting continues to be the primary use case for energy storage. Although the energy shifting for short-duration energy storage grows in absolute values, the growth of other applications such as energy shifting for long duration and other use cases will start taking over some of its share in gigawatt-hours in the coming decade (Figure 6). The share of long-duration energy shifting will become notable starting from 2028 when many LDES projects come online through procurement programs in markets including the US, the UK, Canada, Australia, Japan and South Korea.

**Energy shifting using short-duration energy storage** accounts for 78% of total energy storage deployments (referring to gigawatt-hours in this section) in 2025, down three percentage points from the 2024 level. Our estimate shows that the share of energy shifting using short-duration energy storage holds steady around 80% of total until 2028. Projects categorized under our energy shifting application refer to the use of energy storage for renewable integration, price arbitrage and capacity services. Ambitious clean energy goals and energy storage targets, and

the larger role energy storage is taking in capacity markets, will help keep energy shifting as the dominant application.

**Figure 6: Application mix of energy storage projects deployed annually based on energy capacity**




*Source: BloombergNEF. Note: Excludes pumped hydro projects. Includes 'Other' application category. At a project level, if multiple applications are selected, the capacity is divided equally among them. Energy shifting refers to capacity built for renewable integration, power price arbitrage and/or providing reliable capacity to meet peak system demand.*

The share of **energy shifting using long-duration energy storage** grows to 4-6% of total in 2028-2035 from almost zero today. Many markets such as the US, the UK, Australia, Canada, Japan, and Korea are procuring LDES using various programs, and those projects should start coming online in the late 2020s. The share could be even higher in the future, if more markets commit to LDES procurement. Battery storage duration is extending to six to eight hours, enabling it to compete against other novel LDES technologies in many markets. See the Long-duration energy storage section for more details. Similar to short duration, projects categorized under our energy shifting application refer to the use of energy storage for renewable integration, price arbitrage and capacity services.

**Ancillary services** account for 3% of deployments in 2025, declining to just 1% in 2035. Ancillary services have sometimes been the first market that batteries enter. Batteries can nearly instantaneously ramp up and down, lending them a technical advantage over other resources competing to provide ancillary services. Despite these market movements, ancillary services remain a niche market that do not scale compared to the larger opportunity for energy shifting in power markets. The market for ancillary services can often get oversaturated too, leading to lower prices or revenues in the segment. This trend is seen particularly in the Electric Reliability Council of Texas (Eroct) in the US. Thus, more energy storage projects in the region are eyeing a different opportunity and switching to energy shifting using longer-duration systems.

The **residential** market makes up 9% of all energy storage deployments in 2025, but drops to 3% by 2035 as energy shifting applications, or large-scale projects, with growing duration take a larger share of gigawatt-hour installations. Germany remains the largest residential storage market with over 80% of customers adopting batteries with rooftop solar. In Australia, home battery installations are set to surge thanks to the country's new subsidy program to small-scale systems between 5kWh and 100kWh.

The **commercial** segment accounts for 6% of total deployments globally in 2025, up by two percentage points from the 2024 level. Still, the share is set to remain around 6-7% of total after 2025. The largest market by 2035 is China by a distance due to provincial time-of-use retail tariffs for commercial and industrial users and falling energy storage system costs. The demand is also growing in Sub-Saharan Africa, where weak grids help drive battery uptake as storage costs decline, and some Southeast Asian countries, where high retail tariffs encourage corporate electricity users to install energy storage and offset high bills.

**Transmission** and **distribution** remain marginal applications through to 2030, but then transmission grows in the 2030s primarily as China picks up additions. Our analysis suggests that energy storage as a replacement for grids becomes a more significant segment after 2030 as battery prices fall and opportunities emerge for storage as grid infrastructure.

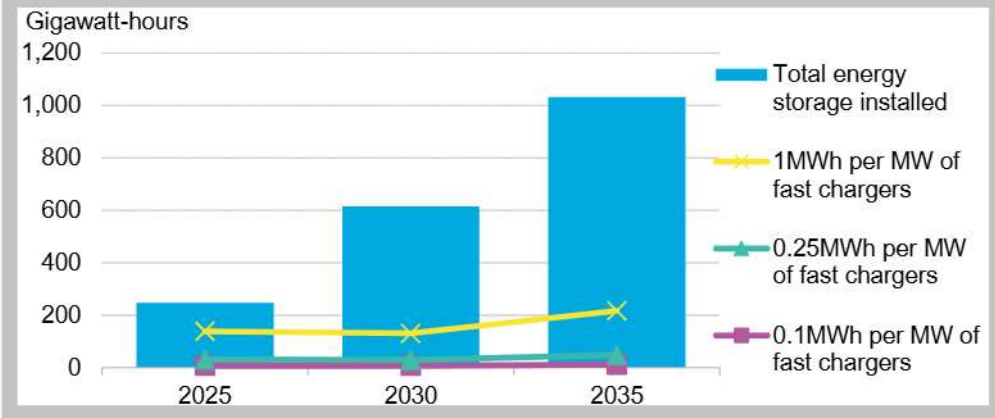
### Feature: Batteries for EV charging stations

Co-location of battery storage at charging sites has been limited, but offers a potentially attractive solution for developers for reducing grid connection and peak electricity costs while taking advantage of on-site renewable generation. While BNEF has not forecasted this capacity in our Energy Storage Market Outlook, this may be a growing segment for batteries in the future.

Recharge, a Nordic public charging provider, is planning to roll out battery storage across sites in Sweden in 2025, and California has been a hotspot for battery storage at truck-charging sites. WattEV is installing 5.5 megawatt-hour (MWh) battery storage systems across several sites, Sysco has a 4MWh system at its Riverside depot and Maersk has a site, with Prologis, near the Port of Los Angeles with a whopping 18MWh of battery storage.

Assuming each megawatt of charging installed is collocated with 0.1-1MWh of battery storage, EV charging stations would account for 1-16% of BNEFs projected energy storage market by 2035 (Figure 7). The low scenario assumes that 10% of stations with ten 150kW chargers install a 1MWh battery at the site. The high case assumes almost all install a battery.

**Figure 7: BNEF's energy storage outlook versus scenarios of storage adoption per megawatt of fast chargers installed**




*Source: BloombergNEF. Note: MWh is megawatt-hour; MW is megawatt.*

**Further reading**

- *Long-Term Electric Vehicle Outlook 2025* (web | terminal)
- *Charging Infrastructure Forecast Model (CIFM)* (web)
- *Data Hub: EV Charging Infrastructure* (tool)

# Section 3. Technology

## 3.1. Battery technology outlook

Lithium iron phosphate (LFP) remains the prevalent lithium-ion battery chemistry in the stationary energy storage market. Chinese battery makers specializing in LFP production continue to benefit from the growth of the Chinese domestic market and aggressive overseas expansion.

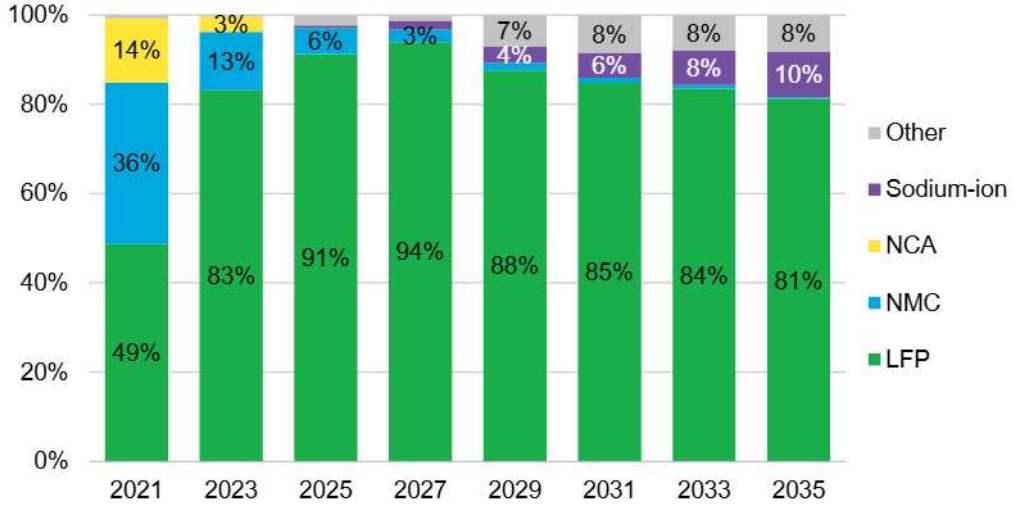
Most major battery makers, such as CATL, BYD, EVE Energy, CALB and Hithium, develop products specifically for the energy storage market, driving a continued deviation from the electric vehicle chemistry mix, which features a larger proportion of nickel-based lithium-ion battery chemistries. Compared to LFP, nickel-based chemistries such as nickel manganese cobalt oxide (NMC) and nickel cobalt aluminum oxide (NCA) are more energy dense, allowing automakers to offer lighter and longer-range electric vehicles.

The energy storage market is dominated by LFP because it is cheaper, safer, and better suited to energy shifting applications

We expect LFP to remain the dominant chemistry for energy storage from now to 2035 (Figure 8), largely due to lower cost and higher cycle life compared to nickel-based lithium-ion battery chemistries. LFP's lower energy density is less of a concern for the energy storage sector: weight and space are not as important for stationary systems, though bigger cell sizes have led to pack and system-level energy density improvements.

Our expectation for sodium-ion batteries has cooled, as activity in China is less imminent due to the increasingly low prices of LFP batteries.

**Figure 8: Stationary storage technology mix outlook based on gigawatt-hours**




*Source: BloombergNEF. Note: "Other' represents capacity built for 'Other' applications in BNEF's Energy Storage Market Outlook, which include a mix of unidentified technologies including long-duration energy storage (LDES). BNEF has not forecast a further breakdown due to uncertainty around commercial scale-up across the many technologies in that group. NCA, NMC and LFP refer to lithium-ion battery chemistries. NCA is lithium nickel cobalt aluminum oxide, NMC is lithium nickel manganese cobalt oxide and LFP is lithium iron phosphate.*

LFP's growing market share continues to be driven by aggressive scale-up in manufacturing capacity led by Chinese battery makers. Battery makers outside China, many of which historically

specialized in nickel-based lithium-ion batteries, are also scaling up manufacturing of energy storage system (ESS) products using LFP. Major examples include South Korea-based LG Energy Solution and Samsung SDI as well as Japan-based Panasonic. As a result, the market share for NMC and NCA drops to 1% by 2029, from a combined 50% in 2021.[1]

BNEF separates capacity as 'other' in the technology mix outlook to address capacity being built under 'other' applications in BNEF's energy storage 2035 forecast, which includes long-duration energy storage (LDES) or the 'energy shifting – long duration' application in our classification. See the Long-duration energy storage section for more details. Within LDES, energy storage technologies including thermal, mechanical and chemical storage solutions will play a role. BNEF has not forecast a further breakdown due to uncertainty around commercial scale-up across the many technologies in that group.

## LFP

Major technology trends in LFP batteries include ever larger prismatic cells for energy storage coming to market, allowing for more energy storage capacity per unit. Standardized 5MWh 20-foot containers using 300 ampere-hours (Ah) or larger cells became the standard offered product for 2024, a 34% increase from 3.72MWh previously using cells around 280Ah. Next-generation products are already being designed with even larger cell and system capacities, as the trend has continued into 2025 with 587Ah cells and respective systems reported to come into mass production by CATL, Hithium, and CRRC Zhushou with deliveries in 3Q and 4Q 2025. Many cell manufacturers such as EVE, CALT and REPT have now announced cells over 600Ah, with BYD announcing a 2,710Ah cell in September 2025, which is to be used in a 14.5MWh, 20-foot container more than double other systems on the market. BYD plans to begin deploying these systems before the end of 2025. See *Battery Makers Respond to Policy Upheavals With Innovation* (web | terminal) for more details.

System integration efficiency can improve with larger cells, as fewer connectors are needed, and more capacity per rack and container can be achieved. However, mass commercialization of larger systems usually takes time when transitioning to larger cells as systems need to be redesigned, with engineering and production taking many months. AC (alternating current) components (power conversion systems) also need to be adapted to new DC (direct current)-side designs. That said, some companies have managed to move to larger cells within the course of a year. These newer products usually launched in China often take six months or so to be available overseas as they need to undergo new product certification requirements in respective markets.

In the US, Fluence integrates US-made LFP battery cells, supplied by AESC, in its energy storage systems. In September, Fluence announced the "first shipment of domestic content lithium-ion battery storage systems using US-made batteries, modules, thermal management systems, controls, and enclosures". They began reshoring the company's supply chain in 2022 to manage risk and market volatility and are now able to provide whole systems which have been made domestically. The local manufacturing ecosystem for LFP in the US is growing as battery manufacturers, particularly leading Korean firms, are tapping into new opportunities in the country's new policy environment. With the elimination of federal subsidies for electric vehicles, battery makers are now rapidly shifting their strategies to instead focus on the stationary storage market. See *What Happened in Vegas: Trump's Big Bill Looms Over RE+* (web | terminal) for more details.

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[1] See *BNEF Energy Storage Tier 1 List 3Q 2025* for more on energy storage providers (web | terminal).

### NMC

NMC batteries have lost market share due to their higher cost. NMC is also less favored for energy storage as it degrades at a faster rate than LFP. NMC remains in the energy storage mix in a handful of markets and applications. In Japan and South Korea, where battery manufacturers specialize in nickel-based chemistries, however, even manufacturers in these markets are looking to shift to making LFP for the ESS sector. We assume a share of manufacturing will meet energy storage demand domestically in Japan and Korea in the next couple of years while LFP capacity is developed, to complement imports of this technology, also players can continue to supply diminishing NMC demand overseas out to 2035, though globally BNEF expects that NMC deployments peaked at 14.4GWh in 2024 and are set to decline to 3.8GWh by 2035.

In the US, we also assume NMC may feature in utility-scale projects until at least 2027. Even though the shift toward LFP is clear, 2024 saw large shipments of NMC batteries for energy storage. Policy uncertainty around tariffs on imports from China, where the vast majority of LFP is manufactured, will reshuffle market players' supply chain strategies in the US and could make any NMC available from outside China more viable.

We expect NMC to continue featuring in residential and commercial applications globally, though LFP will still dominate in this segment. There is existing manufacturing capacity for NMC that we assume will continue serving that segment out to 2035. The residential energy storage market is less price sensitive, and providers are more likely to be able to offer competitive products even with the higher costs for NMC cells. Additionally, the higher density of NMC may provide some competitive advantage in the much smaller end of the residential energy storage market, where size and weight are more carefully considered.

### Sodium-ion

Based on company announcements, BNEF expects sodium-ion batteries to continue growth into the stationary energy storage market.

Initial deployment of new generation products will continue to be in China: in July 2024, a 50MW/100MWh sodium-ion project came online in Hubei, China, becoming the first in the world at this scale. In April, a project combining 40MWh of sodium-ion batteries with 360MWh of lithium-ion became operational in Yunnan, China. The Chinese government has been promoting the development of national standards for sodium-ion battery products to accelerate commercialization and market adoption and has also seen the most significant announcements of sodium-ion battery cell production.

In the US, Peak Energy announced in September the successful deployment and operation of the first grid-scale sodium-ion battery system in the US. The project is small scale at only 3.5MWh. This paves the way for future deployments, however.

Despite this, expectations among manufacturers have cooled as LFP prices continue to trend downward, leading to a reduction in our expectations for sodium-ion to scale.

## 3.2. Long-duration energy storage

As the demand for grid reliability and decarbonization rises, long-duration energy storage (LDES) is gaining significant attention from governments, utilities, and investors. Many regions are recognizing the critical role of LDES in achieving their long-term climate goals and are introducing

supportive policies and mechanisms. Below we highlight some LDES market updates since the last outlook.

**Definition of long-duration energy storage (LDES)**

There is no universal definition for long-duration energy storage. The US Department of Energy defines LDES as storage with a duration of more than 10 hours. In China, energy storage of four hours or longer is considered LDES. We refer to technologies that can extend duration by at least six hours as LDES or take market-specific definitions if these are set.

As of 2H 2025, our forecast has a new application for energy shifting using long-duration energy storage ('energy shifting – long duration'). This new category is generally intended to capture six hours or longer energy storage (excluding pumped hydro), separating it from 'energy shifting – short duration'. If a specific market or procurement defines LDES differently, the market follows the higher duration instead. This category is technology-agnostic and may indeed include battery energy storage, depending on market definitions.

## Market updates

**UK:** In September, the UK's Office of Gas and Electricity Markets (Ofgem) announced the LDES eligibility assessment outcome for its first window of the cap-and-floor scheme for storage with a minimum 6-hour duration. Of the 177 bidding projects, 77 totaling 28.7GW passed the criteria and are moving to the next assessment; lithium-ion battery storage accounts for 70% of the capacity, followed by pumped hydro at 16% and vanadium flow and zinc batteries at 12%. Ofgem will complete the evaluation and award projects in summer 2026. See the UK section and *UK Long-Duration Energy Storage Gets Investment Lifeline* (web | terminal) for more details.

**US:** A few US states are set to procure LDES to meet energy storage deployment goals. In New York, the New York State Energy Research and Development Authority launched the first of three annual 1GW energy storage solicitations in July. Each solicitation targets at least 20% long-duration energy storage projects with 8-hour durations or longer. In Massachusetts, the Department of Energy Resources plans to procure 5GW of energy storage by July 31, 2030: 3.5GW of mid-duration energy storage (with 4- to 10-hour durations), 0.75GW of long-duration energy storage (with 10- to 24-hour durations), and, if commercially available at a reasonable cost, 0.75GW of multi-day energy storage. See the US sections for more details.

**Australia:** New South Wales' Long-Term Energy Service Agreements (LTESAs) provides generators an option to sell their electricity at an agreed minimum price for multiple years. The revenue-underwriting instrument can help improve the economics of expensive long-duration projects. In February 2025, the scheme's round 5 tender awarded LTESAs two long-duration lithium-ion battery projects totaling 225MW/1,800MWh. The state government is currently holding the round 6 tender and is set to announce successful bids from December 2025 to January 2026.

**Japan:** Japan has expanded its capacity auction scheme to energy storage with a duration of six hours or longer. In the latest auction in April, the Organization for Cross-regional Coordination of Transmission Operators (OCCTO) awarded 0.4GW of 6-hour or longer battery storage and 0.96GW of battery storage with 3- to 6-hour durations. The next auction, planned for January 2026, will only target energy storage with duration of six hours or longer. The auction size for energy storage is 0.8 gigawatts, half of which is for lithium-ion battery storage and existing pumped hydropower plants and the remaining is for non-lithium energy storage and new pumped hydropower plants. See *Battery, Nuclear Gain as Hydrogen Muted in Japan Auction* (web | terminal) and the Japan section for more details.

**South Korea:** In May, Korea Power Exchange (KPX) launched its auction program for 6-hour battery storage. Its inaugural auction in July awarded eight battery storage projects totaling 565MW. KPX plans to host annual auctions for 6-hour battery storage until 2029. See the South Korea section for more details.

**Italy:** Italy's inaugural auction for energy storage, called Meccanismo di Approvvigionamento di Capacità di Stoccaggio Elettrico (MACSE), contracted 10GWh of battery storage projects. The average duration of awarded projects was 6.7 hours, showcasing that system durations of battery storage projects are getting longer. A similar trend is also seen in markets like the UK and South Korea.

## Further reading on LDES research:

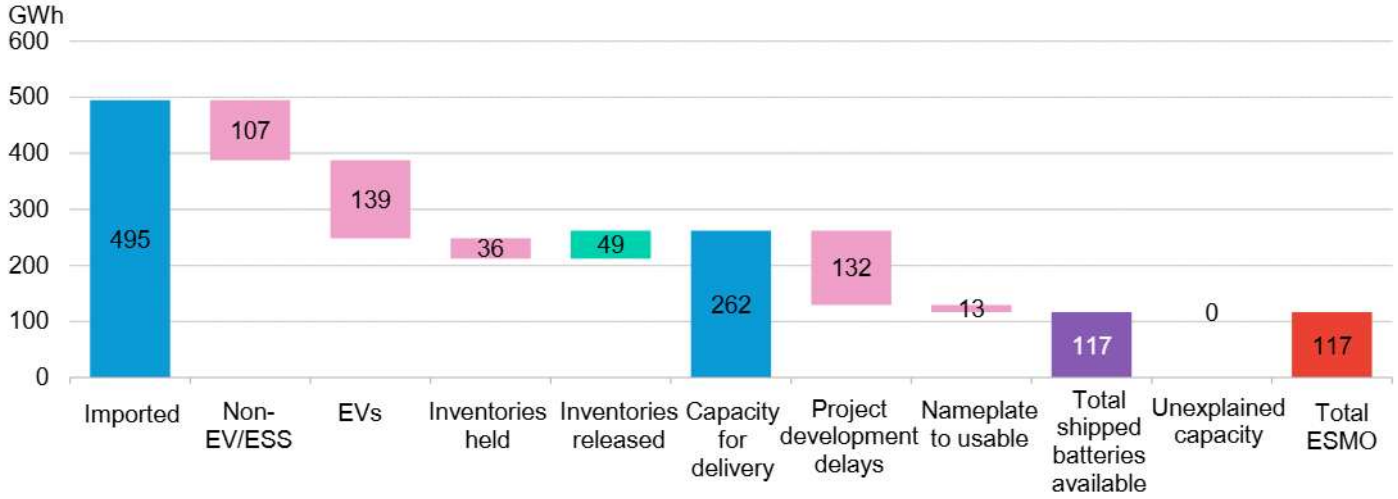
- *2024 Global Long-Duration Energy Storage Update* (web | terminal)
- *2024 Long-Duration Energy Storage Cost Survey* (web | terminal)
- *Flow Batteries Sit at Cusp of Rapid Growth in China* (web | terminal)
- *Long-Duration Storage: Opportunities and Barriers* (web | terminal)
- *Beyond Lithium-Ion: Long-Duration Storage Technologies* (web | terminal)
- *BNEF Energy Storage Project Database* (web | terminal)

# Section 4. Battery shipments

Total quantities of batteries exported from China and Korea into other markets is an indicator that often differs from annual installed capacity tracked by BNEF in its energy storage outlooks. BNEF has been using battery trade flow data to investigate where it reveals gaps at a regional level and to inform global capacity buffers. For raw data on battery imports, clients can use the *Battery Supply Chain Trade Flows Data Tool* (web). Below, we translate that data in comparable battery capacity and apply assumptions to explain implications for the stationary energy storage market.

Data on battery shipments for energy storage is often two to three times more than BNEF's expected annual battery demand for energy storage deployments for any given year[2]. However, that value cannot explain that year's deployments since these batteries may not be operational in the year they are imported. To supply 2025 battery demand, for example, we calculated that 495GWh of batteries were exported from China and Korea, but only 117GWh will be deployed as stationary storage (outside China). Major factors impacting differences, quantified based on our analysis, are in Figure 9. In more detail, these factors are outlined below.

**Figure 9: Batteries exported from China and Korea to meet 2024 stationary energy storage demand outside China**




*Source: BloombergNEF. Note: Exports taken from Sinoimex data, translated to GWh based on $/kWh pack price assumptions. Excludes China domestic demand, assuming that is entirely met by domestic supply. Analysis looks only at batteries exported from China and Korea, not factoring in locally manufactured batteries in non-China and Korea markets. Full assumptions in Appendix* ***A.3 Battery shipment analysis methodology.***

- **Non-stationary energy storage battery demand:** BNEF Energy Storage Market Outlooks do not cover all battery segments (e.g., electric vehicles, consumer electronics and other segments such as data centers, UPS and portable batteries). BNEF calculated that these amount to 215GWh in 2025 (107GWh for non-EV/ESS segments and 139GWh for EVs).
- **Inventories:** Inventories have been playing a major role in company supply chain strategies as the industry has grown substantially to supply a larger and higher number of projects, increasingly impacted by growing localization policies like tariffs and domestic content

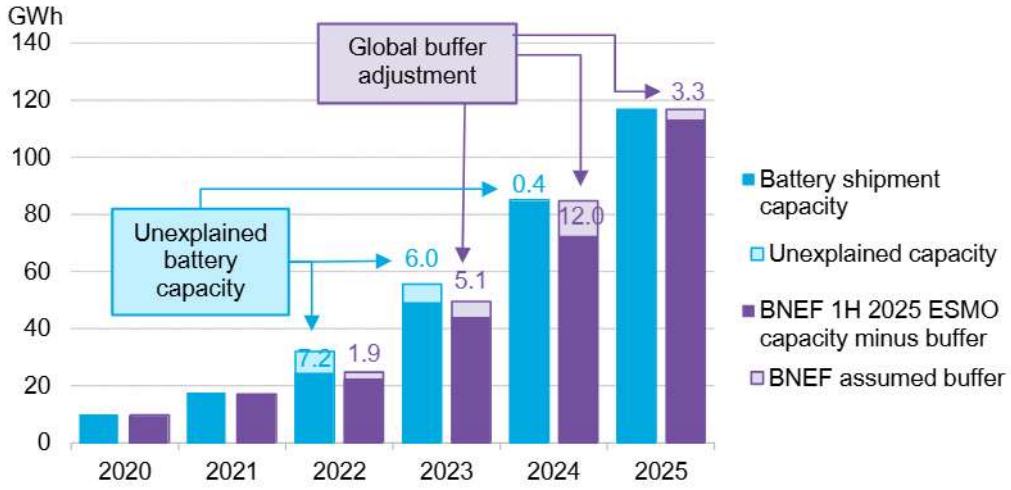
[2] SNE Research reports 301GWh of batteries were shipped for ESS in 2024, compared to BNEF's 184GWh ESS deployments for that year.

premiums or requirements. In 2025, BNEF estimates battery inventories may be depleted by a net 13GWh net (36GWh held from when initially shipped, 49GWh released back into the market from the previous period). Much of this is due to inventories for ESS batteries in the US, which started to grow at the end of 2024 and the beginning of 2025 as companies rushed to import batteries ahead of sector-specific tariffs ratcheting up for non-EV lithium-ion batteries, which will rise to 25% in 2026, from 7.5% today. In parallel, unexpected tariff disputes slowed and re-started imports in the US from April onward, as a separate reciprocal tariff is still being negotiated -- batteries that were imported before tariff disputes are making their way to more advanced projects. For the latest on US tariffs, follow *US Energy Trade Indicators* (web | terminal), and to view the impact of tariffs on costs, see *Trump's China Tariffs Send Battery Cost Back to 2023* (web | terminal).

- **Commissioning delays:** After batteries are imported, there will still be a time lag to commissioning. Based on industry insight, we maintained the 12-month assumption for most markets globally, and 18 months for the US where projects can have longer lead times.
- **Nameplate and usable capacity:** Battery manufacturers will report output based on nameplate capacity, but when a system is installed and commissioned it is typically reported by the energy storage project owner, developer and grid operator based on usable capacity, which is what BNEF reports. BNEF assumed this to be a 10% difference, although this can vary significantly between projects given different tolerances around necessary redundancy (see *Energy Storage System Cost Survey 2024* (web | terminal)).

After considering these factors, 2020 and 2021 battery shipped capacity correlated very closely with BNEF's tracked capacity. For 2022 and 2023, BNEF added global buffers assuming we missed capacity due to tracking visibility. We assumed 5.1GWh in 2023 and 12.0GWh in 2024, which is 12% and 16%, respectively, of the GWh demand outside China in each of these years (excluding buffers). For 2025, our buffers are notably lower, at 3.3GWh, or 3% of 2025 battery demand, as calculated shipped battery capacity is much closer to this year's demand.

**Figure 10: Batteries exported from China and Korea with assumed discounts and delays versus BNEF energy storage demand outside China**




*Source: BloombergNEF. Note: battery shipment capacity is based on battery exports from China and Korea (using Sinoimex data) and discounting for factors such as non-ESS battery segments, inventories, delays to commissioning and nameplate to usable capacity adjustment. Full assumptions in Appendix A.3 Battery shipment analysis methodology.*

We left remaining battery capacity in 2022 to 2024 as 'unexplained capacity' (Figure 10). This difference has fallen over the past years, as more information on where batteries are going emerges.

We did not include China battery production or domestic demand, as we chose to calculate batteries physically available in non-Chinese markets through imports. For context, China produced 260GWh of batteries for stationary storage in 2024 according to the Ministry of Industry and Information Technology (MIIT), compared to our total global installed base of 184GWh in 2024. China production in 2024 is still higher but more in line with what we expect will be installed globally in 2025 (247GWh). For additional information on shipment methodology see *Appendix A.3 Battery shipment analysis methodology*.

# Section 5. Asia Pacific

The Asia-Pacific region is set to add 53GW/144GWh in 2025, up 28% from annual installations in 2024 (Figure 11, Figure 13). China continues to dominate over the next 10 years, anchored by a new deployment target and a new policy calling for a shift to market-driven models. In Australia, annual build in 2025 is set to quadruple year-on-year, highlighting our higher confidence in growth. India, Japan and South Korea are growing capacity through auction programs later this decade. Post-2030, the region's installations keep climbing, as Southeast Asia picks up. Cumulative capacity in the region reaches 517GW/1,619GWh by 2030 and 1,067GW/3,951GWh by 2035 (Figure 12, Figure 14).

**Figure 11: APAC's annual energy storage additions by market**

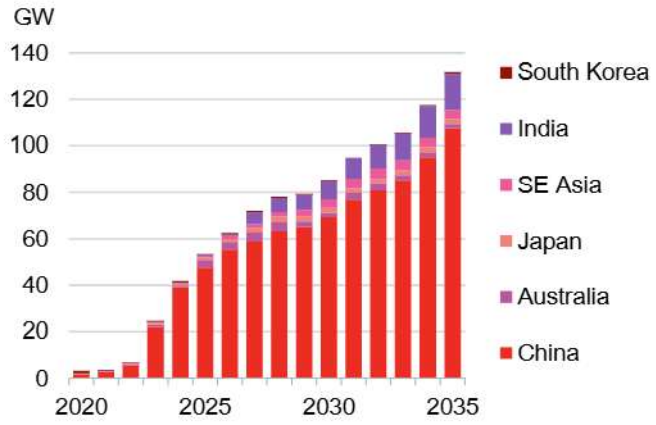



**Figure 12: APAC's cumulative energy storage capacity by market**

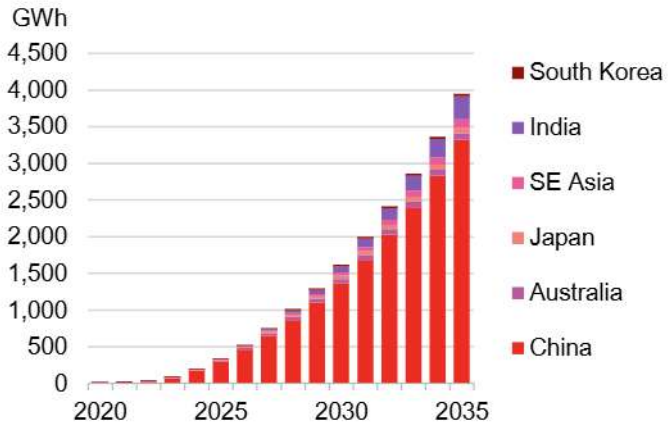



**Figure 13: APAC's annual energy storage additions by application**

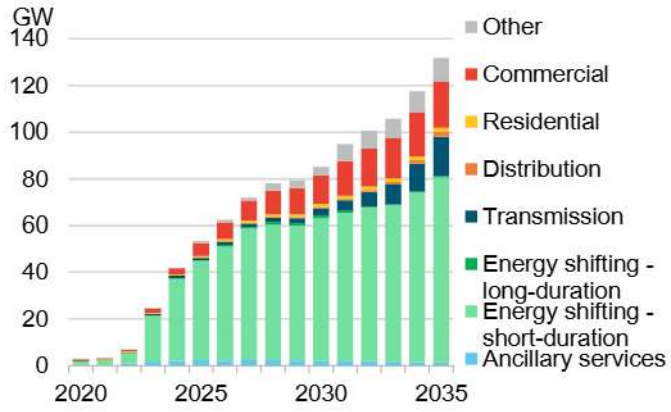
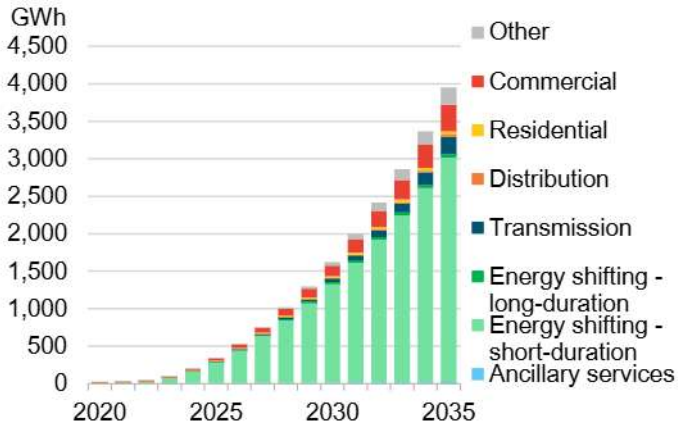



**Figure 14: APAC's cumulative energy storage capacity by application**

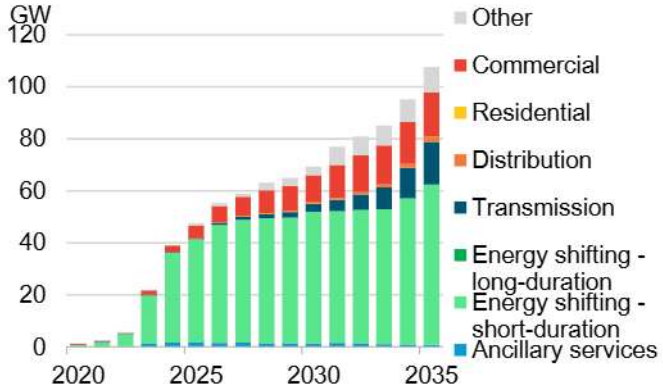



*Source: BloombergNEF. Note: SE Asia is Southeast Asia.*

## 5.1. China

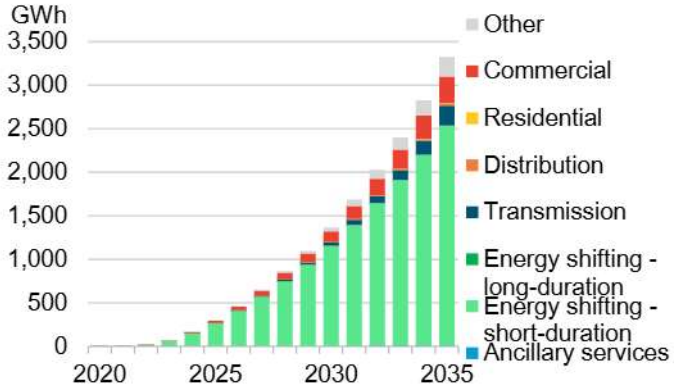
BNEF expects energy storage additions in China to hit a record 47.6GW/130.4GWh in 2025 (Figure 15, Figure 16). In gigawatts, this is 6% higher compared to our previous outlook and a 22% jump compared to 2024 additions. Energy shifting accounts for 83% of the gigawatt additions, driven by mandates in many provinces and the country's updated deployment target. China added 26GW/65GWh of energy storage between January and August 2025, up 23% in gigawatt-hours year-on-year, according to BNEF's database. We expect additions to pick up for the rest of the year, as seen in previous years. Following from a record year, BNEF expects 55.3GW/165.1GWh to be installed in 2026.

**Figure 15: China's annual energy storage build**




*Source: BloombergNEF*

**Figure 16: China's cumulative energy storage capacity**




*Source: BloombergNEF*

As of October 1, we tracked over 180GWh of energy storage systems contracted for delivery in 2025, which includes about 100GWh of tenders for centralized company procurements, based on the country's bidding portal for energy storage projects. We haven't accounted for this full capacity being commissioned in 2025 as some developers use centralized company procurements for price discovery, and it is common for them to withdraw and release a new tender when prices drop. See *China Energy Storage Makers Race to Offer Lowest Prices* (web | terminal) for more details.

With China's continuous commitment to energy storage and forthcoming power market reforms, we expect annual additions to rise in 2025-2027 – a big change from our previous forecast. Previously, we projected a dip in 2026 following the removal of storage installation mandates for renewables and the absence of offsetting drivers; we now think China will support additions in order to match its 180GW cumulative deployment target in 2027 (details in next section below).

In 2030, cumulative energy storage capacity reaches 431GW/1,367GWh, up 15% from our previous forecast. China is set to release its 15th Five-Year Plan in 2026, which will set a new national target for energy storage development from 2026 to 2030. BNEF expects business models to evolve further around 2028 when most provinces launch a spot market and capacity market.

By the end of 2035, China's energy storage market reaches 877GW/3,322GWh – 20 times the cumulative installations in 2024 and up 8% in gigawatt terms mainly due to our higher installation forecasts for 2026-2030. Capacity additions over 2031-2035 in our forecast are in line with our previous outlook.

Our cumulative energy storage additions over 2026-3035 are 9% higher in gigawatts than our previous outlook, even though our solar and wind forecasts for the same period are 5% and 26% lower, respectively. Despite a slowdown in solar and wind additions, growing renewable penetration will sustain the need for energy storage. Additionally, paring energy storage with renewables is still encouraged in the new policy, which requires that solar and wind participate in spot markets, and recent market reform guidelines. See sections below for more details on these.

## New national target and guidelines for power market reforms

On September 12, the National Development and Reform Commission (NDRC) released the Action Plan for the Large-Scale Construction of Energy Storage (2025-2027) and the Guidelines for the Construction of Regional Electricity Spot Markets with Continuous Operation.

The action plan sets a new national target of a minimum 180GW of cumulative energy storage deployment by the end of 2027, excluding pumped hydro. BNEF expects China to surpass this target. We forecast 234GW/650GWh of cumulative energy storage installations in 2027, 88% of which are utility-scale projects in gigawatt terms (206GW/586GWh). Our forecast is 30% higher than the new target. China often surpasses its target. For instance, installations exceeded its 30GW-by-2025 target by the end of 2023 with 33GW/68GWh of cumulative installs by end 2023.

The new guideline aims to accelerate the shift from mandates to market-driven growth by introducing the below action items:

**Table 2: China's new guideline for energy storage to meet the 180GW target by 2027**

| Aspect | Detail | BNEF take |
|---|---|---|
| **New applications** | Explore innovative applications including energy storage at renewable energy bases in deserts and wastelands, standalone storage systems on heavily loaded grids, and energy storage integration with industrial parks, computing facilities, commercial complexes, solar-storage-EV-charging stations, distributed solar and communication base stations. | **Medium impact:** These applications could open up a significant addressable market for storage, though some, such as commercial and industrial storage installations, were already gaining traction and expected to be growing applications. |
| **New business models** | Explore new opportunities such as virtual power plants (VPPs), direct green electricity transmission between (绿电直连) producers and consumers, smart microgrids and vehicle-to-grid (V2G). | **Medium impact:** While these may enable aggregation of assets to access otherwise inaccessible revenue streams, VPPs globally have not yet been a disruptive upside for energy storage markets. |
| **Spot and forward market participation** | Encourage energy storage to participate in the spot power market and the medium- to long-term forward market while ensuring reasonable charging and discharging prices for energy storage, for both standalone stations or integrated with other power generation assets.<br>Electricity consumers with energy storage systems are also encouraged to participate in the spot market and demand response programs, with or without aggregators. | **Medium impact:** Spot and forward markets will provide new revenue streams and require new business models for batteries, though BNEF expects significant competition in these markets could mean their impact on additions may be subdued. |
| **Capacity compensation mechanisms** | Establish a capacity compensation mechanism for energy storage. Provincial pricing regulatory authorities shall manage compensation standards and explore market-based solutions such as competitive auctions, which will eventually turn into a capacity market, to ensure long-term system reliability. | **High impact:** Long-term revenues from mechanisms such as capacity markets are strongly sought by energy storage developers and tend to translate to significant capacity build. |
| **Ancillary services** | Encourage energy storage to participate in the ancillary services markets offering frequency regulation and backup services while promoting joint clearing of these services with the spot market. | **Low impact:** Ancillary services tend to be shallow markets that are quickly oversubscribed, though they can be important for power system stability and can support energy storage revenue stack. |

| Aspect | Detail | BNEF take |
|---|---|---|
| | Ancillary service markets are also encouraged to expand to ramping services and rotational inertia. | |

*Source: National Development and Reform Commission (NDRC), BloombergNEF. Note: Guidelines released in the Action Plan for the Large-Scale Construction of Energy Storage (2025-2027) and the Guidelines for the Construction of Regional Electricity Spot Markets with Continuous Operation.*

## From mandates to market-driven growth

Historically, 30 of 31 provinces, municipalities and autonomous regions in China had mandates indicating a minimum ratio of energy storage relative to solar or wind, with national average ratios of 14.2% for solar and 13.3% for wind. The mandate drove energy storage installations for energy-shifting application projects over 2022-2024, accounting for 87% of capacity additions in gigawatts. In February, however, China introduced Policy No.136 to mandate that all wind and solar generation be traded in the wholesale market starting in 2025 and emphasized that a paired energy storage asset shall not be a prerequisite for the permitting, commissioning or grid connection of new renewable energy projects. See *1H 2025 Energy Storage Market Outlook* (web | terminal).

As of the end of September, 27 provinces have released local implementation plans in response to the No.136 policy: 17 are official and 10 are provisional or draft versions for public consultation. All provinces are set to follow the requirements outlined in the national policy. Table 3 summarizes additional details based on some provinces' plans as they relate to energy storage.

**Table 3: Additional details on energy storage from the local No.136 policy plans, as of September 30, 2025**

| Category | Details |
|---|---|
| Capacity compensation | • Shanxi, Qinghai, Gansu, Liaoning: Offer capacity-based compensation for standalone storage facilities<br>• (Ningxia, Inner Mongolia, Hebei, Shandong, Xinjiang have capacity compensation for energy storage although these are not from the local No.136 policy implementation plans) |
| Benefits or mandates | • Sichuan: Offer additional Contract for Difference (CfD) covered volume* for renewables contracted with energy storage by June 1, 2025<br>• Beijing, Hebei: Keep mandates for renewables authorized before February 5 and 9, 2025, respectively<br>• Guangdong, Hainan: Keep mandates for renewables commissioned before June 1, 2025 |
| Encouragement | • Guangdong: Encourage renewable energy developers to voluntarily develop energy storage assets<br>• Hebei, Heilongjiang: Encourage standalone storage assets (without specifying support) |
| A copy from the policy No.136 or not disclosed | • Anhui, Ningxia, Shandong, Shaanxi, Zhejiang, Inner Mongolia, Fujian, Hubei, Jiangxi, Shanghai, Xinjiang, Yunnan, Chongqing, Guangxi, Guizhou, Hunan, Jilin, Henan, Jiangsu, Tianjin, Xizang |
| To be released | • Henan, Jiangsu, Tianjin, Xizang |

*Source: BloombergNEF, provincial governmental administrations. Note: *Provincial governments decide the annual contracted power volume for winning renewable energy projects in the auctions in the Contract for Difference (CfD) mechanism. See China's CfD Scheme No Panacea for Renewables Developers (web | terminal) for details.*

Four provinces including Shanxi, Qinghai, Gansu and Liaoning are going to provide capacity compensation for energy storage based on their local No.136 policy implementation plans. Inner Mongolia and Ningxia started capacity compensation for storage after the release of the No.136 policy, although these are not mentioned in their local implementation plans. Xinjiang, Hebei and

Shandong had already started capacity compensation for energy storage ahead of the No.136 policy, between 2023 to 2024.

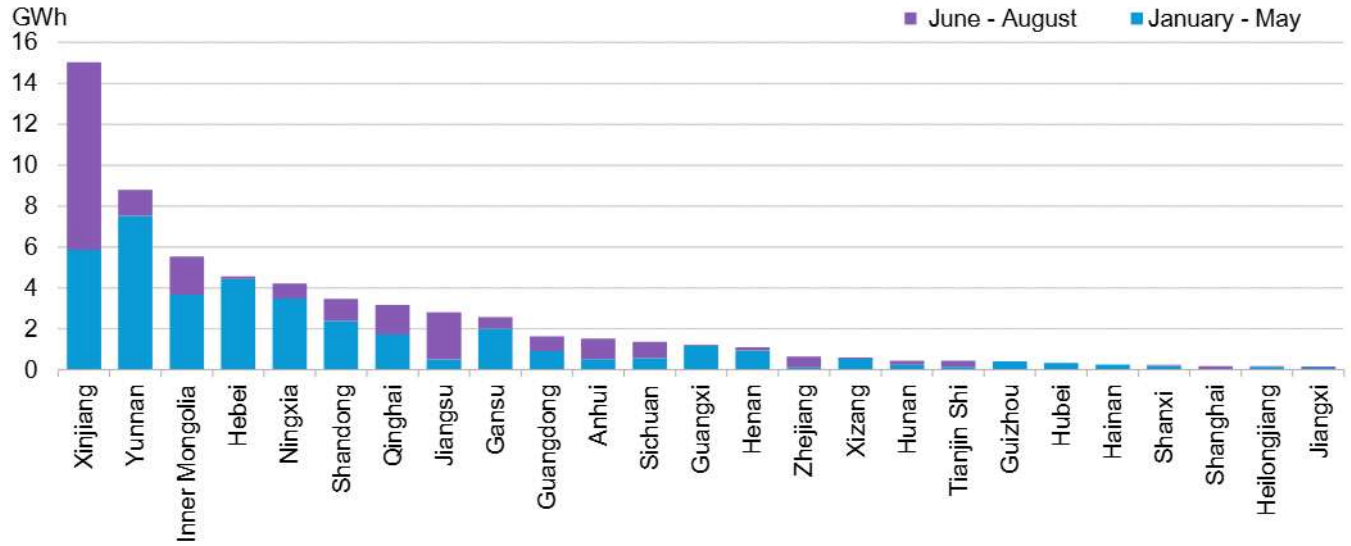
The compensation is only for standalone energy storage facilities. In some regions, co-located storage projects can be converted to standalone facilities although it is rare because of technical difficulties and high cost to retrofit. Nevertheless, co-located storage can still be a part of the scheme in some regions. For example, in Shandong, renewable energy projects can increase the settlement capacity by adding storage, thereby obtaining higher compensation.

The compensation varies from place to place and can be based on power capacity or discharged electricity. Hebei, Ningxia, Shandong and Gansu offer a capacity price of 100-330 yuan/kW ($14-46/kW) per year, while Inner Mongolia and Xinjiang compensate energy storage for discharged electricity at 0.128-0.35 yuan/kWh ($18-49/MWh). Shanxi, Qinghai and Liaoning have not yet disclosed plans.

For provinces that adopt capacity price payments, longer-duration systems are encouraged as the settlements are based on energy capacity. For example, 50MW/200MWh and 100MW/200MWh systems will receive the same amount of compensation assuming specifications elsewhere and the performance are the same, but longer-duration systems will have lower unit ($/kWh) costs.

Despite these payment schemes, uncertainty remains. For example, Inner Mongolia required that energy storage facilities start construction before June 30, 2025, to qualify for compensation, spurring new development (Figure 17). The autonomous region started to revise the scheme annually and to release changes before the end of September, for revisions the following year. As of September 30, the program next year is still uncertain. In Xinjiang, the compensation rate fell to 0.128 yuan/kWh ($18/MWh) in 2025, from 0.2 yuan/kWh ($28/MWh) in 2023 and 0.16 yuan/kWh ($22/MWh) in 2024. Like Inner Mongolia, post-2025 arrangements in Xinjiang are not clarified.

**Figure 17: Energy shifting application additions in 2025, for selected provinces**




*Source: BloombergNEF. Note: Provinces featured include those with 100MWh or more of capacity additions between January to August 2025. Guangdong and Hainan provinces kept mandates to pair energy storage with renewable energy projects commissioned by June 1, 2025. Beijing and Hebei kept mandates to pair energy storage with renewable energy projects authorized by February 5 and February 9, 2025, respectively. Others did not specify as of September 30, 2025. Data updated as of September 1, 2025, according to BNEF's database,*

Currently, most energy storage assets are relying on the capacity rental service payment paid by solar and wind developers who must meet the storage mandates. Going forward, with the removal of the mandates, the number of these capacity rental agreements will fall.

BNEF expects that in some regions, capacity compensation will play an important role in near-term storage deployment by contributing to a project's revenues. NDRC's new policies in September call for a capacity compensation mechanism for energy storage nationwide, which means most provinces should release their plans around 2025-2026. As the power market matures, we expect compensation will gradually shift from a fixed price to competitive auctions.

Regardless of the capacity compensation mechanisms that emerge, as it's impossible to know now what those revenues will look like, it's likely project operators will be eyeing the future fully-established spot markets. Higher renewable penetration in the spot market should increase price spreads, generating arbitrage opportunities for standalone storage systems as the market reforms. Meanwhile, to maximize merchant revenues, some solar or wind developers may develop co-located storage assets to target peak price hours.

It will take some time for the market to adjust to the new market-based environment, during which the industry faces policy uncertainties. While the No.136 policy emphasized that a paired storage shall not be a prerequisite for the new renewable energy projects, it did not specify what are 'new' projects nor what to do with the 'old' projects. In the policy, there was a cut off commissioning date of June 1 to differentiate existing and new renewable energy projects under the new Contract for Difference (CfD) scheme where new projects' electricity prices shall be determined in competitive auctions, but not every province is using this date to cut off mandates.

So far, only Sichuan, Beijing, Guangdong and Hainan have provided cutoff dates for mandates in their local plans (Table 3), with all dates set before June 1. Other provinces that haven't provided such details might have taken or are considering taking similar approaches to continue adding new storage capacity and meet the new national target. It remains unclear when cutoff dates will be the norm nationwide and how strictly the dates will be enforced. Indeed, installations did not stop for most regions after June 1 (Figure 17).

Separately, it remains unclear to what extent developers in Guangdong, Hebei, and Heilongjiang will act on these provinces' respective 'encouragement'. Tianjin has not issued its local plan but in April had already changed from mandates to encouragement of storage for solar and wind.

## Policy headwinds to hit project economics of commercial and industrial storage

The commercial and industrial (C&I) segment has gained traction in China due to favorable arbitrage opportunities and falling energy storage costs. The C&I segment accounts for 10% of the annual additions in gigawatts in 2025, up 57% from our previous outlook and twice the 2024 installation. The growth also reflects our revised forecast for commercial solar, which is 33% higher than our previous estimate. Solar-storage-EV-charging stations are also becoming one of the emerging applications. In July, the Chinese government released a target to deploy at least 100,000 high-power charging facilities nationwide by the end of 2027, encouraging the pairing of them with solar and storage assets.

Despite high interest in C&I storage, we expect shrinking power peak-valley price spreads in some provinces to spread across more regions as part of the country's ongoing power market reforms, reducing arbitrage opportunities. In such provinces as Jiangsu and Guizhou, we expect market players to diversify their business models and participate in virtual power plants and the

spot market. See *China's Commercial Energy Storage Faces Policy Headwinds* (web | terminal) for more details.

## 5.2. Australia

BNEF expects energy storage additions in Australia to reach a record 3.4GW/7.4GWh in 2025, more than quadruple the uptake in 2024 and 14% higher than our previous estimates in gigawatt terms, driven primarily by continued investor enthusiasm for utility-scale batteries.

Cumulative energy storage capacity reaches 22.1GW/56.1GWh by 2030, up 20% from our previous forecast in gigawatt terms. By the end of 2035, Australia's cumulative energy storage fleet grows to 34.1GW/90.8GWh – nearly 11 times larger than at the end of 2024 in gigawatt terms. The 2035 forecast is up 12% from our previous estimate, driven by growth in both the utility-scale and behind-the-meter storage segments.

**Figure 18: Australia's annual energy storage additions**

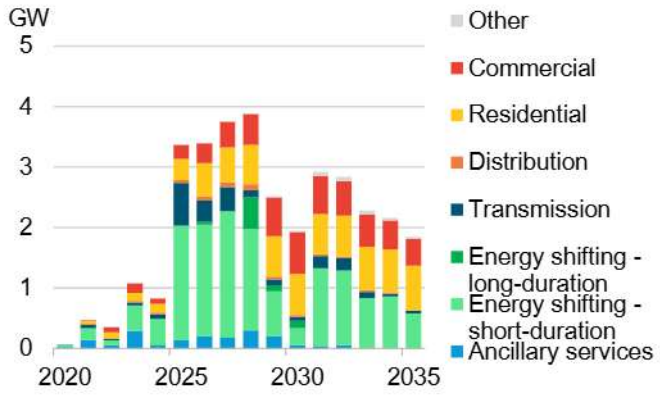
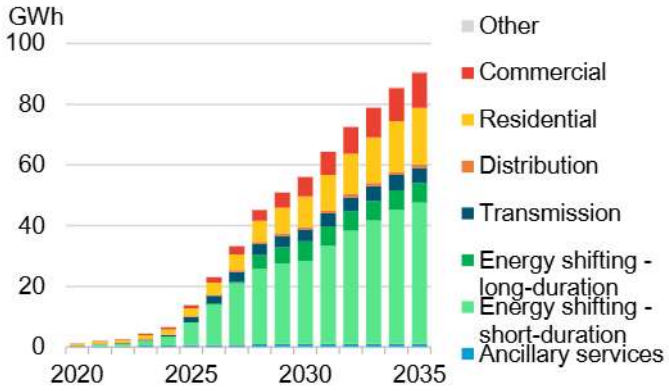



**Figure 19: Australia's cumulative energy storage capacity**




*Source: BloombergNEF*

### Utility-scale

Australia is on the cusp of a utility-scale battery boom, driven by a combination of elevated power market volatility, supportive government policies, and looming coal power plant retirements. BNEF expects 2025 to be a record year for utility-scale battery additions, with 2.8GW/6.0GWh of new capacity forecast to come online.

Many of the newer projects under construction are both bigger and have a longer duration than those commissioned before 2024. Last year, France-headquartered renewable developer Neoen SA's 219MW/877MWh Collie Stage 1 battery in Western Australia became the country's first 4-hour duration battery to come online. This was followed by Spain-headquartered developer Global Power Generation's 55MW/220MWh Cunderdin battery, also in Western Australia, which was reportedly commissioned in April 2025. Synergy Ltd., Western Australia's state-owned utility company, has completed construction on its own 200MW four-hour duration battery in Kwinana, due to fully commission later this year. Synergy is also expected to commission a 500MW/2,000MWh battery in Collie this year. Batteries in Western Australia are being built to soak up cheap renewable supply (particularly from rooftop solar systems) during the midday hours to discharge during the early mornings and evenings, when renewable output subsides.

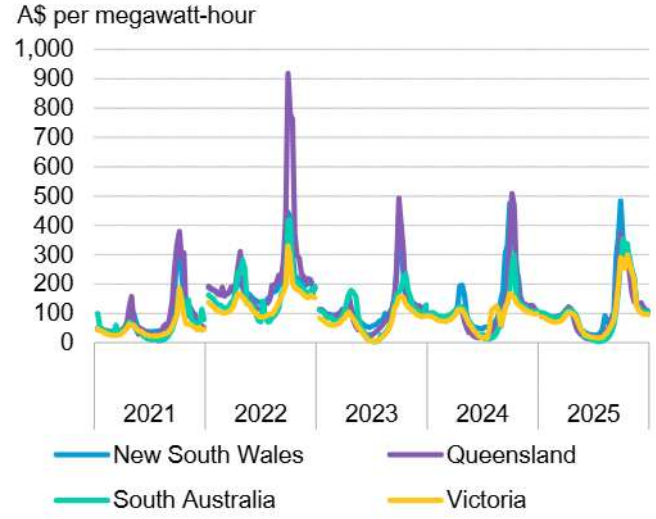
Australia's utilities operating in the east coast region are also building 2- to 4-hour duration batteries, some equipped with grid-forming capabilities, as they seek to pivot their portfolios away from coal and toward low-carbon alternatives. In New South Wales, AGL Energy Ltd. is building a 500MW/1,000MWh battery at the site of its now-retired Liddell coal plant, due online next year, while Origin Energy Ltd. has plans to install 700MW/2,800MWh of battery capacity at the site of its Eraring coal plant – to be built across three stages – by 2027. Earlier this year, AGL announced that it aims to secure financing for 1.4GW of new utility-scale battery capacity in the coal-dominated regions of New South Wales and Queensland by mid-2026. Origin followed this by announcing its own plans to either own or contract nearly 1.8GW of new batteries by 2027. In Victoria, EnergyAustralia Pty has secured financing on the 350MW/1,140MWh Wooreen battery at the site of its Yallourn coal plant, due for commissioning in 2026.

Historically, Australia's big utilities shied away from outright ownership of utility-scale batteries, put off by high upfront costs and uncertain market revenue potential. Instead, they preferred to sign lease agreements which allowed them to operate batteries to earn revenue from competitive markets at the expense of an agreed fixed fee to the battery owner. This trend is changing as costs have declined, revenue potential has improved, and business models have evolved.

## Batteries are benefiting from sustained wholesale power market volatility

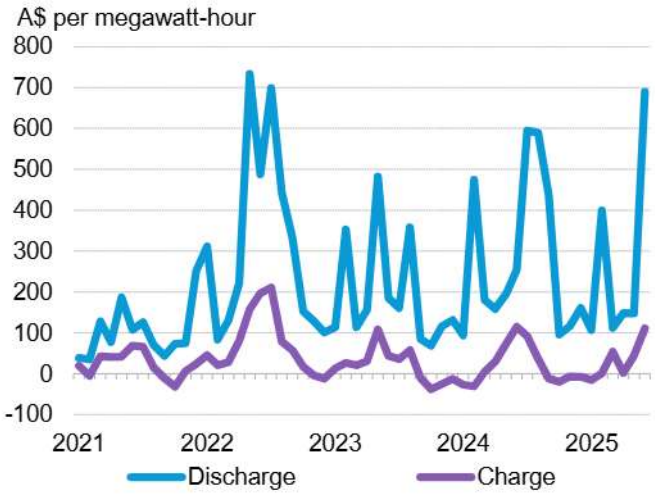
The rapid rise of renewable energy generation continues to reshape Australia's power markets. An ever-growing fleet of wind and solar assets suppresses spot prices when they generate in abundance; conversely, more expensive dispatchable generators ramp up their output and push up spot prices when renewable energy output subsides – exacerbating intraday volatility (Figure 20). Across the first half of 2025, average intraday arbitrage in the NEM's major states – the difference between the lowest and highest average price – ranged from A$189/MWh ($124/MWh) in Victoria to A$458/MWh ($302/MWh) in New South Wales. Across the whole NEM, intraday arbitrage averaged A$328/MWh ($216/MWh) in the first half – a 10% year-on-year increase.

**Figure 20: Average half-hourly intraday average power prices in Australia's National Electricity Market, 1H**




*Source: Australian Energy Market Operator, BloombergNEF.*
*Note: Chart shows half-hourly intraday average power prices during the first half of each year.*

**Figure 21: Monthly realized power prices for batteries in South Australia**




*Source: Australian Energy Market Operator, BloombergNEF.*
*Note: Data is up to June 2025.*

The growing difference in spot prices is increasing intraday arbitrage opportunities, proving lucrative for batteries, as shown by their realized discharging prices and charging costs (Figure 21). BNEF expects arbitrage in the NEM to remain elevated over the short to medium term as more renewables enter the grid, further suppressing midday power prices. The looming retirement of Australia's coal plants and the prospect of gas supply shortfalls starting around the end of the decade could reduce dispatchable capacity in the market, further stoking volatility.

Further reading:

- *Australia Market Outlook, 2H 2025: Volatility and Delays* (web | terminal)
- *2025 Australia Energy Storage Update: Drivers of Uptake* (web | terminal)
- *Australia's Long Duration Batteries Need More Volatility* (web | terminal)
- *Australia's Big Coal Generators Pivot Toward Batteries* (web | terminal)
- *Grid-Stabilizing Technology Booms as Renewables Grow* (web | terminal)

## Government support and looming coal retirements will sustain utility-scale battery uptake

In July 2025, the federal Labor government expanded its Capacity Investment Scheme (CIS) – a series of tenders held every six months between 2024 and 2027 – to secure 26GW of new renewable capacity and 14GW of clean storage capacity by 2030. The scheme aims to incentivize uptake by reducing revenue uncertainty – a longstanding impediment to project bankability.

Successful applicants of CIS tenders will be offered some form of long-term revenue underwriting agreement. A standard CIS agreement is structured such that if a project exceeds its revenue ceiling, the project owner pays the government a percentage of the profits. On the flip side, if a project underperforms relative to its net revenue floor, the government pays the owner a share of the shortfall. In some cases, successful projects may be awarded underwriting agreements that differ in structure to a standard CIS contract.

Akaysha Energy's 4-hour 415MW Orana battery, AGL Energy's 2-hour 500MW Liddell battery, and Iberdrola Australia's 2-hour 65MW Smithfield battery were among the winners of the CIS tender in New South Wales in November 2023. The projects were awarded Long-Term Energy Service Agreements (LTESAs) by the New South Wales government, which provides generators an option to sell their electricity at an agreed minimum price. These revenue-underwriting instruments can also help improve the economics of expensive long-duration projects – in February 2025, the state government awarded LTESAs to 225MW/1,800MWh of long-duration lithium-ion battery projects.

In December 2023, the federal government opened a CIS tender for 600MW of 4-hour equivalent storage capacity in South Australia and Victoria. EnergyAustralia's 4-hour 50MW Hallett battery in South Australia and 4-hour 350MW Wooreen battery in Victoria (to be built at the site of its Yallourn coal plant and co-owned with Banpu Energy) were among the 995MW/3,626MWh worth of capacity awarded CIS contracts in this tender round.

A CIS tender round in Western Australia awarded contracts to 654MW/2,595MWh of battery capacity in February 2025. Western Australia is fast emerging as a hotbed for new battery capacity as the state seeks to shift rooftop solar supply from midday to the evening hours.

Beyond 2030, further uptake of rooftop solar, state-level targets, and more coal closures will drive utility-scale battery installations in Australia. BNEF forecasts that rooftop solar uptake could

increase 76% to 46GW in 2035, from 26GW in 2024. Demand for batteries to shift supply from midday hours, when solar generates at its peak, to other hours of the day will continue to grow.

BNEF also forecasts that around 70% of Australia's currently operating coal capacity will retire by 2035, driven by challenging economics and state targets to increase renewable energy penetration. The state of Victoria, where nearly 5GW of coal capacity is expected to retire over the next decade, has a target to install 6.3GW of batteries by 2035, not limited to utility-scale projects. The government of Western Australia has committed to closing all state-owned coal plants by 2030 and is looking to batteries to shoulder some of the burden of replacing them.

Utility-scale batteries may also emerge as an alternative to gas-powered generation as a form of dispatchable capacity to help balance variable renewable generation in the future. In March, the market operator forecast that the southern states of Australia's east coast gas market could experience domestic supply shortfalls starting in 2028, driven largely by demand for gas-powered generation during peak demand periods in winter, which can coincide with low renewable output. Batteries can mitigate the potential for supply shortfalls by stepping in to balance renewable output during times of low supply – albeit over shorter durations than gas generation.

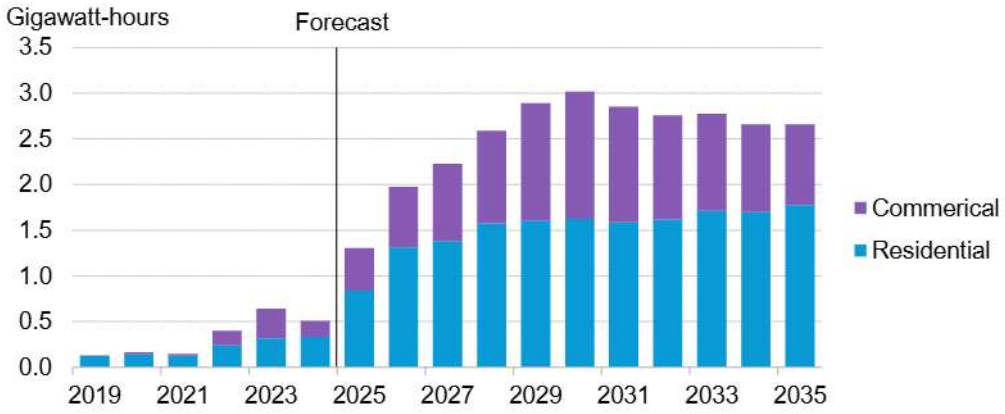
### Further reading:

- *Domestic Gas Shortfalls Loom in Southern Australia* (web | terminal)
- *Australia's Ambitious But Ambiguous Clean Power Policies* (web | terminal)
- *Australia: 10 Things to Watch in 2025* (web | terminal)
- *2023 Australian Coal Update: Drivers of Retirement* (web | terminal)
- *2023 Australian Coal Update: Detailed Plant Analysis* (web | terminal)

## Behind-the-meter

BNEF estimates that over 0.3GW/0.7GWh of small-scale storage capacity was installed in the first six months of 2025, already exceeding capacity installations in 2024. This brings total operational capacity to 1.2GW/3.2GWh. Behind-the-meter (BTM) battery installations are expected to more than double in 2025 compared to the previous year and continue growing out to 2030. In our base case, we forecast installed capacity to reach 7.2GW/16.5GWh by 2030, and 13.4GW/30.2GWh by 2035.

**Figure 22: Annual small-scale storage capacity additions, historical and forecast**




*Source: BloombergNEF. Note: Commercial segment includes industrial systems.*

BTM storage uptake has historically struggled to keep pace with Australia's exuberant rooftop solar market as stubbornly high battery system costs and limited policy support held back growth. In 2024, only 8% of residential solar systems were added with storage. However, residential and commercial battery sales are likely to increase on the back of improving economics as system costs fall and time-of-use tariffs are adopted by more customers. Additionally, Australia's small-scale storage subsidy, the Cheaper Home Batteries Program, commenced on July 1, which provides a subsidy to the upfront cost of battery system sized between 5kWh to 100kWh. Under this policy, residential customers can expect a 28% discount off the cost of their battery in 2025, with the discount gradually decreasing out to 2030.

Further reading:

- *Residential Solar Markets Around the World: A Primer* (web | terminal)

## 5.3. Japan

Japan's energy storage market is set to add 1.1GW/3.0GWh of projects in 2025, up 25% from 2024, and 25% higher than our previous estimates in gigawatt terms as several projects are coming online earlier than our previous expectation to take advantage of lucrative ancillary services market prices. BNEF expects the country to add 1.2GW/3.5GWh in 2026 as energy storage projects awarded in the first capacity auction in 2024 start coming online, along with projects awarded subsidies by the federal government and Tokyo's government, which will take part in the wholesale and ancillary services markets.

Cumulative energy storage capacity reaches 15GW/46GWh by 2030, up 3% from our previous forecast. By the end of 2035, Japan's energy storage market reaches 26GW/76GWh – six times cumulative installations in 2024. Utility-scale energy storage will drive the installation of projects until 2035.

**Figure 23: Japan's annual energy storage additions**

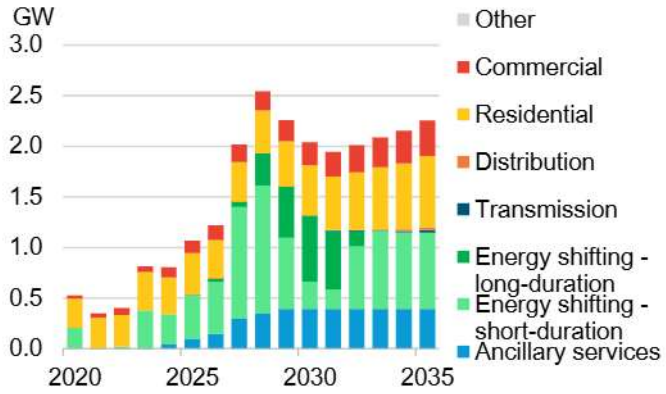
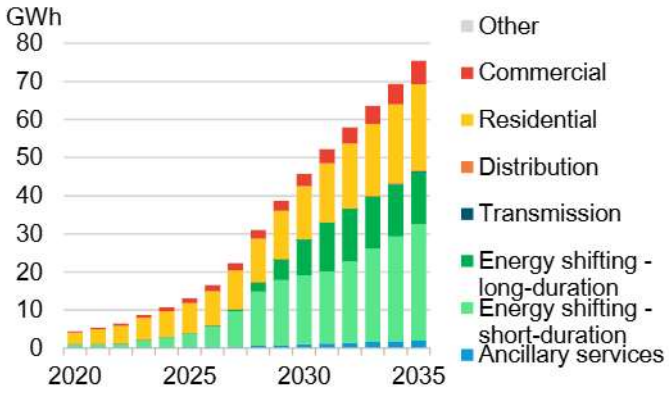



**Figure 24: Japan's cumulative energy storage capacity**




*Source: BloombergNEF*

### Long-term capacity payments to boost utility-scale installations

Japan's utility-scale energy storage deployment is accelerating due to the long-term decarbonization capacity auctions. Long-term capacity payments in the auction program have spurred interest in the Japanese market but have also intensified competition.

The second capacity auction in April 2025 was oversubscribed; battery storage with 3- to 6-hour duration was oversubscribed 5.3 times against 0.96GW of capacity awarded. For 6-hour or longer systems, 1.82GW of bids competed for just 0.4GW of awards. In total, 26 projects amounting to 1.37GW received contracts; all are expected to come online within four years.

The next capacity auction, planned for January 2026, will focus on energy storage with six hours or longer durations, increasing the duration threshold. The auction size for energy storage is 0.8GW, half of which is for lithium-ion battery storage and existing pumped hydropower plants and the remaining for non-lithium energy storage and new pumped hydropower plants. Still, regulators could increase awarded capacity, depending on bid prices and interest in other technologies. This decision-making process is not transparent, creating uncertainty in the market. In addition, the next auction will cap any single overseas country's share of battery cell supply at 30%, with the goal of diversifying supply chains. Such frequent changes in auction designs have posed policy risks to market players.

Further reading:

- *Battery, Nuclear Gain as Hydrogen Muted in Japan Auction* (web | terminal)
- *Japan Capacity Market 2025 Update: New Rules, New Tech* (web | terminal)
- *Japan's Energy Storage Uptake Challenged by Policy Risks* (web | terminal)

## Ancillary services market has no soft landing in sight

Japan's ancillary services market has remained largely undersubscribed despite lucrative payments. Early market entrants with battery storage projects have benefited from higher ancillary services payments, as it can receive a premium compared to other slower-responding technologies like pumped hydro and gas power plants.

From April to September 2024, batteries received an average of ¥172/kW for a 30-minute ancillary service block (equivalent to $2,290/MW-hour) in the III-2 segment, which covers replacement reserves for renewables supported by the feed-in tariff (FiT) scheme. The payment to battery storage is about 25 times that for thermal power plants. The trend has continued despite government efforts to reduce market size. According to BNEF analysis, market revenues in the Hokkaido region in 2024 alone could cover 59% of the capital expenditure for a new battery storage project. See *Jackpot for Batteries in Japan's Hokkaido Builds Up Queue* (web | terminal) for more details.

## More subsidies to benefit large-scale projects in competitive markets

The Ministry of Economy, Trade and Industry (METI) has expanded subsidy allocations for large-scale energy storage projects. METI's fiscal year 2025 budget stands at ¥15 billion ($106 million), up 76% from ¥8.5 billion ($60 million) in fiscal year 2024. Despite declining energy storage costs, many of Japan's projects still need subsidies to be bankable due to uncertain and volatile merchant revenues. The program is accepting new applications from August to October and will select recipients at the end of the year.

## Interconnection rule changes are under discussion

Surging interest in energy storage interconnection for large-scale energy storage projects led to a nearly quadrupling of applications year-on-year to 18GW by the end of June 2025, according to METI. This surge could slow interconnection processes for other technologies, stimulating the government to consider tougher requirements for energy storage applications by reducing

speculative applications. Proposals under discussion include requiring proof of potential project sites such as land registry documents when seeking an interconnection study as well as capping the number of applications each company can file simultaneously. A governmental committee will continue discussing the details. The timing of changes was unclear as of the end of September.

### Federal and regional subsidy programs to support uptake of behind-the-meter systems

BNEF expects cumulative capacity of Japan's residential and commercial storage to grow to 11GW/29GWh in 2035, a threefold increase from today. Subsidy programs should support this trend. Japan's Ministry of Environment also runs a program offering subsidies of up to ¥39,000/kWh ($262/kWh) for commercial batteries and ¥41,000/kWh ($276/kWh) for residential batteries this year. In Tokyo, homeowners purchasing a residential battery system or companies leasing these systems can receive up to ¥120,000/kWh ($807/kWh) of battery capacity under Tokyo's fiscal year 2025 budget. Homeowners can combine both subsidy programs, but the total cannot exceed Tokyo's subsidy.

## 5.4. South Korea

South Korea is set to add 105MW/312MWh of projects in 2025, down 62% from 2024, with no change from our previous estimate. Projects awarded in the pilot energy storage auction in Jeju Island in 2023 are expected to come on line this year, driving the country's energy shifting storage build. Battery-related fire incidents in the past few years have slowed energy storage deployment in the country, but South Korea's annual energy storage addition is set for a rebound from 2026 thanks to the launch of a battery storage auction program in the mainland and Korea Electric Power Corp. (Kepco)'s plan to install energy storage in place of making transmission grid investments. BNEF expects South Korea's cumulative storage additions between 2025 and 2030 to total 2.8GW/13.8GWh, 158% higher than BNEF's previous estimates in gigawatt terms.

Cumulative energy storage capacity reaches 8.1GW/25.6GWh by 2030, up 37% from our previous forecast. It reaches 10.1GW/36.1GWh in 2035 – almost doubling cumulative installations in 2024. We maintained the same annual buildout between 2031 and 2035 as our previous forecast, though energy storage deployment could be higher if the energy storage auction program continues in future years.

In addition, the election of pro-renewables President Lee Jae Myung in June is set to bolster the growth of the energy storage market. Lee has highlighted the crucial role of energy storage in balancing the intermittent output of solar and wind power to accelerate the country's energy transition. Lee's major energy agenda, the *Energy Highway*, hinges on the expansion of distributed clean energy sources where co-location of energy storage will play a key role.

**Figure 25: South Korea's annual energy storage additions**

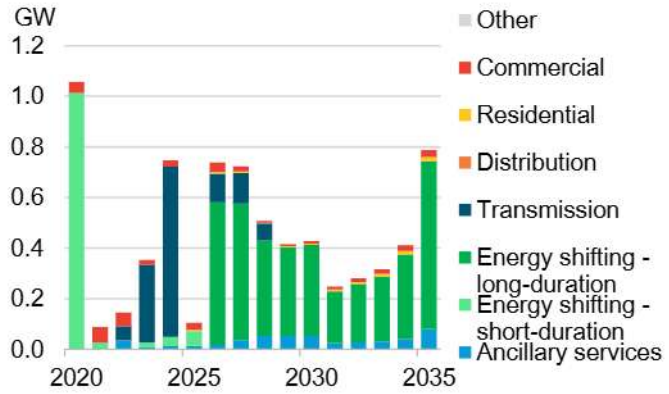
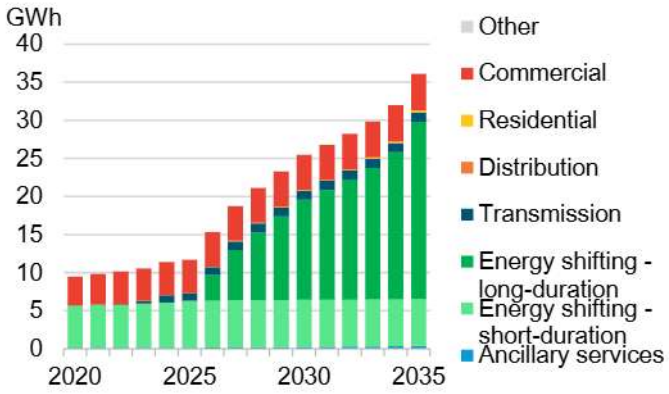



**Figure 26: South Korea's cumulative energy storage capacity**




*Source: BloombergNEF*

## Energy storage market poised for a resurgence with launch of nationwide auction

Korea Power Exchange (KPX) launched its energy storage auction program in May and plans to award long-term contracts to 540MW of energy storage projects annually from 2025 to 2029 based on the government's 11th energy roadmap, which was released in February. Its inaugural energy storage auction in July was oversubscribed by 5% and awarded eight battery storage projects with 6-hour systems totaling 565MW. Projects must start operation by the end of 2026 and follow KPX's charge-discharge signal while receiving a fixed payment per kilowatt-hour of capacity for 15 years.

Awarded projects can only receive the auction's long-term contract payments and cannot benefit from other revenue sources such as the country's renewable energy certificates (RECs) and competitive markets, at least in the first auction. Despite the lack of merchant revenues, companies with secured contracts are preparing for future auctions with merchant trading opportunities by building up their track record in the energy storage space. KPX will host another 540MW auction for 6-hour battery storage later this year.

As of September 30, KPX hasn't disclosed the winners of the first auction, but local media reported that Samsung SDI's NMC batteries swept the award by securing six of eight sites. LG Energy Solution's LFP batteries, which are known to be more cost-competitive, secured the remaining two. The industry estimates that the cleared prices in the latest auction were ranging from the upper-20 won to low-30 won level (around $19-24/MWh), which is almost half of the Jeju pilot ESS auction's payment of around 50 won per kilowatt-hour ($36/MWh), which was also reported by the media. Aside from low bid prices, site selection can be a hurdle as developers must develop projects near substations to receive an award.

The latest energy roadmap reaffirmed South Korea's target of reaching 23GW of storage capacity by 2038, which translates to an annual installation requirement of 811MW. BNEF has not reflected the whole award target capacity after 2030 to reflect possible uncertainty around the continuation of the auction scheme once the administration changes in five years.

### Kepco's deteriorating financial situation leads to additional storage builds in substations

Kepco is adding a 300MW energy storage system at its substations over the next three years to defer grid investments. The utility has already built 978MW of storage at six substations between 2022 and 2023 to stabilize the frequency of the system while absorbing excess electricity caused by delays in grid reinforcement. Although such efforts allow more renewables capacity to be installed and delay the need for grid investment in the near term, the utility will need more investments in grid infrastructure to connect more renewables in the long term and to support the country's decarbonization goal.

Further reading:

- *South Korea's Energy Storage to Reboot in Renewables Pivot* (web | terminal)
- *South Korea Pivots to Renewables With New President-Elect*: React (web | terminal)

## 5.5. India

India is set to add 0.5GW/1.0Wh of projects in 2025, more than four times annual installations in 2024, but 74% lower than our previous estimates in gigawatt terms due to our revised forecast methodology that discounts the lack of energy storage auctions before 2024 (Figure 27). Following from a record year, BNEF expects 0.7GW/1.9GWh to be installed in 2026.

Cumulative energy storage capacity reaches 26.9GW/83.2GWh by 2030, up 7% from our previous forecast (Figure 28). The country has conducted multiple energy storage auctions since 2024, setting the stage for a sharp increase in annual installations starting in 2026. The updated utility-scale storage forecast for 2025-2028 is anchored in these auction programs, which cover both standalone and hybrid projects. We apply risk-adjusted auction capacity, reflecting the progress and status of each program. For around-the-clock renewable auctions without disclosed storage requirements, we assume that 25% of auctioned renewable capacity will be paired with 3-hour energy storage systems. Beyond 2028, capacity is forecasted using historical auction trends together with expected growth rates in solar and wind development. See *Clean Energy Auctions and Tenders Tracker* (web | terminal) for a list of auction programs in India.

By the end of 2035, India's energy storage market reaches 86.9GW/312.8GWh – 317 times the cumulative installations in 2024 (Figure 28). The 2035 forecast is up 3% in gigawatt terms due to our forecast methodology change. The country's auction programs will drive the installations of projects until 2035.

**Figure 27: India's annual energy storage additions**

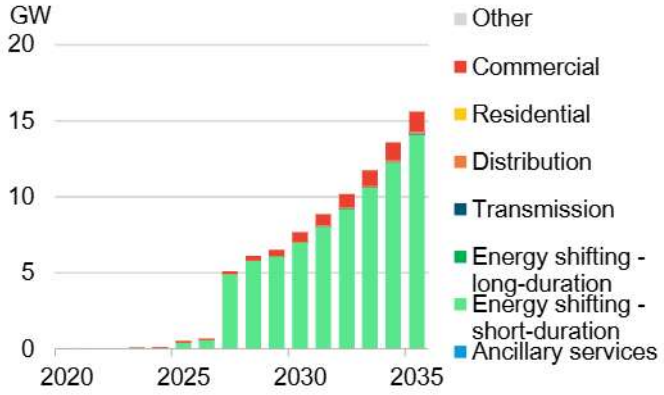
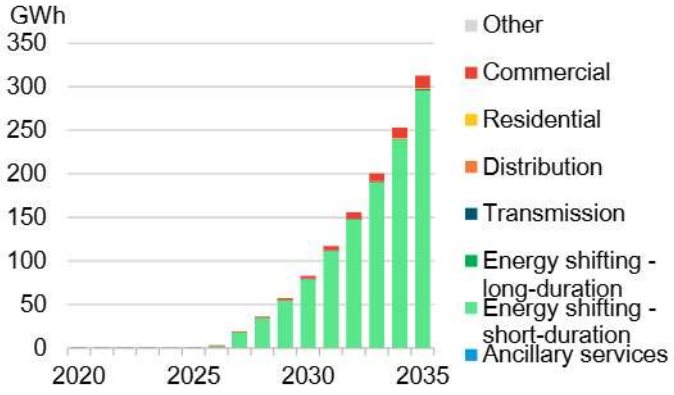



**Figure 28: India's cumulative energy storage capacity**




*Source: BloombergNEF*

## 5.6. Southeast Asia

BNEF expects annual energy storage additions in Southeast Asia to more than double in 2025 to 724MW/2,218MWh (Figure 29, Figure 31). The Philippines' accounts for 68% of the region's additions this year as the country's largest electric distribution utility, Meralco, rushes ahead of the compliance deadline for the Renewables Portfolio Standard (RPS). High retail tariffs in Vietnam and the Philippines also push commercial and industrial users to install behind-the-meter storage to shave bills.

Annual regional additions peak in 2032 at 4.5GW/16.3GWh as Indonesia-Singapore solar-plus-storage export projects gradually come online. Other policy tailwinds include Malaysia's various auction programs and Vietnam's new power sector roadmap. With these developments, cumulative energy storage capacity in the region reaches 13.2GW/40.6GWh in 2030 and 33.8GW/113.2GWh in 2035 – three times our previous estimate for 2030 and four times for 2035 (Figure 30, Figure 32).

**Figure 29: Southeast Asia's annual energy storage additions by application**

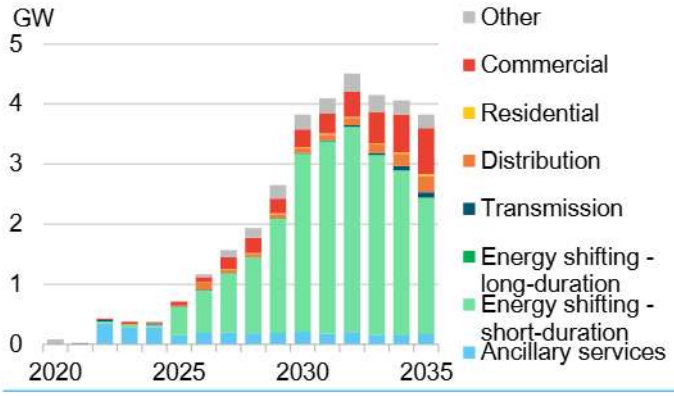



**Figure 30: Southeast Asia's cumulative energy storage capacity by application**

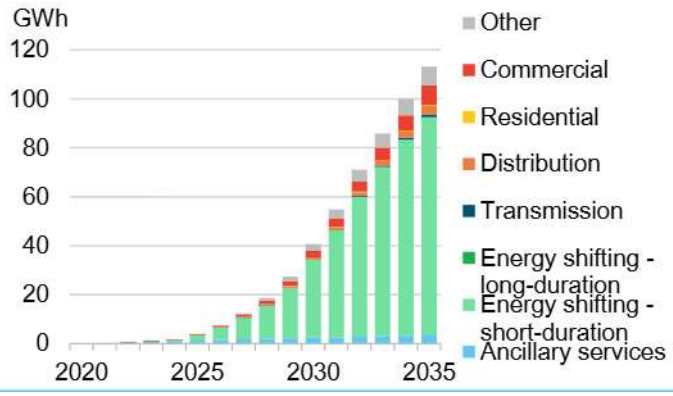


**Figure 31: Southeast Asia's annual energy storage additions by country**

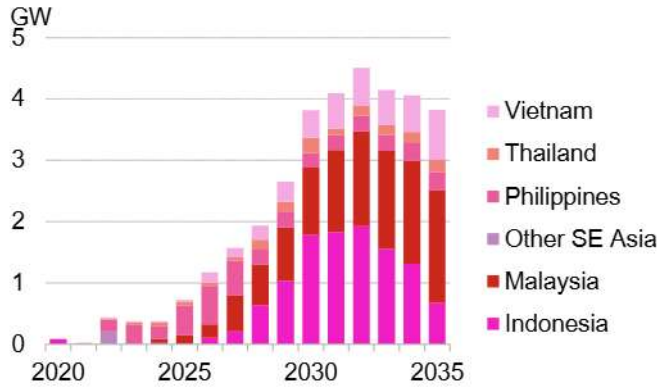
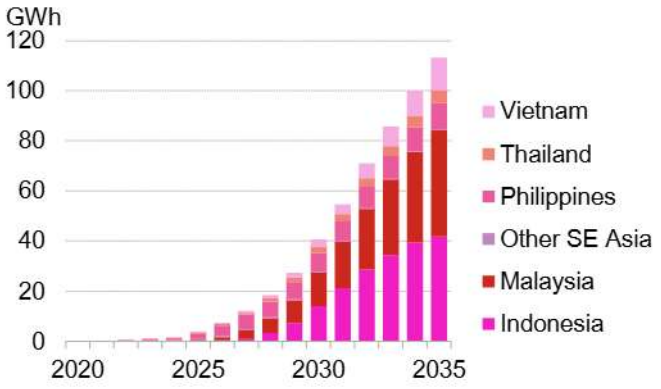



**Figure 32: Southeast Asia's cumulative energy storage capacity by country**




*Source: BloombergNEF*

## Indonesia

Indonesia is expected to add 15MW/22MWh of battery energy storage projects in 2025, an annual decline of 31% in power capacity but a 43% increase in energy storage capacity from 2024. BNEF expects 100MW/203MWh to be installed in 2026, driven by state utility PLN's new power development plan and a large solar-with-storage project to be built in a nickel processing hub in Morowali, Central Sulawesi.

Cumulative energy storage capacity reaches 3.9GW/14.2GWh by 2030. About three-quarters of this capacity is expected to come from seven solar-with-storage projects being developed for exporting clean power to Singapore. By the end of 2035, Indonesia's energy storage market reaches 11.2GW/41.8GWh from about 0.1GW/0.1GWh in 2024.

BNEF's latest outlook is five times higher by 2035 on a cumulative gigawatt basis than our previous outlook mainly because we incorporated the solar export plan into our forecast. Projects in this plan are expected to dominate installations to 2035, leading to annual additions peaking in 2032 at 1.9GW/7.4GWh. Capacity additions decline afterwards as there are thus far no known major projects that follow the scale of those in the export plan. For more information on these projects, see *Singapore's Clean Power Push Benefits Region's Transition* (web | terminal).

## Malaysia

Malaysia is expected to add 128MW/428MWh of projects in 2025, a doubling in power capacity and a fivefold increase in energy storage capacity from 2024. BNEF expects the deployment pace to ramp up further in 2026, with 222MW/843MWh to be added due to a utility-scale system being developed by state utility TNB and those under the MyBeST standalone battery storage auction.

Cumulative energy storage capacity reaches 3.6GW/13.4GWh by 2030. By the end of 2035, Malaysia's energy storage market reaches 11.7GW/42.6GWh from about 0.1GW/0.1GWh in 2024. Capacity additions to 2035 are driven by three government programs:

- MyBeST auction series: The first round in this series accepted bids from May to July 2025 and is expected to award 400MW/1,600MWh in October 2025, to be commissioned by April 2027,
- Auctions for solar projects paired with energy storage capacity: Expected from Large Scale Solar auction round 6, which is scheduled in late 2025 or early 2026, and

- Direct clean power procurement program involving businesses and independent power producers (Corporate Renewable Energy Supply Scheme, CRESS). The grid access charge levied on CRESS participants is significantly cheaper for suppliers of firm power ($47/MWh) than intermittent power ($95/MWh), providing project developers with an incentive to add energy storage systems to solar projects.

BNEF's latest outlook is 30 times higher by 2035 on a cumulative gigawatt basis than our previous outlook as we incorporated these three programs in our outlook, significantly boosting our view on the market.

## Philippines

The Philippines is set to add 493MW/1,514MWh of projects in 2025, up 137% from 2024. This is 5% higher than our previous estimates in gigawatt terms largely because 1.1GW of solar with storage, a part of the 3.5GW/4.5GWh solar-plus-storage project by Meralco, is expected to commission this year to comply with the Renewables Portfolio Standard (RPS) mandate. Following a record year, BNEF expects 628MW/1,954MWh to be installed in 2026 with Meralco's solar-plus-storage fully commissioned, reaching another all-time high installation level.

Cumulative energy storage capacity reaches 3.2GW/7.4GWh by 2030, up 50% from our previous forecast. A rise in auctions of renewables paired with battery energy storage projects and RPS mandate will drive installations. The RPS requires that electricity suppliers such as Meralco source 40% of their annual power supply from renewables by 2035, creating opportunities for battery installations. See *The Philippines' Path to Clean and Affordable Electricity* (web | terminal) for more details.

By the end of 2035, the Philippines' energy storage market could reach 4.5GW/10.5GWh – six times cumulative installations until 2024. Our 2035 forecast is up 52% in gigawatt terms, due to government-led auctions, higher penetration of renewables and battery deployment with rooftop solar by commercial customers to reduce costly electricity bills.

Historically, ancillary services were the dominant application for battery storage in the Philippines, representing 87% of cumulative installations as of the end of 2024. These projects had long-term contracts with the grid operator, but since January 2024, they have also been able to participate in the spot market. Amid rising competition, revenues from the spot market for projects with long-term contracts may decline. In addition, the growing penetration of renewables paired with batteries is reducing the need for additional ancillary services to be procured by grid operators or through the spot market. Thus, we expect annual deployments for the ancillary services segment to decline after 2027.

The residential and commercial sectors account for 15% of cumulative installations by 2035. With consumers in the Philippines paying the highest retail electricity tariffs in Southeast Asia, pairing solar with storage will be an attractive strategy to reduce electricity bills and hedge against future price increases.

## Vietnam

Vietnam is set to add 29MW/58MWh of projects in 2025, up 59% from 2024, and 198% higher than our previous estimates in gigawatt terms due to the increasing adoption of batteries in the commercial segment, driven by soaring electricity bills. Commercial electricity users pay the highest retail tariffs, which increased 15% between January 2023 and July 2025. Additionally, the government is proposing to grant cash rebates of up to $115 per household for new rooftop solar systems of at least 1kWp paired with batteries of at least 2kWh. The program would also offer

preferential interest rates that can be up to four percentage points below the commercial lending rates for three years. BNEF expects 167MW/333MWh of battery energy storage to be installed in 2026. See *Vietnam's Corporate Clean Power Policy Bears First Fruit* (web | terminal) for more details.

Cumulative battery energy storage capacity reaches 1.4GW/2.8GWh by 2030, four times our previous forecast. The country's update on its power sector roadmap in April mandates new utility solar projects be paired with batteries of up to 10% of the solar project's capacity, driving the growth of utility-scale energy storage projects post 2027. Despite the mandate, we expect limited policy impacts on new build between 2025 and 2027 due to a lack of enforcement, detailed government guidelines, and uncertainty around the timing of future solar auctions. During this period, energy storage connecting on the distribution network is expected to drive new installations due to Vietnam Electricity Group's (EVN) request in August for five regional distribution companies to deploy batteries on their networks to meet peak power demand. EVN has set a target of 1.2GW/2.4 GWh of installations by 2026. See *Solar Takes Center Stage in Vietnam's Revised Power Plan* (web | terminal) and *Grid Batteries Kickstart Vietnam's Long-Term Storage Plan* (web | terminal) for more details.

By the end of 2035, Vietnam's energy storage market reaches 4.6GW/13.0GWh cumulatively, up from just 46MW/92MWh in 2024. The 2035 forecast is up 431% in gigawatt terms, due to Vietnam's strong targets calling for 48.6GW(AC) of new solar projects by 2035 and the co-location mandate.

# Section 6. Americas

The Americas region is set to install 15.8GW/52.3GWh of projects in 2025, up 20% from 2024, and 9% higher than our previous estimates in gigawatt terms (Figure 33, Figure 35). US developers are rushing to avoid the new restrictions on Chinese equipment starting in 2026, and projects from Canada's energy storage procurement in Ontario and Chile's strong pipeline come online. Following a record year, the region is set to keep building more capacity over the next 10 years. In 2035, the region's energy storage market reaches 276GW/1,111GWh (Figure 2, Figure 4). The US will increasingly be supplied by growing domestic battery manufacturing capacity. Latin American growth is supported by Brazil's upcoming, though delayed, capacity auction and high renewables penetration in markets like Chile.

**Figure 33: AMER's annual energy storage additions by market**

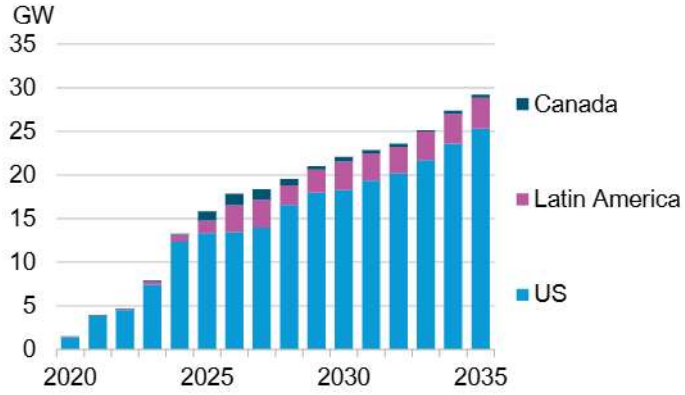



**Figure 2: AMER's cumulative energy storage capacity by market**

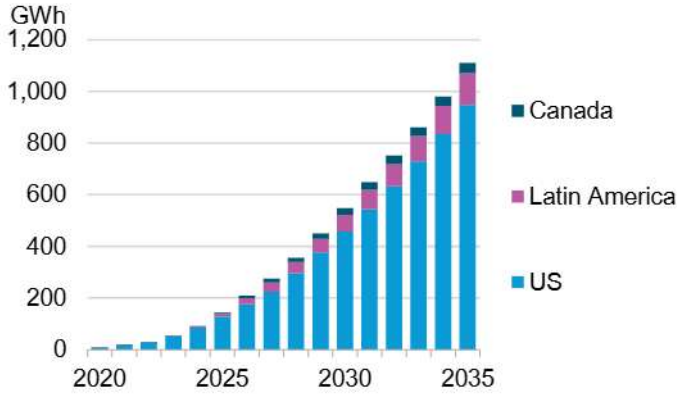



**Figure 35: AMER's annual energy storage additions by application**

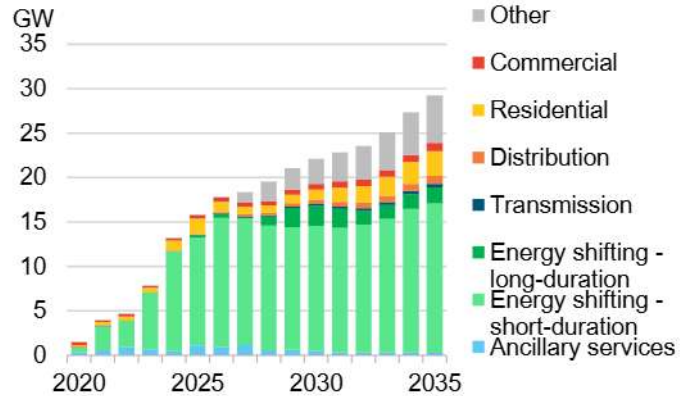
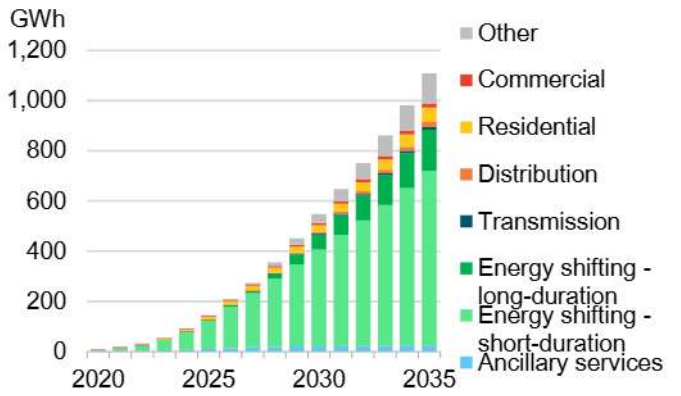



**Figure 4: AMER's cumulative capacity by application**




*Source: BloombergNEF*

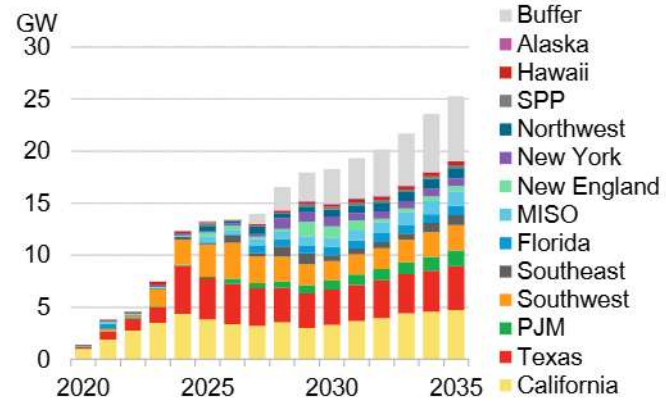
## 6.1. US

The US is set to add 13.3GW/42.4GWh of energy storage projects in 2025, up 8% from 2024, and 3% higher than our previous estimates in gigawatt terms (Figure 5), as we expect market players to rush to start construction this year given policy changes related to the "One Big Beautiful Bill" Act (OBBBA) impacting available incentives. Following from a record year, BNEF expects 13.5GW/48.0GWh to be installed in 2026.

Cumulative energy storage capacity reaches 125GW458GWh by 2030, up 9% from our previous forecast (Figure 6). OBBBA has new restrictions on the use of Chinese equipment which are set to accelerate annual build over 2025-2027, as companies rush to start project construction this year and avoid the new restrictions starting from 2026. We expect the US market to adapt quickly to the new environment and establish its own supply chain without 'prohibited foreign entities' (PFEs), also referred to as foreign entities of concern (FEOCs). Beyond 2027, domestic manufacturing capacity and battery imports from non-PFE countries such as South Korea and Southeast Asia are expected to drive further growth despite the policy changes.

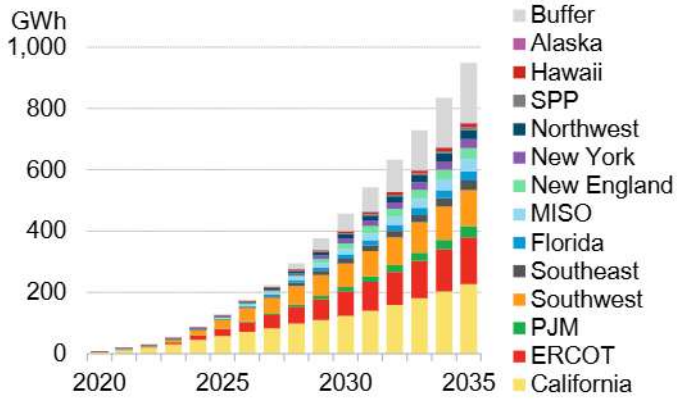
By the end of 2035, the US's energy storage market reaches 235GW/948GWh – seven times the cumulative installations in 2024 (Figure 6). The 2035 forecast is up 5% in gigawatt terms, primarily because our previous forecast reflected significant policy uncertainty at that time – including frequent and extreme changes in import tariffs – and did not account for suppliers' rapid ramp-up of domestic battery manufacturing. We increased the US buffer capacity in line with our 2H 2024 forecast, since we had reduced buffers in 1H 2025 due to policy uncertainty. Despite our more bullish view on the US market, our updated 2035 outlook is still 6% lower than our 2H 2024 forecast in gigawatt terms, as we think the baseline build is still lower compared to if the Inflation Reduction Act incentives had been kept as they were.

**Figure 5: US's annual energy storage additions**




*Source: BloombergNEF*

**Figure 6: US's cumulative energy storage capacity**




*Source: BloombergNEF*

### "One Big Beautiful Bill" Act

Market players are quickly adapting to the new policy environment since the passage of the 'One Big Beautiful Bill' Act (OBBBA), in July. Under the new law, energy storage projects can keep qualifying for the full Investment Tax Credits for sites beginning construction by the end of 2033. The credit rate falls to 75% of full credits in 2034 and 50% in 2035 before reaching zero after 2035, compared to the same reduction rates after 2032 or the year that the power-sector emissions fall to 25% of 2022 levels (whichever is later) previously. In contrast, tax credits for

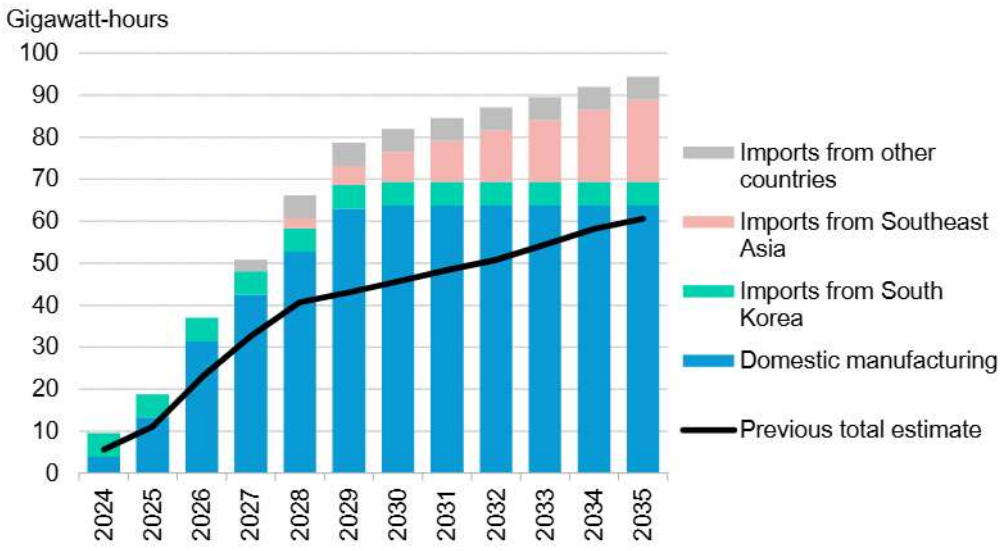
solar and wind projects were slashed and will no longer be available after 2027. See *Trump Slams the Brakes on US Wind and Solar Growth* (web | terminal) for more details.

Still, the new restrictions on prohibited foreign entities (PFEs), also known as foreign entities of concern (FEOCs), could pose a hurdle to the US market. PFEs are companies with links to Russia, North Korea, Iran or – most relevantly – China. Under the new rule, taxpayers associated with PFEs are ineligible for tax credits, and projects are restricted from receiving material assistance from PFEs. To qualify for tax credits, energy storage projects starting construction in 2026 or later must spend at least 55% of project costs on equipment and services supplied by non-PFEs. See *Trump's Big Bill Sets Many Hurdles for Chinese Clean Tech* (web | terminal).

Project developers with adequate capital are rushing to start construction this year to avoid the new rule, supporting higher annual build between 2025 and 2027. As of September 3, BNEF tracked 6.6GW/20.9GWh of new energy storage projects commissioned in 2025 and 27.7GW/70.8GWh of projects under construction or with financing secured. The total capacity is equivalent to 97% of our forecasts for utility-scale projects over 2025-2027. Early-stage projects and projects by smaller players may not be able to make the 2025 construction-start deadline.

Despite the new PFE restrictions, BNEF still expects the US market to keep growing as many market players are keen to keep a presence in the market by managing their supply chains. BNEF expects the availability of non-PFE battery cells in the US to exceed 60GWh per year in 2028 and 90GWh by 2035 (Figure 7) – 80% and 56% higher than our previous estimates, respectively, and 11% and 5% higher relative to demand excluding long-duration storage. The growth is driven by quick ramp-up of domestic battery manufacturing capacity and battery cell imports from countries not associated with PFEs – such as South Korea and Southeast Asia.

**Figure 7: BNEF's updated estimates on the availability of battery cells for utility-scale energy storage in the US**




*Source: BloombergNEF. Note: For manufacturing plants in the US, Southeast Asia and other countries, the figure assumes 50% of the nameplate capacity to be available in the first year of operations. Risk-adjusted methodology also assumes that 50% of announced plant capacity and 70% of under-construction plant capacity will come online. Previous total was estimated in July 2025. See BNEF's Trump Slams the Brakes on US Wind and Solar Growth* (web | terminal).

Domestic manufacturing capacity in Figure 7 includes plans from companies such as LG Energy Solution (LGES), Tesla, e-Storage and AESC. Korean manufacturers LGES, Samsung SDI and SK On are ramping up battery manufacturing capacity for energy storage in the US by converting production lines originally dedicated to electric vehicles into ones that deliver energy storage. Our assessment assumes e-Storage and AESC, both with ties to China, meet the new restrictions by modifying their company structure, though these companies are likely to be considered PFEs today.

Domestic manufacturing could be higher than our estimate if more PFEs or Chinese companies found a way of meeting the new restriction (Table 4). Many Chinese companies are currently engaging with their legal counsels and waiting for the US Treasury to issue guidance on how PFEs are classified, which is due by the end of the year. Once the guidance comes out, many may consider forming a partnership or creating a joint venture with local or non-PFEs to stay in the US market. For now, our estimate does not take account of these companies' manufacturing capacity. See *What Happened in Vegas: Trump's Big Bill Looms Over RE+* (web | terminal) for more details.

**Table 4: Common strategies for Chinese equipment manufacturers facing US Foreign Entities of Concern (FEOC) rules**

| Strategy | Who is trying it | BNEF take |
|---|---|---|
| Adapt corporate structure, including board and executive makeup | Larger companies are better suited to this than smaller entities | A limited set of companies will be able to exploit this strategy |
| Diversify from the US to other markets | Smaller companies may find this easier than shifting their structure or opening new manufacturing sites within the US | The US remains an attractive market due to high prices and a large customer base. Players will prefer to stay in the US if possible. |
| Sell US manufacturing base to non-Chinese companies | China-based manufacturers with legal or organizational barriers to FEOC compliance may sell their assets | Shifting US tariff strategy creates risks to non-Chinese plants as well |
| Open more factories in the US or within US-allied markets | Foreign firms betting on continued high US tariffs and seeking access to US market (and tax credits) | Shifting US tariffs hit upstream imports and key regions like Southeast Asia, presenting uncertain payoff to investment |
| Form partnerships and joint ventures in US with non-FEOC companies | China-based manufacturers with US factories must do this to qualify for key tax credits | Laws on foreign mergers and upcoming guidance on intellectual property licensing create challenges to this approach |

*Source: BloombergNEF*

**Table 5: US tariffs on Chinese non-EV lithium-ion batteries, as of the end of September 2025**

| | Rate |
|---|---|
| General import tariff | 3.4% |
| Section 301 | 7.5% (before 2026) |
| Section 232 | 10% |
| Temporary reciprocal tariffs | 10% |
| **Total** | **40.9%** |

*Source: BloombergNEF*

## Chinese suppliers are rushing to close supply deals before 2026

The US-China tariff escalation is currently paused though it is set to expire on November 10. Currently, US tariffs on Chinese non-EV lithium-ion batteries stand at 40.9% (Table 5). Future reciprocal tariffs are uncertain, but the Section 301 tariff is scheduled to increase to 25% starting from 2026. Given the current US-China reciprocal tariff pause and the new OBBBA-related rules, Chinese battery storage suppliers are rushing to export batteries to the US. This should help them to keep their near-term business activities while figuring out their longer-term strategies depending on upcoming guidelines on PFEs.

## Falling cost despite import tariffs

The cost of energy storage systems is still falling despite tariffs, based on participants at the RE+2025 trade show[3]. Turnkey energy storage systems using Chinese batteries cost around $200 per kilowatt-hour (kWh) with tariffs, we were told. This is 15% lower than in 2024. The value is also in line with the results in our *Energy Storage System Cost Survey 2024* (web | terminal), conducted between September and October 2024. BNEF's survey, however, did not account for the impacts of reciprocal tariffs as they didn't exist at that time. Thus, turnkey systems of around $200/kWh are likely reflecting the current pause in the US-China tariff spat and Chinese players' efforts to secure US contracts ahead of FEOC restrictions next year. We have also heard that turnkey systems in the US could cost around $250-300/kWh, depending on other factors like the origin of the batteries and state-level regulations and permitting.

Some suppliers, particularly those with strong bargaining power, have sought to pass cost increases from tariffs entirely onto developers rather than sharing the burden. Even when suppliers agree to split the increase, they may still raise equipment prices to preserve their margins, according to one RE+ participant. As a result, developers often must bear the brunt of tariff uncertainty on their equipment costs whenever the US government changes tariffs.

BNEF expects higher-than-expected project costs to impact build more in regions like Ercot where project costs heavily determine project viability. The limited energy price volatility and falling ancillary service payments in Ercot could exacerbate the situation. By contrast, markets with contracted revenues such as California and the Southwest may have room to renegotiate contracts, depending on contract terms and utilities' flexibility. For instance, it is reported that some Californian agreements allow offtakers to terminate or adjust pricing within agreed thresholds indexed to battery cell import prices. Still, re-negotiation could take some time, and stakeholders would need to complete the transactions as quickly as possible to avoid the new PFE restrictions.

## New York, New Jersey and Massachusetts are launching solicitations to meet their deployment targets

No state has set a new target for energy storage this year (Table 6), but a few states such as New York, New Jersey, and Massachusetts are set to procure energy storage through competitive solicitations starting from this year (covered in regional sections below). These solicitations offer long-term contracts with awarded projects, supporting deployment in states where merchant revenues are insufficient.

[3] RE+ is a major clean power industry conference run by Solar Energy Industries Association (SEIA) and Smart Electric Power Alliance (SEPA), with a focus on solar and storage. The 2025 event was held in Las Vegas, Nevada, from September 8-11, 2025. See *What Happened in Vegas: Trump's Big Bill Looms Over RE+* (web | terminal) for more details.

**Table 6: US state energy storage targets**

| State | Year announced | Legislation/regulation | Target |
|---|---|---|---|
| California | 2010<br>2016 | AB2514<br>AB2868 | 1,825MW by 2020 (1,325MW utility-scale storage and 500MW of distributed storage) |
| Oregon | 2015 | HB2913 | Portland General Electric and Pacific Power to each install at least 5MWh by 2020 up to 1% of 2014 peak load |
| Nevada | 2017 | SB204 | 100MW by 2020, 1,000MW by 2030 |
| New Jersey | 2018 | Clean Energy Act | 2,000MW by 2030 |
| Massachusetts | 2017<br>2024 | HB4857<br>St. 2024 c. 239 | 1,000MWh by 2025, 5GW by 2030 (3.5GW of 4- to 10-hour systems, 0.75GW of 10- to 24-hour systems and, if commercially available at a reasonable cost, 0.75GW of 24-hour systems or longer) |
| Virginia | 2020 | HB1526 | 3,100MW by 2035 |
| Connecticut | 2021 | SB952 | 300MW by 2024, 650MW by 2027, and 1,000MW by 2030 |
| Maine | 2021 | SP213 | 300MW by 2024, 400MW by 2030 |
| Maryland | 2023 | HB910 | 750MW by 2027, 1,500MW by 2030 and 3,000MW by 2033 |
| New York | 2021, 2022 | Case 18-E-0130 | 1,500MW by 2025, 6,000MW by 2030 |
| Michigan | 2023 | HB4256 | 2,500MW by 2030 |
| Rhode Island | 2024 | H7811 | 90MW by 2026, 195MW by 2028, and 600MW by 2033 |

*Source: BloombergNEF*

## Ercot (Texas)

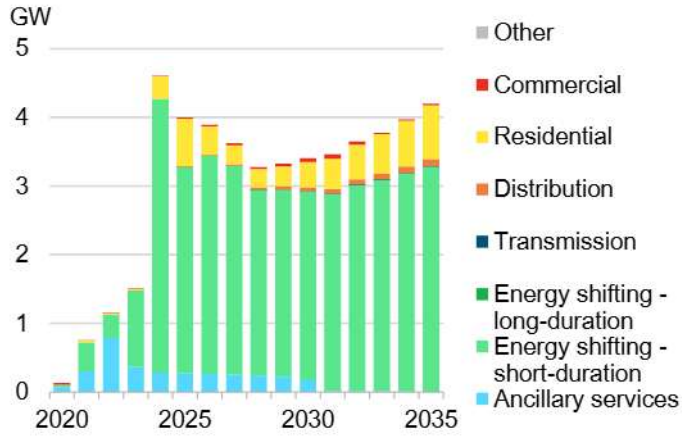
Texas, or the Electric Reliability Council of Texas (Ercot), is set to add 4.0GW/8.5GWh of projects in 2025, down 13% from 2024, and 9% lower than our previous estimates in gigawatt terms (Figure 8), because some projects in the pipeline might not be able to be safe harbored to qualify for tax credits without PFC restrictions. Following from a record year in gigawatt-hours, BNEF expects 3.9GW/10.5Wh to be installed in 2026.

Cumulative energy storage capacity reaches 29.8GW/81.0GWh by 2030, almost no change from our previous forecast. This is because our more bullish view, driven by a rush to safe harbor, offsets our previous low estimates that accounted for policy uncertainty at that time, particularly annual installations in 2026-2028.

By the end of 2035, Ercot's energy storage market reaches 48.9GW/153.1GWh – six times the cumulative installations in 2024 (Figure 9), though down 6% in gigawatt terms from our previous outlook. Still, load growth, driven by new data centers and oil refining, and energy storage's continued access to tax credits will support installations through 2035. Despite limited energy

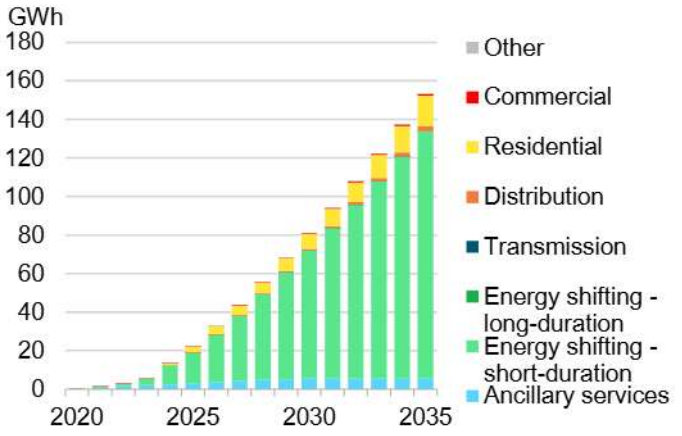
price volatility in 2024 and this year, BNEF expects future revenues for energy storage in Ercot to rise over the next 10 years due to the growing solar fleet. See *Ercot Market Outlook 2025* (web | terminal) for more details.

**Figure 8: Ercot's annual energy storage additions**




*Source: BloombergNEF*

**Figure 9: Ercot's cumulative energy storage capacity**




*Source: BloombergNEF*

In Texas, more renewable projects are set to be co-located with energy storage from 2027. Driving this is firstly state law (H.B.1500), legislated in 2023, requiring new electricity generation facilities signing an interconnection agreement on or after January 1, 2027, to have firming generation capacity. In addition, developers are considering co-located solar and storage projects due to falling revenues in the ancillary service and wholesale electricity markets for standalone systems. According to the US Energy Information Administration (EIA) monthly generator data, 3.1GW of energy storage projects co-located with solar are scheduled in 2026, 3.8GW in 2027 and another 1.5GW in 2028. These are equivalent to 30% of planned capacity for energy storage in 2026, 38% in 2027 and 48% in 2028, based on the EIA data.

Another state law (S.B.6), legislated in June, will require any large load greater than 75MW to be capable of curtailing during grid stress or a high price period. Since Ercot's large load interconnection queue has more than tripled in the last year, mainly driven by data centers, the new law should incentivize data center owners to install back-up power, including battery storage, diesel generators and microgrids. The Public Utility Commission of Texas (PUCT) is starting to build a roadmap and implementing these rules through the next year. These upcoming rules are likely to have a major impact on data center design and power supply strategy.

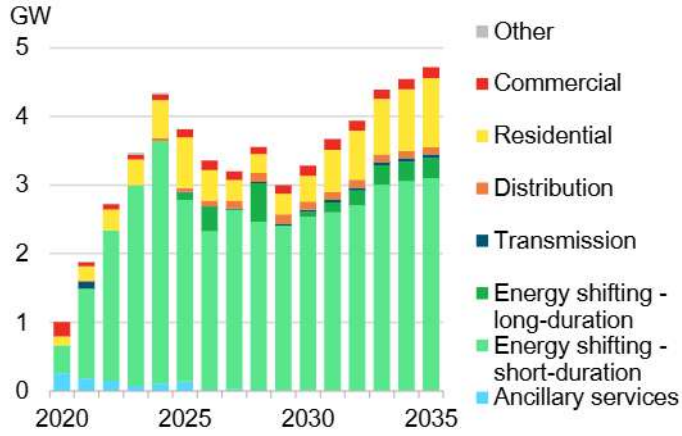
## California

California is set to add 3.8GW/12.6GWh of projects in 2025, down 12% from 2024, though 5% higher than our previous estimates in gigawatt terms, accounting for projects in the pipeline (Figure 10). Following from a down year, BNEF expects 3.4GW/13.5GWh to be installed in 2026.

Cumulative energy storage capacity reaches 34.3GW/124.1GWh by 2030, down 3% from our previous forecast (Figure 11). Energy storage projects in California typically secure long-term contracts with offtakers, but we expect slower uptake of new projects since the changes in import tariffs and the new restrictions on Chinese equipment require pricing re-negotiation for some agreements. By the end of 2035, California reaches 55.6GW/227.1GWh – four times cumulative installations in 2024 (Figure 11). The 2035 forecast is down 6% in gigawatt terms due to worsened economics for batteries given federal policy changes. Still, the state's decarbonization

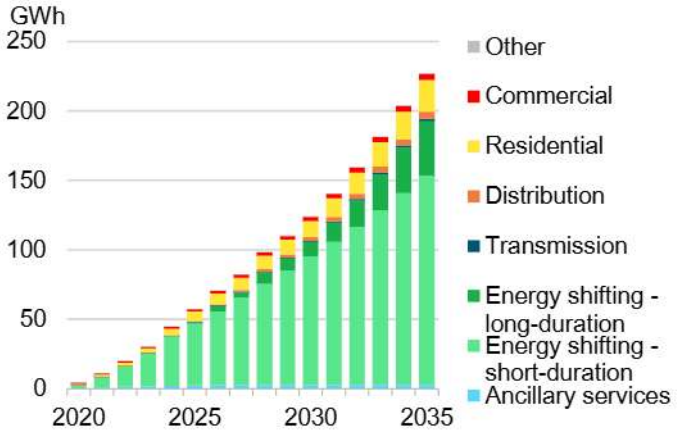
target, high solar penetration and utilities' storage procurement, including long-duration energy storage, will maintain strong build through 2035.

**Figure 10: California's annual energy storage additions**




*Source: BloombergNEF*

**Figure 11: California's cumulative energy storage capacity**



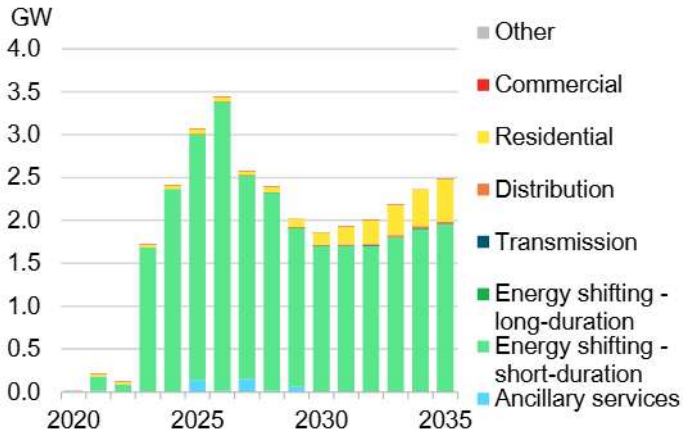

*Source: BloombergNEF*

## Southwest

The Southwest, which covers Nevada, Arizona, Utah, New Mexico and Colorado, is set to add 3.1GW/12.2GWh of projects in 2025, up 27% from 2024, and 22% higher than our previous estimates in gigawatt terms (Figure 12). The region's interest in energy storage procurement has been growing since 2023; annual deployment is almost catching up with Ercot and California. Following from a record year, BNEF expects 3.4GW/12.0Wh to be installed in 2026, setting another record.

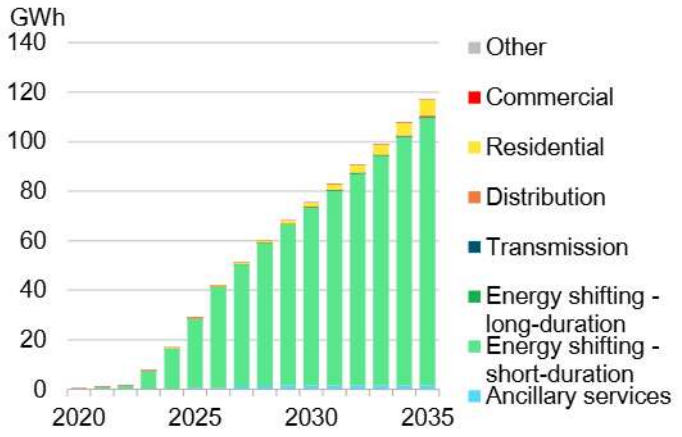
Cumulative energy storage capacity reaches 20GW/75GWh by 2030, up 33% from our previous forecast (Figure 13). We see more energy storage projects in the pipeline than previously estimated, which, combined with steady growth over the past few years, has led us to raise our overall forecasts despite the recent federal policy change. By the end of 2035, the region's energy storage market reaches 31GW/117GWh – seven times the cumulative installations in 2024 – and is up 16% in gigawatt terms from our previous outlook, due to the region's strong growth (Figure 13). Regional utilities' energy storage procurement, often with contracted revenues, will drive the installations through 2035.

**Figure 12: Southwest's annual energy storage additions**




*Source: BloombergNEF*

**Figure 13: Southwest's cumulative energy storage capacity**



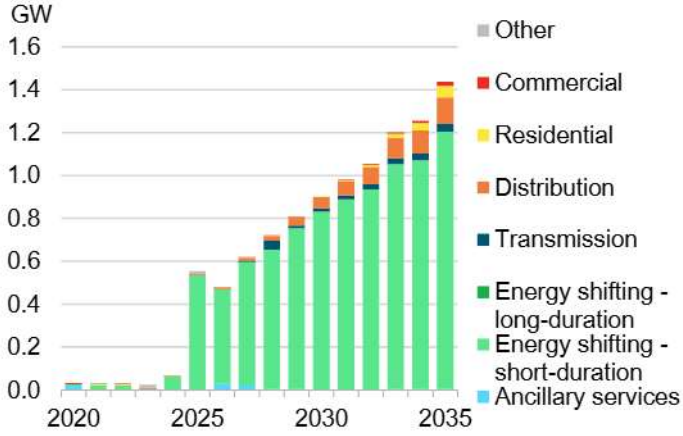

*Source: BloombergNEF*

## MISO

The Midcontinent Independent System Operator (MISO) region is set to add 0.6GW/2.1GWh of projects in 2025, 13 times additions in 2024, and 48% higher than our previous estimates in gigawatt terms (Figure 14). The region is set to hit its annual record because multiple projects including 100 to 200MW sites have already come online and more projects are scheduled this year. Following from a record year, BNEF expects 0.5GW/1.8Wh to be installed in 2026.

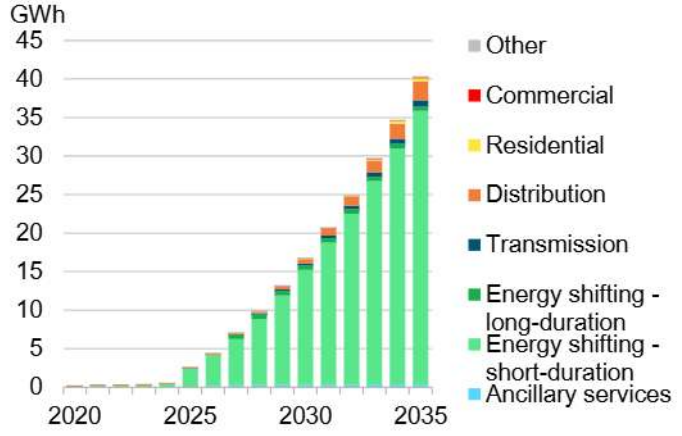
Cumulative energy storage capacity reaches 4.3GW/16.8GWh by 2030, up 18% from our previous forecast (Figure 15). By the end of 2035, MISO reaches 10.3GW/40.3GWh – 39 times the cumulative installations in 2024 – though our outlook is down 25% in gigawatt terms from the previous forecast due to the impact of federal policy changes, new gas power plants in the pipeline and our updated view on the region's limited merchant revenues for energy storage. Still, the high expectation of solar uptake and coal power plant retirements in MISO will drive the build through 2035. Some buffer capacity in our US-wide forecast could be allocated to the capacity in MISO if the region succeeds in deploying more energy storage than our estimate.

**Figure 14: MISO annual energy storage additions**




*Source: BloombergNEF*

**Figure 15: MISO cumulative energy storage capacity**




*Source: BloombergNEF*

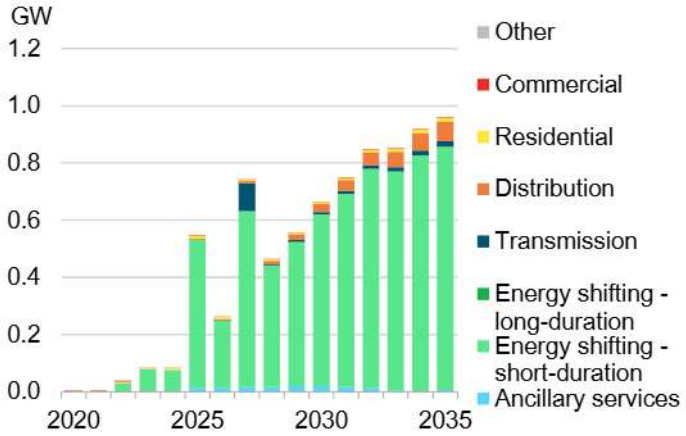
BNEF's latest analysis shows merchant revenues for energy storage in the region are set to remain small over the next 10 years due to high baseload demand keeping charging prices elevated, posing challenges to new energy storage project development. Still, some market players eye MISO's lucrative capacity payments. In MISO's latest Planning Resource Auction (PRA) auction for 2025/26, summer capacity prices reached record highs driven by tight supply conditions amid growing demand and despite a new pricing method to assess over- and under-supply. The latest auction for summer 2025 under the new pricing method for all zones cleared at $666.50/MW-day and awarded 499.2MW of battery storage. Such a lucrative payment could boost energy storage project revenues. See *MISO Power Market Outlook* (web | terminal).

## Northwest

The Northwest, which covers Washington, Oregon, Idaho, Montana and Wyoming, is set to add 0.5GW/2.0GWh of projects in 2025, six times additions in 2024, and 5% higher than our previous estimates in gigawatt terms (Figure 16). In the region, 0.3GW/1.3GWh of projects have already come online this year and annual installation is set to hit a new record. Following from a record year, BNEF expects 0.3GW/1.0Wh to be installed in 2026.

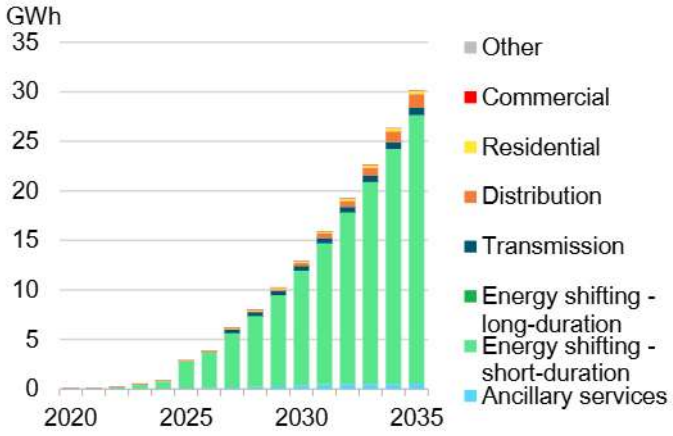
Cumulative energy storage capacity reaches 3.5GW/12.9GWh by 2030, down 32% from our previous forecast (Figure 17). Although a large volume of energy storage projects is scheduled for 2025-2027, we have reduced our post-2027 forecast as major utilities such as Puget Sound Energy and PacifiCorp are not planning much energy storage capacity after 2027 in their integrated resource plans. By the end of 2035, Northwest's energy storage market reaches 7.8GW/30.1GWh – 34 times cumulative installations in 2024 – though down 26% in gigawatt terms, due to our more conservative view based on regional utilities' long-term resource plans and the dampening impact of new federal policies.

**Figure 16: Northwest's annual energy storage additions**




*Source: BloombergNEF*

**Figure 17: Northwest's cumulative energy storage capacity**




*Source: BloombergNEF*

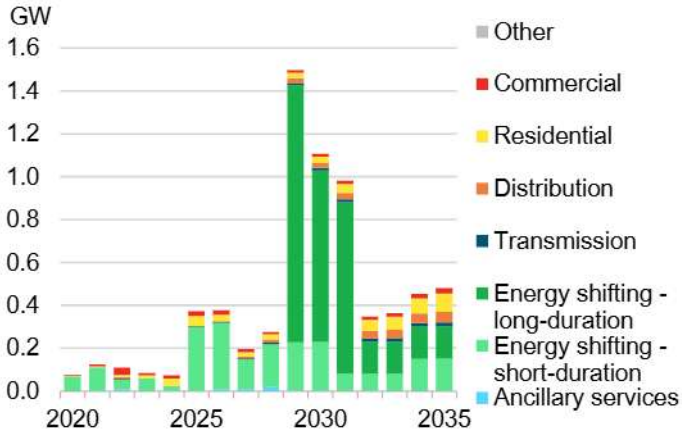
## New England

The New England region is set to add 0.4GW/0.9GWh of projects in 2025, five times additions in 2024, and 4% higher than our previous estimates in gigawatt terms, because more projects are set to come online than previously estimated (Figure 18). US-based developer Plus Power has already built a 150MW/300MWh project (web) and is building another 175MW/350MWh project (web) this year. Following a record year, BNEF expects 0.4GW/1.4GWh to be installed in 2026.

Cumulative energy storage capacity reaches 4.4GW/19.5GWh in 2030, up 31% from our previous forecast (Figure 19). Post-2028 annual installations are higher as we're now accounting for Massachusetts's mid-duration energy storage solicitations totaling 3.5GW over 2025-2027. Our current forecast assumes 80% of each auction's capacity to be subscribed given the region's low historical storage deployment. Projects awarded in these auctions should come online in 2029-2031. Another 750MW solicitation for long-duration energy storage scheduled in 2030 should support annual build over 2032-2035. By the end of 2035, New England's energy storage market reaches 7.0GW/34.7GWh – 13 times cumulative installations in 2024 and up 16% in gigawatt terms from our previous outlook (Figure 19).

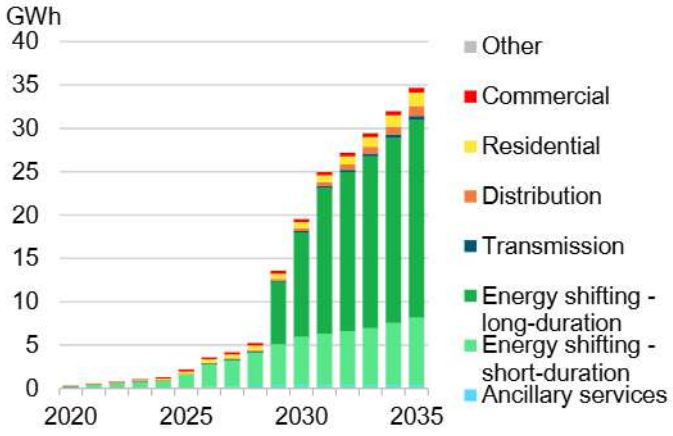
In **Massachusetts**, the state's Department of Energy Resources issued a request-for-proposal of four sets of solicitations over 2025-2030 to procure 3.5GW of energy storage systems with 4- to 10-hour durations. The solicitations offer a contract for up to 30 years and seek projects ranging between 40MW and 1GW. Projects must come online before January 1, 2030. The first 1.5GW procurement was conducted by July 31, 2025, with another 1GW one scheduled by July 31, 2026, another 1GW by July 31, 2027, and any remaining capacity by July 31, 2030.

**Figure 18: New England's annual energy storage additions**




*Source: BloombergNEF*

**Figure 19: New England cumulative energy storage capacity**



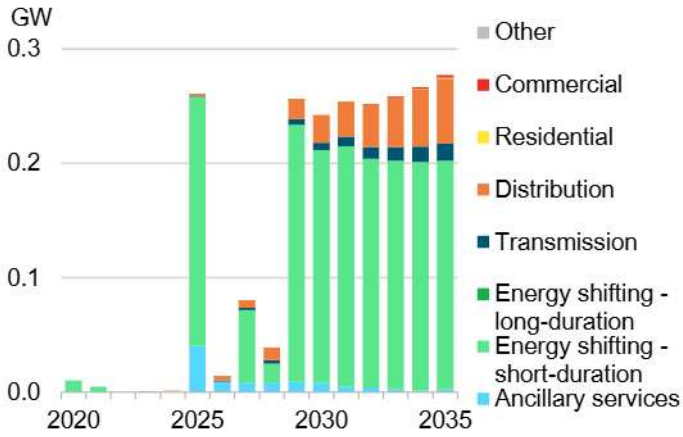

*Source: BloombergNEF*

## SPP

The Southwest Power Pool (SPP) region is set to add 0.3GW/0.8GWh of projects in 2025 – a huge jump from last year's meager 1MW/2MWh installation (Figure 20). This is 199% higher than our previous estimate in gigawatt terms because our previous estimate risk-adjusted some planned project capacity based on project status. NextEra Energy's 252MW/800MW Skeleton Creek project drives a spike for 2025. Following a record year, BNEF expects annual installation for 2026 to plummet at 13MW/53MWh due to a lack of projects in the pipeline.

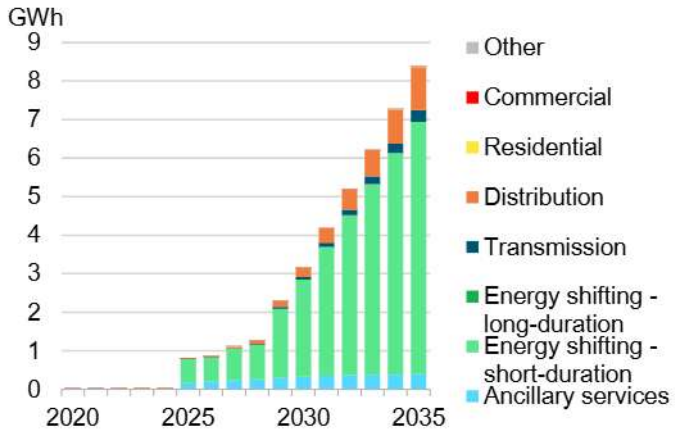
Cumulative energy storage capacity reaches 0.9GW/3.2GWh in 2030, down 14% from our previous forecast (Figure 21). By the end of 2035, SPP's energy storage market reaches 2.2GW/8.4GWh – 127 times cumulative installations in 2024. The 2035 forecast is down 11% in gigawatt terms, due to limited planned project capacity in the region.

**Figure 20: SPP's annual energy storage additions**




*Source: BloombergNEF*

**Figure 21: SPP's cumulative energy storage capacity**




*Source: BloombergNEF*

## New York

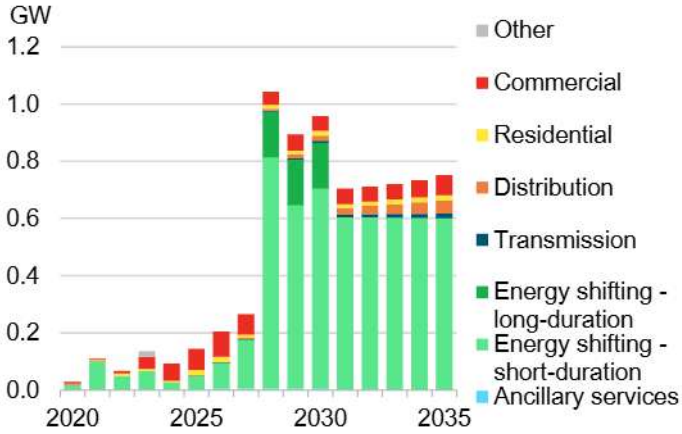
New York is set to add 0.1GW/0.4GWh of projects in 2025, up 57% from 2024, though 20% lower than our previous estimates in gigawatt terms, as our previous forecast estimated twice the amount of utility-scale energy storage would come online this year (Figure 22). Still, New York's installation this year is set to be the highest in history. Following from a record year, BNEF expects 0.2GW/0.8Wh to be installed in 2026.

Cumulative energy storage capacity reaches 4.0GW/15.9GWh in 2030, down 7% from our previous forecast (Figure 23). New York's 1GW solicitations will support annual deployment of short- and long-duration energy storage over 2028-2030. Our forecast assumed 80% of auctioned capacity to be awarded given high interest in the procurement. Still, we expect the OBBBA's restriction on Chinese equipment to present a hurdle to some projects. Since the new OBBBA rule affects projects starting construction in 2026 and onward, it will likely affect energy storage projects awarded in the solicitations. Separately, more stringent safety regulations in New York State/City could make project development challenging.

By the end of 2035, New York's energy storage market reaches 7.6GW/29.7GWh – 15 times the cumulative installations in 2024 – though down 13% in gigawatt terms compared to our last outlook due to the impact of OBBBA (Figure 23). Our forecast assumes that New York will keep its momentum through solicitation programs going forward even after 2030, driving the installations through 2035. We cut build for the distribution application as the state has been slow to come up with procurement strategies for the segment.

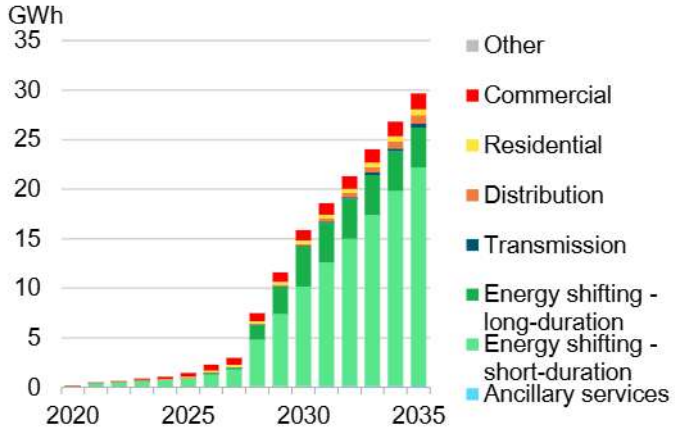
This year, the New York State Energy Research and Development Authority (NYSERDA) started the first of three annual energy solicitations scheduled over 2025-2027 to achieve its 3GW deployment target for utility-scale projects. Each solicitation seeks 1GW of energy storage projects under the state's Index Storage Credits (ISC) mechanism, which offers a 15-year contract to lithium-ion projects and a 25-year contract to non-lithium projects. Awarded projects must start operations by the end of 2030 to meet the state's deployment target. The application submission deadline was in September, and NYSERDA plans to announce winning projects in the second quarter of 2026.

**Figure 22: New York's annual energy storage additions**




*Source: BloombergNEF*

**Figure 23: New York's cumulative energy storage capacity**



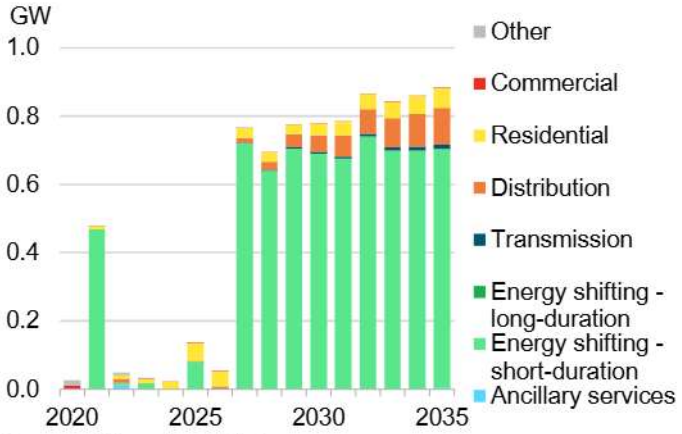

*Source: BloombergNEF*

## Florida

Florida is set to add 0.1GW/0.3GWh of projects in 2025, six times additions seen in 2024, and 76% higher than our previous estimates in gigawatt terms as utility-scale project additions are higher in our revised estimate (Figure 24). Still, utility-scale deployment for 2025 is less than 100MW. Following a down year, BNEF expects only 53MW/157MWh to be installed in 2026.

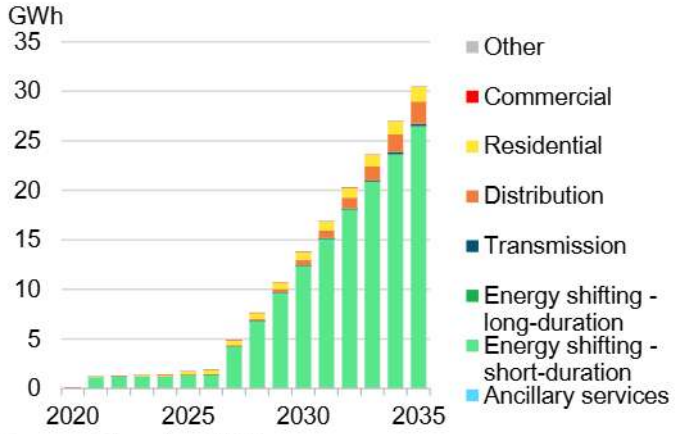
Cumulative energy storage capacity reaches 3.8GW/13.8GWh by 2030, up 25% from our previous forecast, which reflects regional utilities' integrated resource plans (Figure 25). Florida Power & Light's Ten Year Power Plan Site Plan for 2025-2034, released in April, included 1,944MW of energy storage projects in 2026 and 820MW in 2027, although the EIA statistics do not track these projects so they are likely delayed or being reconsidered. They are, hence, not currently in our forecast for 2026-2027. If these succeed in coming online, however, near-term capacity could be higher than our estimate. By the end of 2035, Florida's energy storage market reaches 8.1GW/30.4GWh – 13 times the cumulative installations in 2024 and up 15% in gigawatt terms from our previous outlook, as we adjusted it upward based on the utilities' long-term procurement plans (Figure 25).

**Figure 24: Florida's annual energy storage additions**




*Source: BloombergNEF*

**Figure 25: Florida's cumulative energy storage capacity**




*Source: BloombergNEF*

## PJM

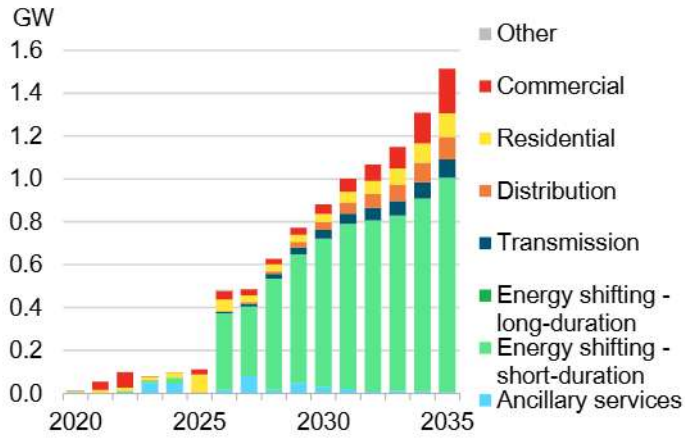
The PJM Interconnection (PJM) region is set to add 0.1GW/0.3Wh of projects in 2025, down 13% from 2024, and 41% lower than our previous estimates in gigawatt terms because we now expect only 5MW/20MWh of utility-scale capacity to come online this year (Figure 26). Still, the region's annual installation for all segments is set to be the second highest in history thanks to high installations for the commercial segment. Following a record year, BNEF expects 0.5GW/1.7Wh to be installed in 2026 as more large-scale projects get deployed.

Cumulative energy storage capacity reaches 4.1GW/13.6GWh by 2030, down 32% from our previous forecast (Figure 27). New Jersey's 1GW solicitations in 2025-2026 (further expanded below) are impacted by the new rule under the OBBBA, hitting new projects, much like the solicitation program in New York. By the end of 2035, PJM's energy storage market reaches 10.2GW/36.1GWh – 13 times the cumulative installations in 2024 and down 29% in gigawatt terms due to OBBBA impacts (Figure 27). Despite the lower installation forecast than before, the region's data center load growth, especially in northern Virginia and Ohio, will drive the installations of projects until 2035. See *US Data Center Market Outlook: The Age of AI* (web | terminal) for more details.

In **New Jersey**, the New Jersey Board of Public Utilities (NJBPJ) approved the state's first phase of the Garden State Energy Storage Program, which aims to procure 1GW of energy storage through annual solicitations in 2025-2026. The first tranche of the first phase seeks 350-750MW of energy storage projects and plans to issue awards by the end of October. As of October 3, PJM's cluster interconnection queue includes 598MW/923MWh of active energy storage projects (assuming 3-hour durations for projects without disclosed energy or capacity values) although no project has been disclosed in the state based on the EIA's record. So, we only assume 60% of the capacity will be awarded in each auction and will be built in 2028-2029.

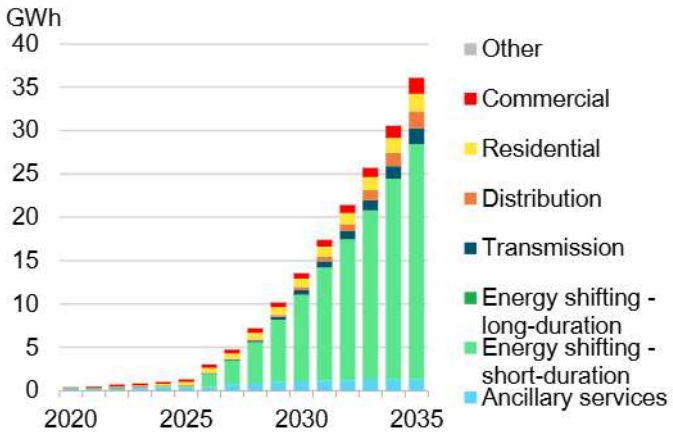
The second tranche aims to procure the remaining capacity in the first half of 2026. The program offers a 15-year contract for projects. Awarded projects in the first tranche must have at least 4-hour durations and must come online within 30 months after the solicitation end on August 20, 2025.

**Figure 26: PJM's annual energy storage additions**




*Source: BloombergNEF*

**Figure 27: PJM's cumulative energy storage capacity**



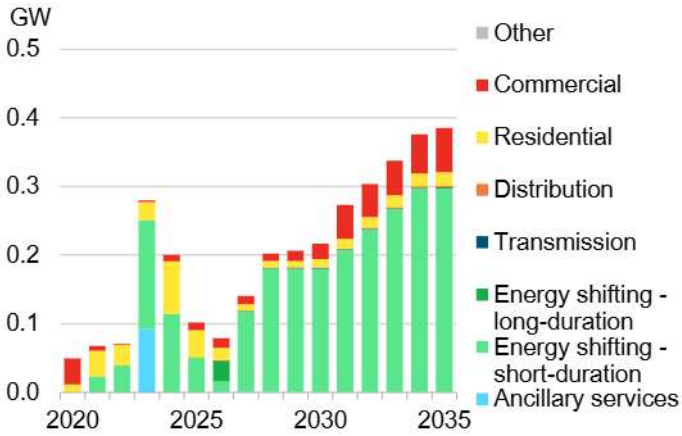

*Source: BloombergNEF*

## Hawaii

Hawaii is set to add 0.1GW/0.3GWh of projects in 2025, down 49% from 2024, and 45% lower than our previous estimates in gigawatt terms (Figure 28), as we revised our forecast based on projects in the pipeline and Hawaiian Electric's revised action plan for its Integrated Grid Plan. Following a down year, BNEF expects 79MW/376MWh to be installed in 2026.

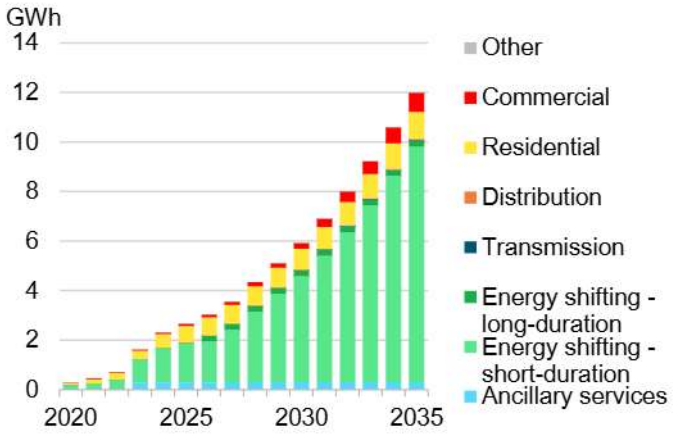
Cumulative energy storage capacity reaches 1.7GW/5.9GWh by 2030, down 32% from our previous forecast (Figure 29). By the end of 2035, Hawaii's energy storage market reaches 3.4GW/12.0GWh – four times the cumulative installations in 2024 and down 36% in gigawatt terms, due to the OBBBA and based on Hawaiian Electric's revised long-term plan that does not list many projects over 2031-2035. Still, high solar penetration in the state will drive the installation of projects until 2035.

**Figure 28: Hawaii's annual energy storage additions**




*Source: BloombergNEF*

**Figure 29: Hawaii's cumulative energy storage capacity**



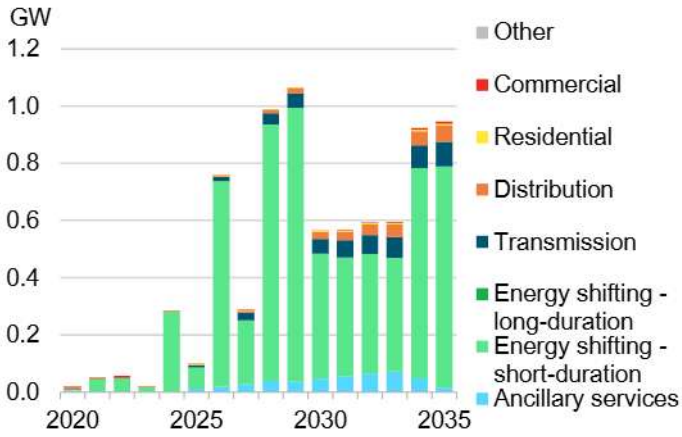

*Source: BloombergNEF*

## Southeast

The Southeast region, excluding Florida, is set to add 0.1GW/0.4Wh of projects in 2025 (Figure 30), down 65% from 2024, and 64% lower than our previous estimates in gigawatt terms as only about a third of the previous forecast's utility-scale project capacity is still expected to come online this year. Following a down year, BNEF expects 0.8GW/3.2GWh to be installed in 2026.

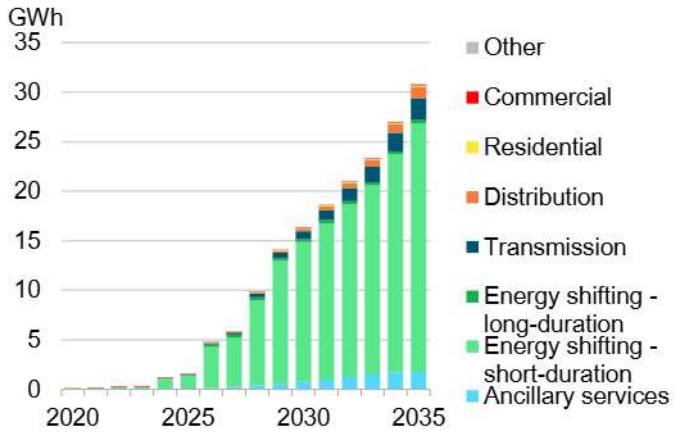
Cumulative energy storage capacity reaches 4.2GW/16.3GWh by 2030, up 26% from our previous forecast (Figure 31). Regional utilities are planning to bring large energy storage capacity online over the next few years: Georgia Power with 765MW in 2026, Louisville Gas & Electric with 400MW in 2028 and Dominion Energy South Carolia with 500MW in 2029. By the end of 2035, the Southeast's energy storage market reaches 7.8GW/30.8GWh – 17 times the cumulative installations in 2024 and up 5% in gigawatt terms due to regional utilities' interest in energy storage procurement (Figure 31).

**Figure 30: Southeast's annual energy storage additions**




*Source: BloombergNEF*

**Figure 31: Southeast's cumulative energy storage capacity**



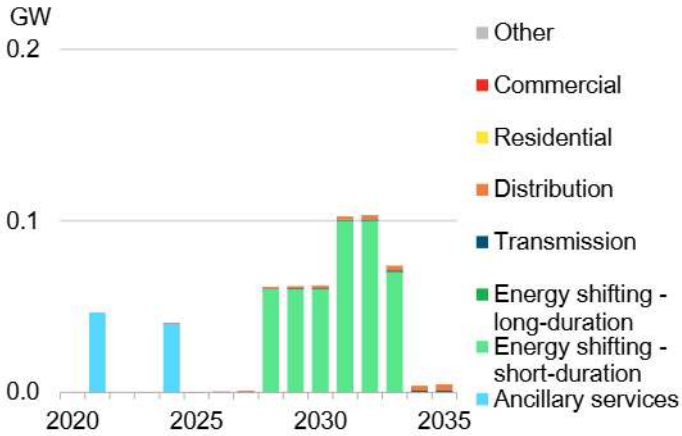

*Source: BloombergNEF*

### Alaksa

Alaksa is set to add 0.1W/0.5MWh of projects in 2025, a big drop from 40MW/80MWh in 2024, and no change from our previous estimates in gigawatt terms (Figure 32). Following a down year, BNEF expects 0.3MW/1.1MWh to be installed in 2026.

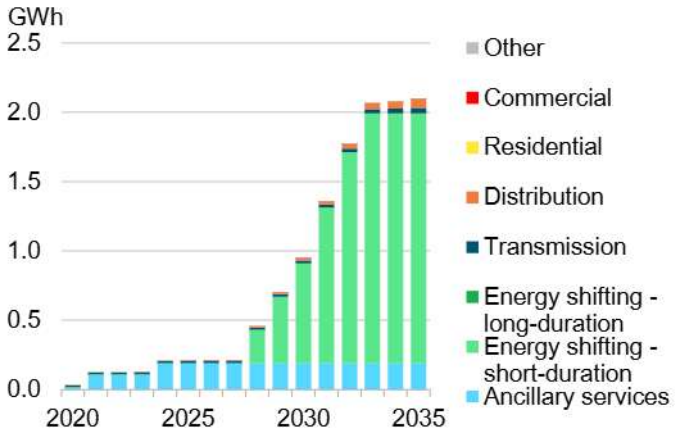
Cumulative energy storage capacity reaches 0.3GW/0.9GWh by 2030, up 19% from our previous forecast (Figure 33). By the end of 2035, Alaska's energy storage market reaches 0.6GW/2.1GWh – four times the cumulative installations in 2024 and up 21% in gigawatt terms, as we have revised our forecast based on Chugach Electric Association's integrated resource plan and our economic modeling.

**Figure 32: Alaska's annual energy storage additions**




*Source: BloombergNEF*

**Figure 33: Alaska's cumulative energy storage capacity**




*Source: BloombergNEF*

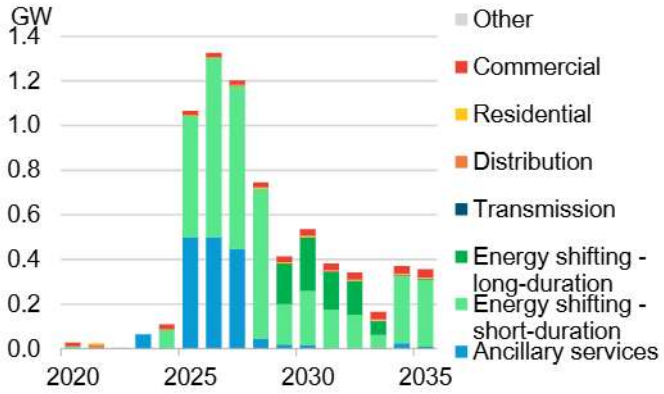
## 6.2. Canada

Canada is set to see a wave of large-scale energy storage projects coming online starting from this year by adding 1.1GW/4.3GWh of projects in 2025, eight times annual build in 2024 and 32%

higher than our previous estimates in gigawatt terms (Figure 34). Some projects awarded in Ontario Independent Electric System Operator's (IESO) energy storage procurement in the past are coming online earlier than our previous estimate. Following a record year, BNEF expects 1.3GW/5.2GWh to be installed in 2026.

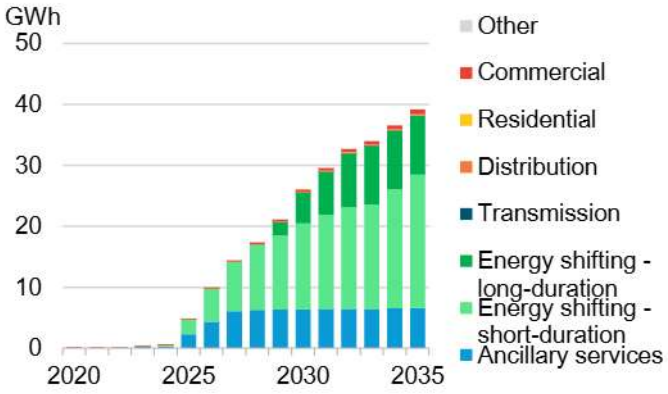
Cumulative energy storage capacity reaches 5.1GW/26.1GWh by 2030, up 23% from our previous forecast (Figure 35). The IESO's Long-Term 2 (LT2) procurement targets 1.6GW of energy storage. The first tranche, launched in June, seeks 0.6GW of projects that can come online by May 1, 2030. IESO has doubled the system duration requirement to at least eight hours, up from four in the previous procurement, which should drive long-duration energy storage project installations in coming years. By the end of 2035, Canada's energy storage market reaches 7.2GW/39.1GWh – 23 times the cumulative installations in 2024 and up 19% in gigawatt terms, due to our revised pre-2029 forecast (Figure 35).

**Figure 34: Canada's annual energy storage additions**




*Source: BloombergNEF*

**Figure 35: Canada's cumulative energy storage capacity**




*Source: BloombergNEF*

## 6.3. Latin America

Battery energy storage deployment is taking off in Latin America. Chile is set to double its energy storage additions this year after a record of more than 0.5GW/2.3GWh of storage capacity last year. Argentina awarded 667MW in their first-ever energy storage auction in September 2025, with capacity expected to come online by 2027. Brazil's long-awaited first standalone battery auction is expected by late 2025 or early 2026. Mexico also has ambitious plans for batteries, with the state utility company announcing at least 2.2GW of energy storage on their 5-year expansion plan.

Energy storage additions in the region hit 802MW/3,071MWh in 2024. This was more than double the 2023 additions in gigawatt terms. This year, capacity additions are expected to rise significantly both in megawatts and megawatt-hours to 1,436MW/5,698MWh. Cumulative energy storage capacity reaches 17GW/64GWh by 2030 and 33GW/122GWh by 2035, roughly 24 times larger than the gigawatt-hour installed capacity at the end of 2024. Growth is primarily in the utility-scale segment, as renewable penetration across Latin America grows strongly.

**Figure 36: Latin America's annual energy storage additions**

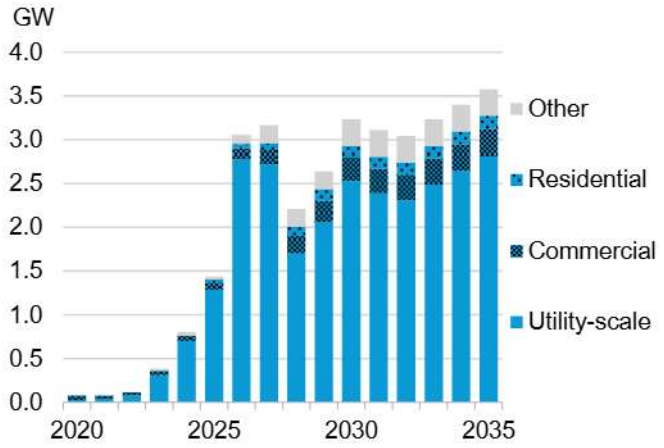



**Figure 37: Latin America's cumulative energy storage capacity**

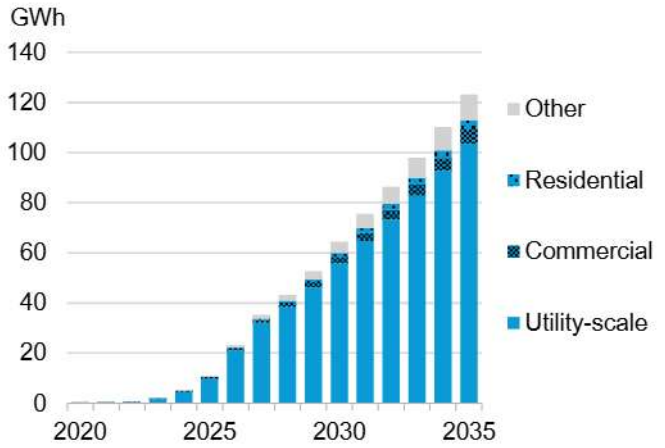



**Figure 38: Latin America's annual energy storage additions by market**

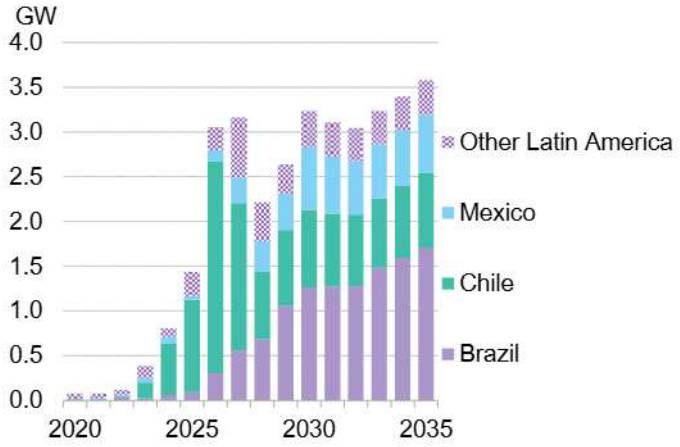
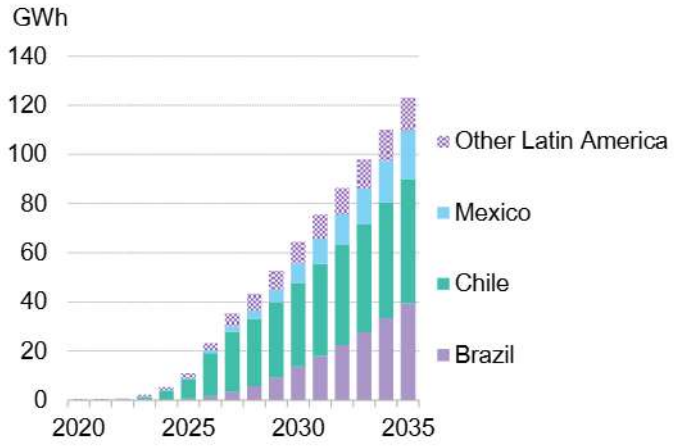



**Figure 39: Latin America's cumulative energy storage capacity by market**




*Source: BloombergNEF*

## Brazil

Latin America's largest market is falling behind its neighbors in energy storage. Deployment is still at an early stage, hindered by incomplete legislation and delayed plans for a dedicated auction. Still, this is expected to change in the coming years as the first signs of intermittent renewable constraints emerge, highlighting the need for energy storage.

BNEF expects around 90MW/248MWh in new build additions by 2025, tripling to 304MW/1,055MWh in 2026. Cumulative energy storage capacity reaches 4.1GW/13.6GWh in 2030 and 11.4GW/39.4GWh in 2035, from less than a gigawatt at the end of 2024. Our cumulative forecasts for 2030 and 2035 are 20% and 16% higher than our previous estimates.

BNEF expects energy storage projects for energy shifting to drive Brazil's deployment growth this decade. The country had planned a capacity auction dedicated to battery storage for 2025, but delays in the regulatory process now suggest it will likely take place in 2026. Projects must have at least 30MW of capacity with 4-hour duration and be operational by July 2029, according to

preliminary rules. The auction will award a 10-year contract. Total capacity to be awarded has not been disclosed.

**Figure 40: Brazil's new build power capacity, by application**

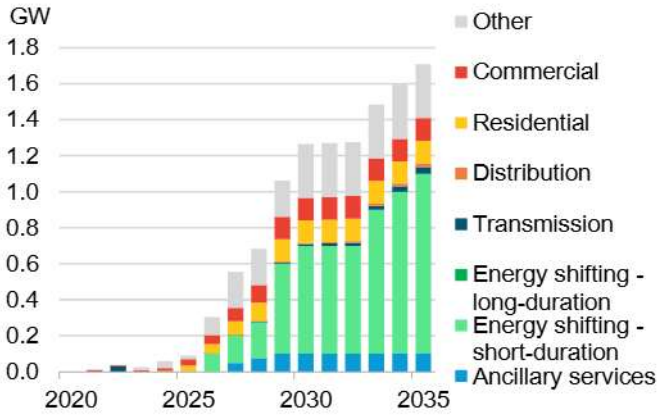
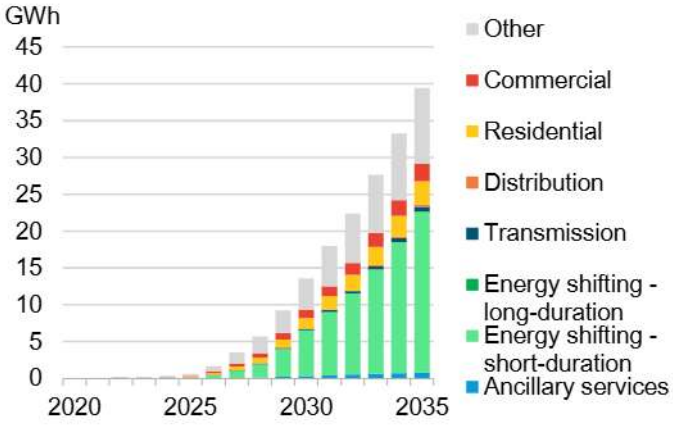



**Figure 41: Brazil's cumulative energy capacity, by application**

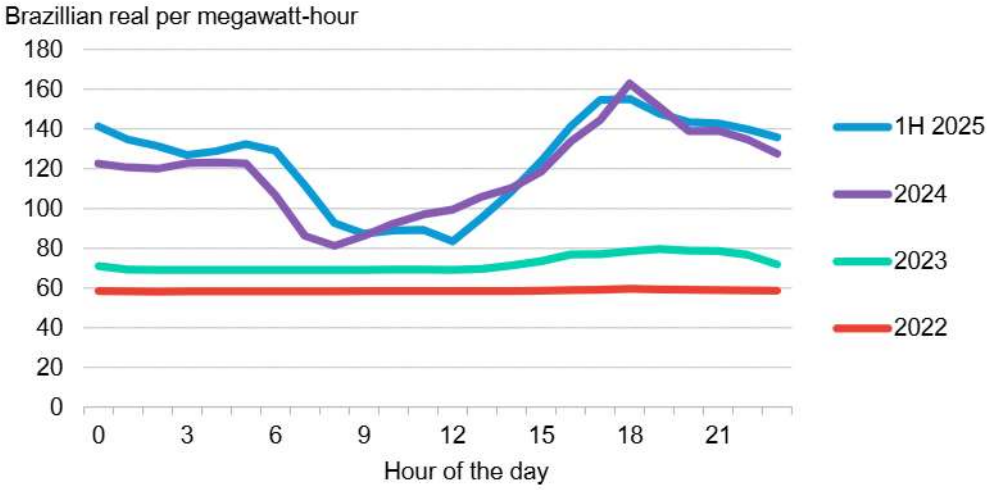



*Source: BloombergNEF*

Energy storage systems co-located with wind and solar will also drive installations for energy shifting to reduce losses from forced generation cuts. Curtailment of renewable generation has increased sharply in Brazil, rising to 14% for wind and 21% for solar in 2025's first half from near zero in 2022. For more, see *Latin America Clean Energy Market Outlook 2025* (web | terminal).

To make storage projects more profitable, Brazil needs a clear price signal for the technology as the growing intra-day variability of spot power price creates opportunities for energy arbitrage. Historically, electricity prices in Brazil were largely driven by dispatchable hydro generation without much price volatility. This trend has, however, been changing and showing the "duck curve" more evidently since 2024 (Figure 42). Projects awarded in the upcoming auction could also capture additional revenue through energy arbitrage.

**Figure 42: Average hourly wholesale power price in Brazil's Northeast market**




*Source: Source: Câmara de Comercialização de Energia Elétrica, BloombergNEF.*

In addition, energy storage installations in isolated areas not connected to the national grid, included in the 'Other' category, could become the second-largest growth driver. In these regions, customers typically pay for the high cost of diesel generation. Falling energy storage costs should be able to help communities accelerate the adoption of battery-based microgrids. BNEF expects this segment's cumulative capacity to reach 2.6GW/10.3GWh by 2035.

## Chile

Chile is set to add a record 1.0GW/4.4GWh of projects in 2025, 80% higher than 2024 additions in gigawatts. Just over 0.5GW/2.5GWh have come online year-to-date and as much is slated to come online by the end of the year. Given a solid pipeline of projects already under construction or with financing secured, mostly tied to new or existing solar assets, BNEF expects a new record of 2.4GW/9.8GWh of storage capacity to be added in 2026.

Chile has a target of renewables representing 80% of the country's electricity generation by 2030. To meet this, batteries can help stabilize the country's power system and mitigate severe transmission bottlenecks where renewables with zero marginal generation costs are curtailed. The Ministry of Energy's Supreme Decree 70/2023, published in June 2024, updated regulations on the country's power transfer scheme, which balances capacity obligations in the power system, and allowed energy storage systems to participate in the scheme by defining formulas that calculate compensations for storage systems, spurring a raft of investments in the sector.

Even after the installation peak in 2026, the tail end of projects in the pipeline supports large annual additions in 2027. Annual installations fall to 750-850MW between 2028 and 2035 once most major pre-existing solar and wind assets complete energy storage installations. By 2030, cumulative energy storage capacity reaches 8.3GW/34.2GWh, up 70% from our previous forecast in gigawatts.

The greater clarity on market rules coupled with a growing need to strengthen grid resilience are expected to continue driving demand for storage throughout the forecast period. By the end of 2035, BNEF sees Chile's energy storage market reaches 12.4GW/50.5GWh – roughly 15 times cumulative installations through 2024.

**Figure 43: Chile's annual new energy storage build**

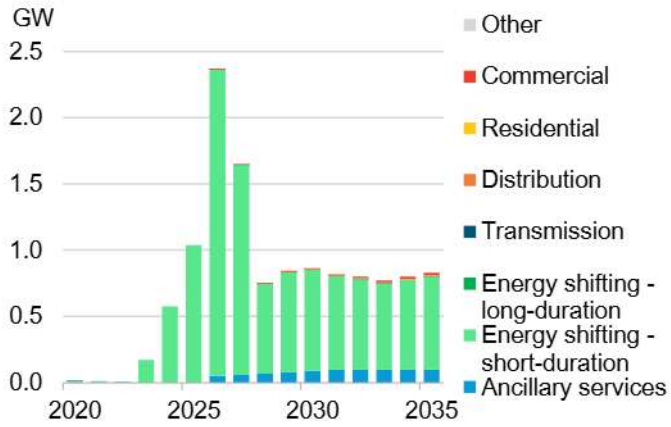
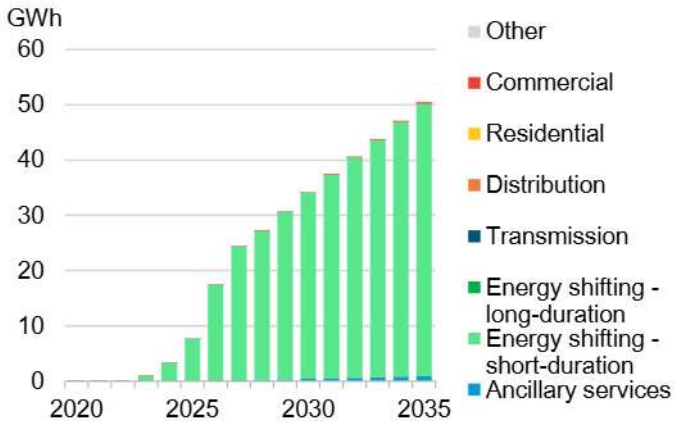



**Figure 44: Chile's cumulative energy storage capacity**




*Source: BloombergNEF*

## Mexico

Following several years of falling investments in clean power as a result of the anti-market and anti-renewables policies of former President Andrés Manuel López Obrador, Mexico is set to add just 41MW/140MWh of battery storage in 2025. President Claudia Sheinbaum took office in October 2024 and has since enacted a sweeping reform of the country's energy sector through a series of laws published in March. Still, most market players are so far adopting a wait-and-see approach. The government seeks to balance guaranteeing the prevalence of the state-owned utility Comisión Federal de Electricidad (CFE) in the power market with creating a friendlier environment for private investors. Detailed regulations should be published by the end of the year.

Statements made in March 2025 by Undersecretary for Planning and Energy Transition Jorge Islas indicated that new wind and solar projects in Mexico will be required to include batteries accounting for 30% of solar and wind capacity, a ratio that features in CFE's 2025-2030 Expansion Plan. This plan targets 2.2GW of battery storage to be co-located to CFE's solar and wind projects and implied another 1.9GW of storage capacity (to be co-located with 6.4GW of solar and wind) by the private sector.

With the launch of CFE's plan and the expectation of increased clarity in the upcoming rules, battery storage installations should grow in subsequent years and peak in 2030 when many of the projects in the plan are slated to be commissioned. BNEF expects cumulative installations to reach 2.1GW/7.8GWh in 2030, up 35% from our previous forecast in gigawatts, and 5.2GW/19.4GWh in 2035, 11% higher than our previous forecast in gigawatts.

**Figure 45: Mexico's annual energy storage additions by application**

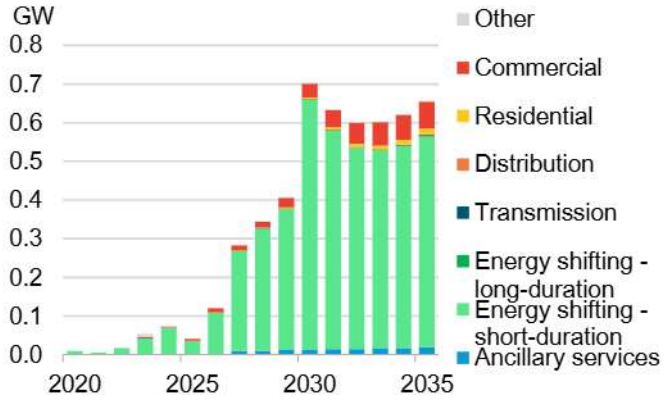
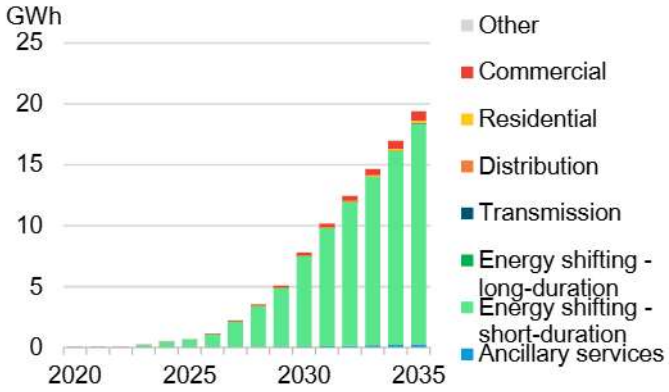



**Figure 46: Mexico's cumulative energy storage capacity by application**




*Source: BloombergNEF*

## Other Latin America

The rest of Latin America is expected to add roughly 269MW/948MWh of battery storage in 2025, with the Salinas and Jobos projects in the US territory of Puerto Rico and the Mariana project in Argentina contributing the bulk of that volume. This is over three times as much as was added in 2024 in gigawatt-hour terms.

Additions are expected to increase over the next few years, most notably thanks to the AlmaGBA auction, Argentina's first large-scale auction for battery capacity, focused on the Greater Buenos Aires area. Although initially planned to cover 500MW, the auction awarded 667MW in total in late August, with contracts signed in early September. The contracted projects are scheduled to come

online over the next 12 to 18 months, leading to installations in 2026 and 2027. In addition to the contracts of 667MW, market administrator CAMMESA mulls awarding an additional 222MW to another five bidders though it has not released a timeline for that process.

BNEF expects cumulative storage installations in the rest of Latin America to hit 2.8GW/8.8GWh by 2030, 51% higher than our previous forecast in gigawatts. Beyond 2030, the expansion of both small- and utility-scale renewable power across the region is expected to drive demand for storage systems. BNEF forecasts the cumulative capacity to reach 4.7GW/13.7GWh by 2035, up 20% from our previous estimate in gigawatts.

**Figure 47: Other Latin America's new build power capacity, by application**

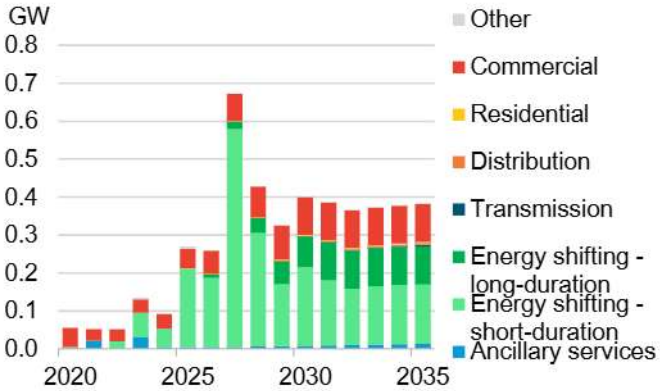
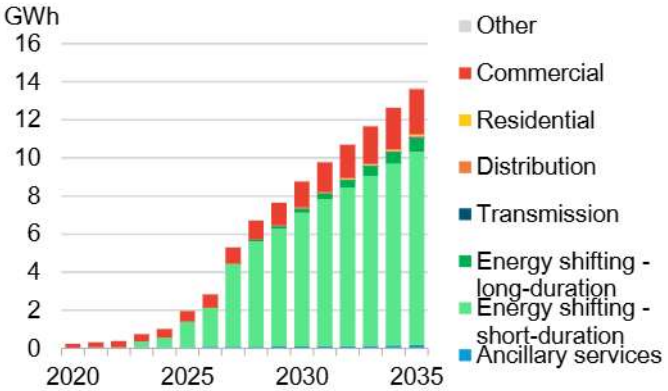



**Figure 48: Other Latin America's cumulative energy capacity, by application**




*Source: BloombergNEF. Note: Other Latin America includes Argentina, Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Peru and Uruguay*

# Section 7. Europe, Middle East, and Africa

The Europe, Middle East and Africa (EMEA) region is set to add 21.5GW/47.9GWh in 2025, up 44% in gigawatts year-on-year. Saudi Arabia, Africa, and smaller European countries drive growth. In Saudi Arabia, annual installations doubled in 2025 to 2.1GW/7.8GWh, driven by tenders hosted by state utility Saudi Electricity Company. South Africa kept high installations, while other Sub-Saharan African countries in aggregate jumped sevenfold, indicated by growing battery imports in the region.

Historically, small-scale storage dominated installations in the EMEA region, but utility-scale projects will account for over 50% of additions in 2025 for the first time since 2019. The share of utility-scale projects keeps rising over the next 10 years as more countries, notably in Europe, install large-scale projects through auction programs and emerging tolling agreements. Starting from 2030, Italy's annual capacity additions exceed 6GW, driven by the country's new MACSE auction program, which inaugurated in September. The region's cumulative installation reaches 252GW/641GWh by 2030 and 516GW/1,564GWh by 2035.

**Figure 49: EMEA's annual energy storage additions by region or country**

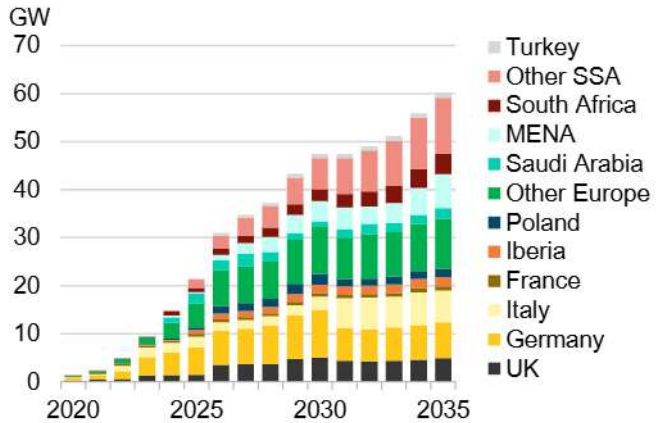



**Figure 50: EMEA's cumulative energy storage capacity by region or country**

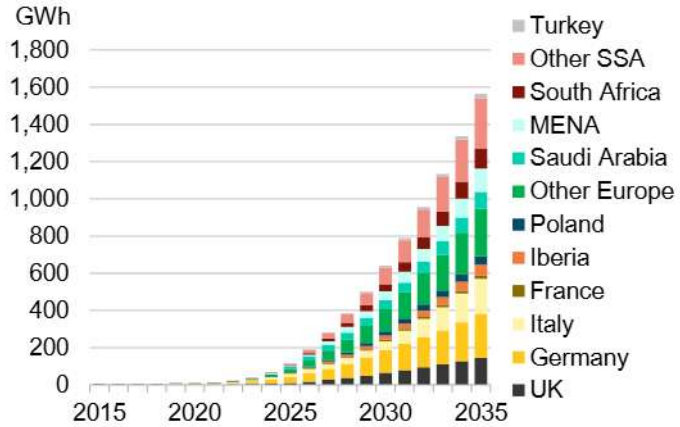


**Figure 51: EMEA's annual energy storage additions by application**

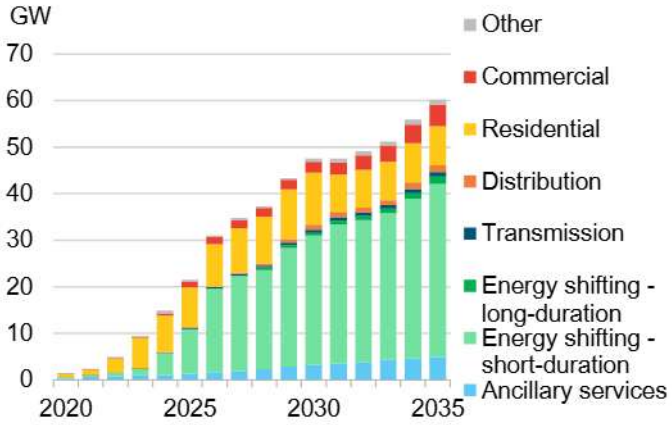
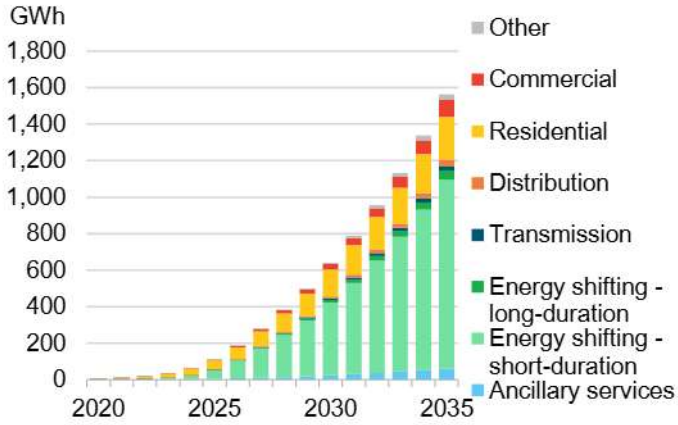



**Figure 52: EMEA's cumulative energy storage capacity by application**




*Source: BloombergNEF. Note: MENA is Middle East and North Africa. SSA is Sub-Saharan Africa.*

## 7.1. European policy updates

In Europe, governments continue to move from providing direct grants or capex subsidies toward increasingly using mechanisms like two-way contracts for difference. This allows governments to ensure that they only help developers manage their downside risk and prevents funds from going toward projects that would be otherwise profitable (Table 7).

**Table 7: Energy storage policies, targets and support schemes in Europe since 2024**

| Market | Targeted support schemes for energy storage |
|---|---|
| Austria | • €75 million approved in September 2024 for systems over 1MWh<br>• €35 million approved in April 2024 for systems between 4kWh and 50kWh<br>• €17.9 million approved in June 2024 for systems between 51kWh and 1MWh |
| Belgium | • No EU-approved targeted scheme, but batteries can win long-term contracts in the capacity market |
| Bulgaria | • €339 million approved in March 2024, targeting 1.4GW of renewables plus 350MW of storage – contracted 3.1GW of renewables plus 1.2GW of storage in November 2024 instead<br>• €589 million approved in June 2024, targeting 3GWh – contracted nearly 10GWh in April 2025 instead |
| Croatia | • €500 million approved in April 2024 |
| Cyprus | • €35 million approved in February 2025, targeting 150MW/350MWh of co-located energy storage |
| Czech Republic | • €279 million approved in March 2025, targeting 1.5GWh of energy storage – to be contracted by December 2025<br>• LEX OZE III amendment approved in March 2025, now allows standalone BESS to be directly connected to the grid |
| Germany | • Innovation auctions are held twice a year – awarded 587MW of PV plus storage in October 2024 round, targeting 486MW in May 2025 round, contracted 488MW in July 2025 instead |
| Greece | • €341 million approved in September 2022, targeting 1GW of energy storage by 2026 – contracted 900MW instead: first round contracted 411MW in 2023, second round 300MW in 2024 and final round 189MW in March 2025<br>• €1 billion approved in April 2024, directly awarded to two renewable plus storage projects by 2025 |
| Hungary | • €1.1 billion approved in June 2023, targeting 800MW/1,600MWh – contracted 440MW in April 2024 |

| Market | Targeted support schemes for energy storage |
|---|---|
| Ireland | • No EU-approved targeted scheme, but batteries can win long-term contracts in the capacity market |
| Italy | • €17.7 billion approved in December 2023, targeting 9GW/71GWh by 2033 – first round scheduled for September 2025, targeting 10GWh by 2028, two more rounds of 20GWh to come to a revised total of 50GWh by 2033 |
| Lithuania | • €180 million approved in October 2024, targeting 1.2GWh of energy storage – first round accepting applications until June 2025, targeting 800MWh by 2028, awarded 1.7GW/4GWh in August 2025 instead |
| Netherlands | • €417 million approved in October 2023, targeting renewable plus storage projects – first round allocated €100 |
| Poland | • €1.2 billion approved in October 2024, targeting at least 5.4GWh of energy storage – first round opened in April 2025, taking applications until May 2025 |
| Portugal | • €100 million approved in August 2024, targeting 500MW by 2025 |
| Romania | • €103 million approved in March 2023, targeting 240MW/480MWh – contracted to projects totaling 130MWh in Oct-2024<br>• €150 million approved in November 2024, targeting co-located energy storage |
| UK | • No targeted scheme, but batteries can win long-term contracts in the capacity market |

*Source: European Commission, BloombergNEF. Note: Green shading indicates changes since 1H 2025.*

## 7.2. Germany

Germany is set to add 5.7GW/9.8GWh of energy storage capacity in 2025, up 22% from 2024, and in line with our previous estimates, led by consistent growth in the residential sector (Figure 53). Following from a record year, BNEF expects 7.2GW/13.3GWh to be installed in 2026.

Cumulative energy storage capacity reaches 60GW/122GWh in 2030, 1% higher than our previous forecast (Figure 54). Germany is driving co-located utility-scale project growth through innovation auctions and showing a steady increase in the residential sector. By the end of 2035, Germany's energy storage market reaches 95GW/235GWh – seven times the cumulative installations in 2024. The 2035 forecast is up 1%, supported by slightly stronger residential growth. Residential and utility-scale sectors will continue to drive the installation of projects until 2035.

**Figure 53: Germany's annual energy storage additions**

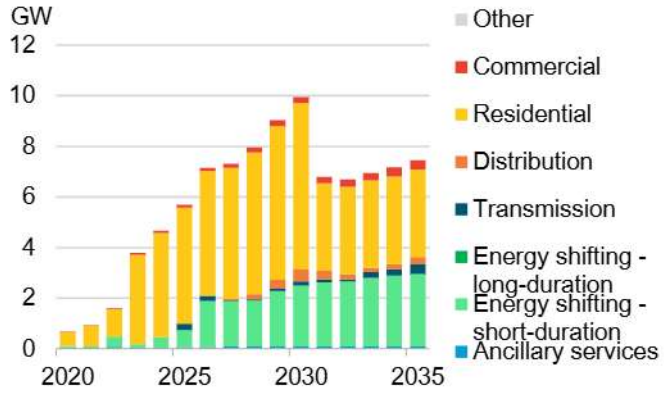
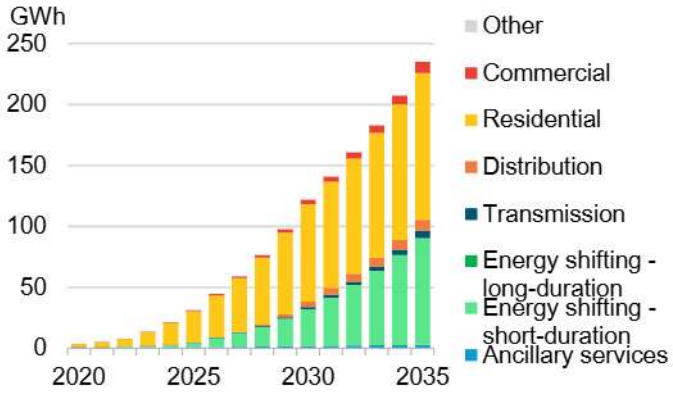



**Figure 54: Germany's cumulative energy storage capacity**




*Source: BloombergNEF*

### Residential

The residential segment remains Europe's largest, providing a stable foundation despite slowing growth. The attachment rate of batteries to solar remains high, which we estimate increased from 81% to 84% this year, translating to 4.6GW/7.8GWh of residential batteries installed. We expect uptake to accelerate in the years leading to 2030, when BNEF's residential solar forecast totals 43.8GW, informed by Germany's ambitious target for 215GW of solar PV in all segments by 2030. Residential battery installations drop after 2030, in line with expectations for residential solar in Germany to slow after targets are met.

### Utility-scale

Germany's market is maturing, with innovation auctions continuing to drive much of utility-scale project build, though new operating and revenue models like tolling agreements are emerging. Tolling agreements and floor-plus-revenue share deals already cover more than 3GWh of pipeline capacity. Examples include Sweden-based asset owner Vattenfall and Germany-based RWE signing tolling agreements for their projects with Swiss-based operator Terralayr; or UK-based project owner Gresham House signing floor-plus-share agreements for its projects with Bermuda-based investment manager Nephila Capital (Markel Group) and Germany-based utility company and asset operator Statkraft

## 7.3. UK

The UK is set to add 1.5GW/2.8GWh of projects in 2025, up 6% from 2024, and 5% lower than our previous forecast, due to unmet expectations in transmission-related battery build (Figure 55). Following a record year, BNEF expects the market to more than double next year, with 3.5GW/7.5GWh to be installed in 2026.

Cumulative energy storage capacity reaches 27.7GW/66.2GWh in 2030, 30% higher than our previous forecast in gigawatt-terms and 41% higher in gigawatt-hour terms due to strong results in the T-4 capacity market auctions and growth of the long-duration energy storage scheme (Figure 56). By the end of 2035, the UK's energy storage market reaches 50.4GW/147.1GWh – 10 times cumulative installations in 2024. The 2035 forecast is up 16% in gigawatt terms and 20% in gigawatt-hours, due to slightly stronger long-duration pipeline expectations. Short-duration utility-scale projects will dominate installations until 2035, with long-duration projects gradually adding to growth from 2026.

**Figure 55: UK's annual energy storage additions**

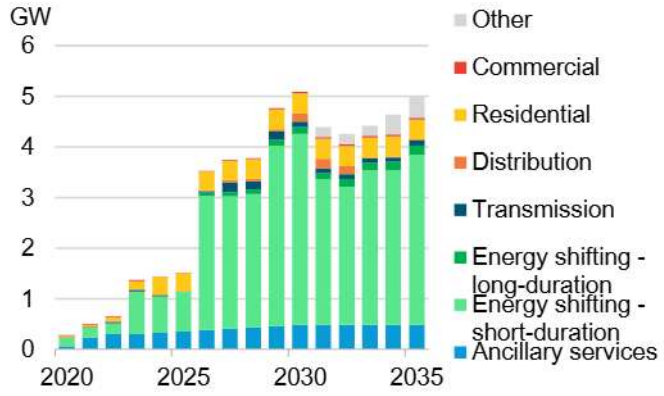
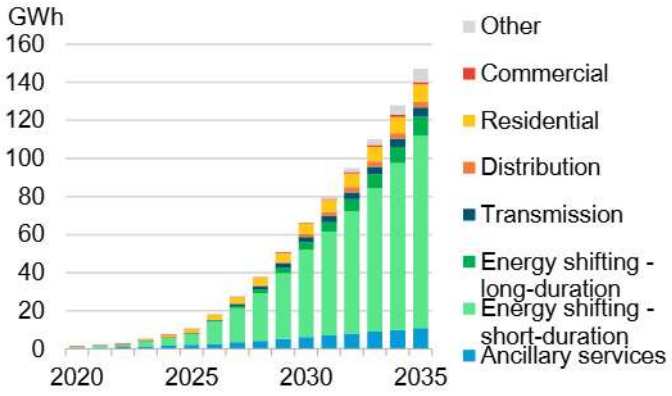



**Figure 56: UK's cumulative energy storage capacity**




*Source: BloombergNEF*

### Long-duration energy storage

The UK is bringing more contractual certainty to storage, balancing merchant BESS and a subsidized long-duration storage (LDES) scheme. The LDES scheme gives eligible projects with 8h+ duration bespoke cap-and-floor revenue contracts, to provide investors with revenue certainty and facilitate investments in long-duration storage. The first LDES application window, which opened between April and June, drew 171 bids, 77 of which passed eligibility checks representing a total of 28.7GW of capacity, including 3.6GWh of vanadium flow batteries and a 300MWh Liquid Air Energy System, against a 20GW-by-2035 LDES target. Tolling and floor agreements are also proliferating with nearly 3GWh of deals, including UK-based asset owner Gresham House signing floor and tolling agreements for its projects respectively with France-based utility and asset operator EDF and UK-based utility and asset operator Octopus Energy.

## 7.4. Italy

Italy is set to add 2.2GW/5.7GWh of projects in 2025, up 8% from 2024, and in line with our previous estimates led by ancillary services projects continuing to expand and residential demand remaining steady (Figure 57). Following a record year, BNEF expects the market to slow next year, with 1.8GW/3.9GWh to be installed in 2026 as delays in tenders have pushed our forecasted growth to the longer term.

Cumulative energy storage capacity reaches 18.2GW/46.2GWh in 2030, 22% lower than our previous forecast. Italy is running a few rounds of tenders, some of which we now expect will lead to energy shifting growth post-2030 (Figure 58). By the end of 2035, Italy's energy storage market reaches 50.8GW/188.6GWh – nine times the cumulative installations in 2024. BNEF's 2035 forecast is up 19% in gigawatt terms, due to the confirmed 50GWh targeted capacity in the MACSE auctions (see below). Utility-scale will drive the installations of projects until 2035, with a governmental intent to develop longer-duration systems.

**Figure 57: Italy's annual energy storage additions**

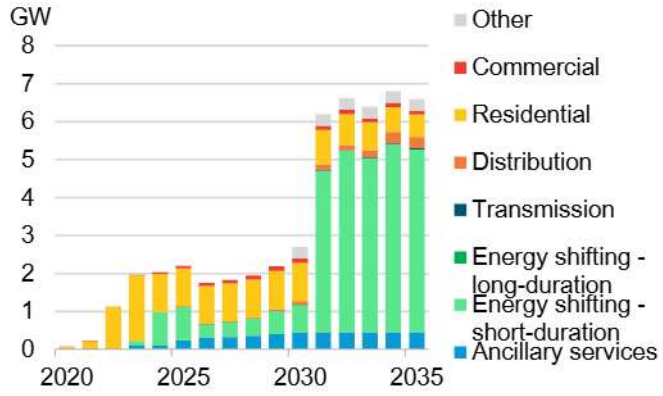
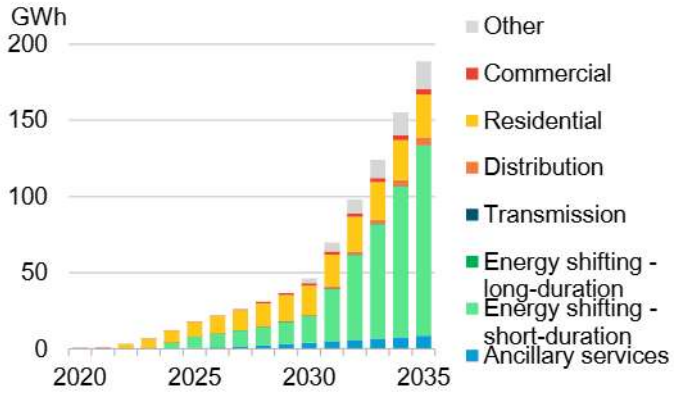



**Figure 58: Italy's cumulative energy storage capacity**




*Source: BloombergNEF*

### MACSE auctions

BNEF expects Italy's future additions will be heavily dependent on the MACSE auctions. Meccanismo di approvvigionamento di capacitá di stoccaggio (MACSE) is Italy's scheme to add 50 gigawatt-hours (GWh) of new standalone storage capacity by 2030, awarded through several competitive auction rounds. With an approved budget of €17.7 billion ($19.1 billion) through 2033, Terna – the Italian transmission system operator (TSO) – will pay developers a fixed yearly amount for the contracted energy storage projects. The first round of the auction, targeting 10GWh capacity, closed on September 30, and awarded full capacity at a record low price, with projects expected to come online by 2028.

Given delays to MACSE timelines since the first auction was first expected in 1H 2025, we've pushed out energy-shifting capacity buildout by two years. With winning bids of only €12,000-19,000/MWh/year ($14,024-22,205/MWh/year), less than half the €37,000/MWh/year ($43,242/MWh/year) ceiling, and an average duration of 6.7 hours, the inaugural tender showcased a record-low clearing price as developers bid aggressively to secure 15-year contracts. Developers likely targeted minimal returns and relied on exceptionally low-cost equipment, with intense competition — particularly from Chinese suppliers facing high barriers to expand in the US market — and scale effects from longer-duration systems pushing total installed costs to an estimated €100-130/kWh ($117-152/kWh).

Further reading:

- *Italy's Energy Storage Auction Set For Fierce Bidding* (web | terminal)
- *Italy's Rock-Bottom Bids Show How Fast Battery Costs Are Falling* (web | terminal)

## 7.5. Iberia

Iberia is set to add 820MW/1,580MWh of projects in 2025, six times the capacity added in 2024, and 3% lower than our previous estimates in gigawatt terms (Figure 59). Additions are led by large utility-scale projects. Following from a record year, BNEF expects 1,240MW/2,610MWh to be installed in 2026.

Cumulative energy storage capacity reaches 8.7GW/21.9GWh by 2030, 3% lower than our previous forecast (Figure 60). Portugal is showcasing slower residential growth than expected, though it still represents a quarter of the country's capacity by 2030. Meanwhile, Spain is accelerating utility-scale deployment to support solar integration, in line with our previous estimates. By the end of 2035, Iberia's energy storage market reaches 17.8GW/58.2GWh – 25-fold the cumulative installations in 2024. The 2035 forecast is down 2% in gigawatt terms, due to slightly weaker long-term expectations for residential capacity. BNEF expects that curtailment volumes and high solar penetration rates will remain strong economic drivers of project installations through 2030, with utility-scale projects set to dominate until 2035.

**Figure 59: Iberia's annual energy storage additions**

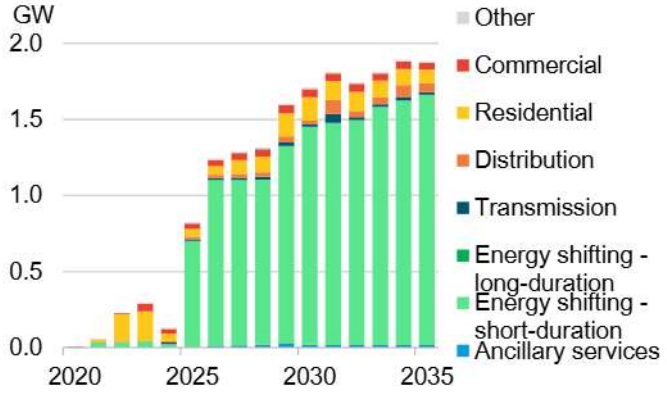
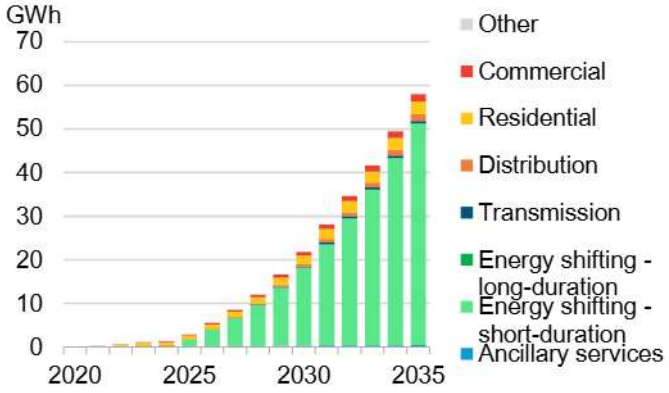



**Figure 60: Iberia's cumulative energy storage capacity**




*Source: BloombergNEF*

## Portugal

Portugal's residential storage market is cooling together with residential solar installations, as high solar penetration and longer payback periods are making solar investments less attractive. Near-term growth is instead driven by legacy projects contracted under the last large PV-plus-storage auction, but with no fresh policy signals, the longer-term curve declines. While there are no regulatory barriers, there is currently no clear structural support to energy storage build in the longer term.

## Spain

Spain is also facing some regulatory challenges as the Royal Decree Law 7/2025 (or "anti-blackout" degree) was rejected by the country's Congress in July. The law aimed to reinforce the country's electricity system, notably by granting energy storage public utility status and facilitating the permitting process for hybrid storage projects. Regardless, utility-scale projects in Spain will continue to be developed by the country's financial support scheme. The latest energy application window closed on July 15 and is expected to have been largely oversubscribed. The scheme allocates a €700-million-budget to offer grants from €250/kWh for standalone BESS to €1.5k/kW for pumped hydro projects, which could support the development of up to 9GWh of storage capacity. Once awarded, the projects will have to be operational by the end of 2029.

## 7.6. France

France is set to add 591MW/821MWh of projects in 2025, up 29% from 2024, and 25% higher than our previous estimates, because utility-scale projects are growing faster than expected (Figure 61). Following a record year, BNEF expects 570MW/871MWh to be installed in 2026.

Cumulative energy storage capacity reaches 5.3GW/8.4GWh in 2030, 1.3% higher than our previous forecast (Figure 62). France is expanding its storage capacity steadily, led by utility-scale projects supported by grid service needs, but with slightly reduced expectations for residential additions. By the end of 2035, France's energy storage market reaches 9.1GW/18GWh – six times the cumulative installations in 2024. The 2035 forecast is down 8% due to weaker expectations for commercial and residential additions, while utility-scale growth remains robust. Utility-scale and growing residential projects will drive the installations of projects until 2035.

France's utility-scale pipeline is growing on paper, with grid connection requests more than doubling since 2022 and 7GW of energy storage projects pending approval for transmission grid connection. Project economics are not as favorable as in other European markets, so the large pipeline hasn't materialized to next stages and BNEF's outlook remains conservative. On the residential side, expectations have softened after a 68% tariff cut on selling excess solar power back to the grid weakened the case for PV and slowed battery uptake. BNEF's residential PV forecasts fell 48%, to 9.2GW in 2035 from 17.6GW.

**Figure 61: France's annual energy storage additions**

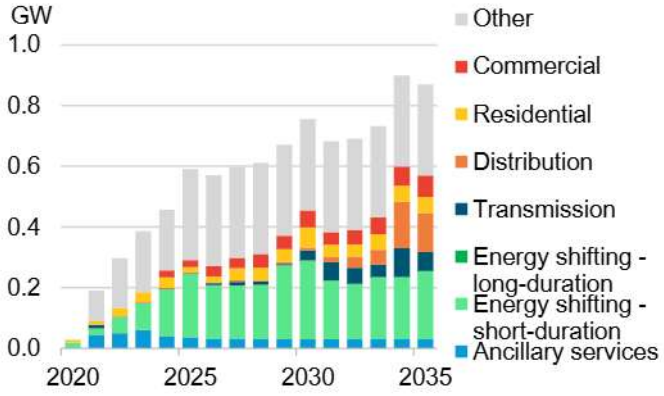
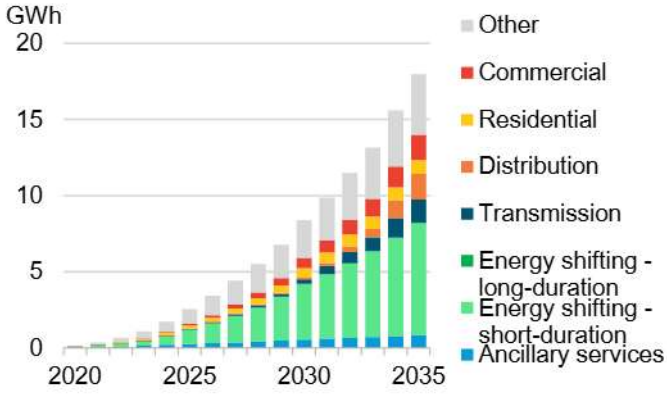



**Figure 62: France's cumulative energy storage capacity**




*Source: BloombergNEF*

## 7.7. Poland

Poland is set to add 520MW/972MWh of projects in 2025, more than doubling capacity additions in 2024, and 3% lower than our previous estimates (Figure 63). Utility-scale projects expand while residential is slightly reduced from past expectations. Following from a record year, BNEF expects additions to more than triple, with 1.6GW/3.2GWh to be installed in 2026.

Cumulative energy storage capacity reaches 10.2GW/23.4GWh by 2030, 21% higher than our previous forecast (Figure 64). Poland is scaling utility-scale capacity rapidly with its growing prevalence of storage in capacity market auctions by 2030. By the end of 2035, Poland's energy storage market reaches 18.3GW/44.3GWh – 53 times cumulative installations in 2024. The 2035 forecast is up 12.2% as more utility-scale projects are carried into the long-term outlook. Capacity

market auctions and aggressive government subsidies will continue to drive the installation of projects until 2035.

Poland is emerging as Eastern Europe's energy storage leader, with the continent's second-largest capacity market for batteries after the UK. Around 14GWh of energy storage capacity is expected online by 2030, including 2.6GW awarded in the 2024 auction. The pipeline is also deepening with the launch of a €1.2-billion state aid scheme targeting 5.4GWh by 2028; its first round, worth €980 million, ran from April to May 2025 and is now awaiting results. In parallel, state utility PGE is driving utility-scale buildout with the 900MWh Żarnowiec project (which broke ground in September) and 400MW/800MWh Gryfino plant, adding 1.7GWh by 2029, with the company's total capacity planned to reach 17GWh by 2035.

**Figure 63: Poland's annual energy storage additions**

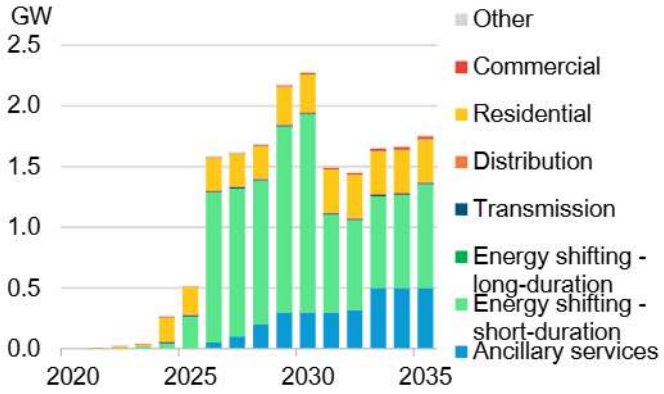
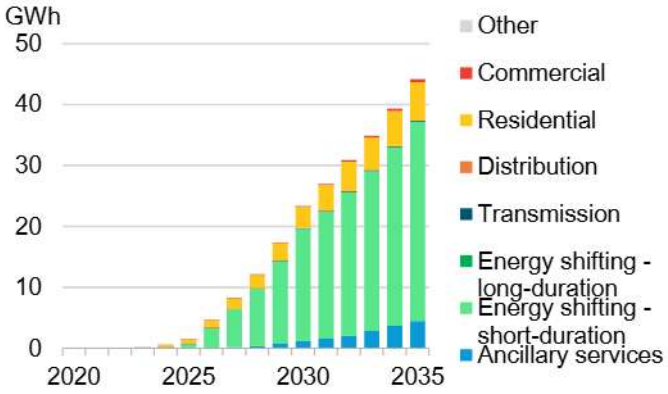



**Figure 64: Poland's cumulative energy storage capacity**




*Source: BloombergNEF*

## 7.8. Rest of Europe

The rest of Europe is set to add 5.0GW/8.7GWh of projects in 2025, up 51% from 2024, and 1.6% higher than our previous estimates in gigawatt terms, because utility-scale short-duration build accelerates across multiple markets to integrate growing solar and wind. Following from a record year, BNEF expects 7.5GW/14.6GWh to be installed in 2026.

Cumulative energy storage capacity reaches 53.1GW/117.4GWh by 2030, up 6% from our previous forecast. The rest of Europe is scaling utility-scale storage to support renewables and grid flexibility. By the end of 2035, energy storage markets across the rest of Europe reach 100.4GW/255.1GWh – 15 times cumulative installations in 2024. The 2035 forecast is unchanged in gigawatt terms, as slightly stronger utility-scale pipelines are offset by marginally lower residential assumptions. Energy shifting projects will drive most installations until 2035.

### North Europe

The North Europe region (Norway, Sweden, Finland, Denmark, Latvia, Estonia, Lithuania) is set to add 1.3GW/2.1GWh of projects in 2025, up 57% from 2024, and in line with our previous estimates (Figure 65). Utility-scale growth continues across Nordic markets. Following from a record year, BNEF expects 1.1GW/2.0GWh to be installed in 2026.

Cumulative energy storage capacity reaches 8.7GW/18.1GWh in 2030, 18% higher than our previous forecast (Figure 66). North Europe is accelerating utility-scale storage deployment through oversubscribed tenders, notably in Lithuania, where the government awarded six times its targeted capacity. By the end of 2035, North Europe's energy storage market reaches 16.6GW/40.1GWh – 13-fold the cumulative installations in 2024. The 2035 forecast is up 9%, supported by stronger long-term utility-scale pipelines from other similar tenders. The utility-scale sector will drive installations of projects until 2035. Outside Lithuania, there was no new major activity in the region announced since last outlook.

**Figure 65: North Europe's annual energy storage additions**

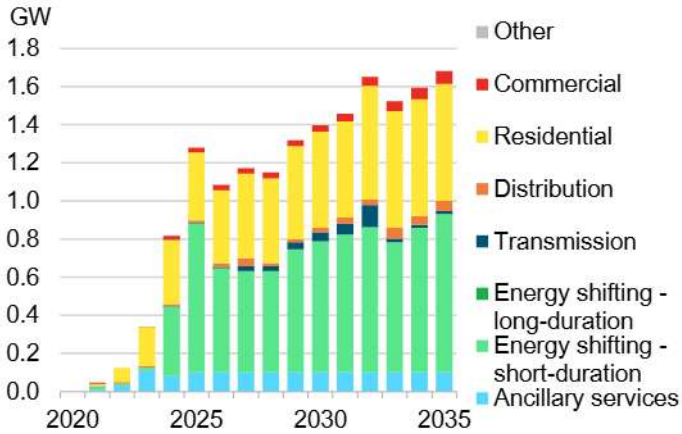
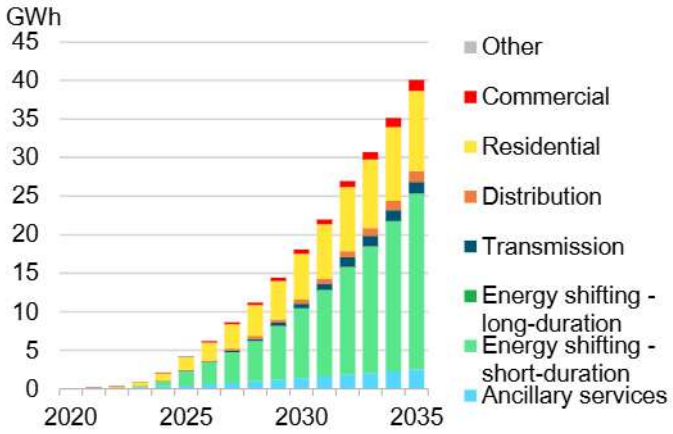



**Figure 66: North Europe's cumulative energy storage capacity**




*Source: BloombergNEF*

### Lithuania's boom

Lithuania's latest energy storage grant scheme in August drew applications totaling 1.7GW/4.0GWh and €197 million in requests – nearly twice the allocated budget. The program was first announced in February, just a day before the Baltics synchronized with the Continental Europe Synchronous Area, with an initial target of 800MWh. The scheme has since been topped up with €37 million in July and a further €45 million call due in October. The total pipeline now represents €840 million of investment, with about 15% covered by state subsidies and delivery targeted for 2028.

## South Europe

The South Europe region (Bulgaria, Croatia, Greece, Hungary, Romania, Cyprus, Malta) is set to add 1.1GW/2.1GWh of projects in 2025, nearly tripling capacity additions in 2024, and in line with our previous estimates, driven by a steady utility-scale pipeline (Figure 67). Following from a record year, BNEF expects additions to more than double, adding 2.8GW/5.7GWh in 2026.

Cumulative energy storage capacity reaches 16.2GW/40.7GWh by 2030, 7% higher than our previous forecast (Figure 68). South Europe is accelerating utility-scale storage buildout, outweighing reduced residential and commercial assumptions in the medium term. By the end of 2035, South Europe's energy storage market reaches 28.1GW/79.6GWh – 54 times the cumulative installations in 2024. The 2035 forecast is down 2%, due to slightly weaker long-term

residential and commercial expectations offsetting higher utility-scale forecasts. The utility-scale sector will drive the installation of projects until 2035.

Southeastern markets are scaling fast on the back of oversubscribed tenders. **Bulgaria** has already awarded 10GWh in its April 2025 RESTORE tender, commissioned 500MWh in Lovech the same month, and allocated a further 2.3GWh of co-located capacity in late 2024 – bringing its storage pipeline to nearly 13GWh.

**Romania** is also accelerating, with more than 1GWh of projects in the development pipeline, including from Poland-based utility R.Power and local developer Electric Spot expected by 2028, and capacity from the 1.5GWh tender in October 2024 that was more than three times oversubscribed. Given the above, the country's 5GW-by-2026 target looks stretched, but 6GWh by 2030 remains achievable. On the residential side, the country has launched a €150 million program for new behind-the-meter co-located storage, targeting around 600MWh by 2026, with awards still pending.

**Figure 67: South Europe's annual energy storage additions**

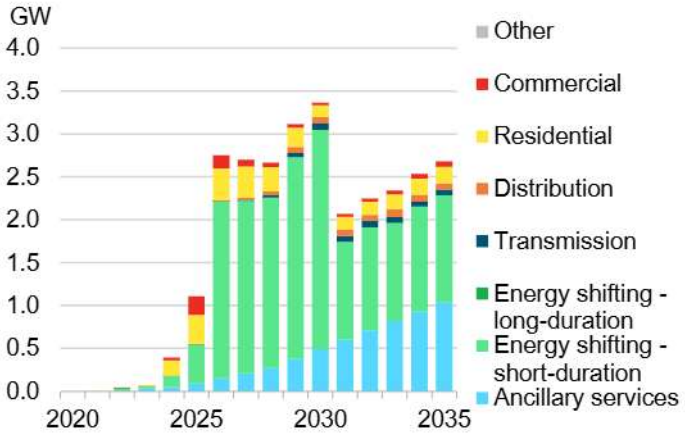
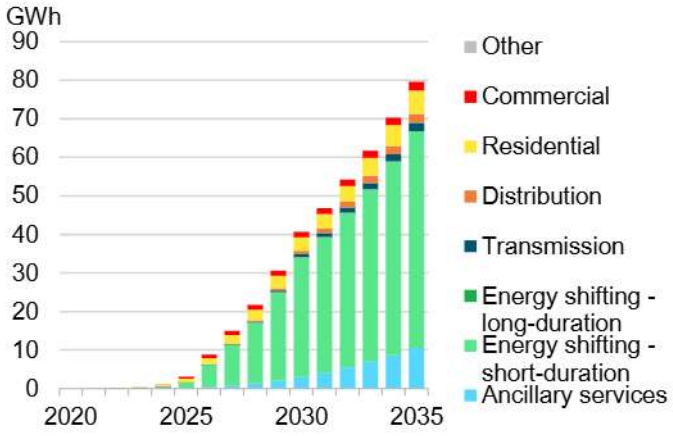



**Figure 68: South Europe's cumulative energy storage capacity**




*Source: BloombergNEF*

## West Europe

The West Europe region (Austria, Belgium, Ireland, Netherlands, Switzerland, Luxembourg) is set to add 1.5GW/2.6GWh of projects in 2025, up 8% from 2024, and 2% lower than our previous estimates, as residential and commercial growth is steady but slightly reduced from earlier forecasts (Figure 69). Following a record year, BNEF expects 2.4GW/4.7GWh to be installed in 2026.

Cumulative energy storage capacity reaches 19.4GW/41.5GWh in 2030, in line with our previous forecast (Figure 70). West Europe continues to expand through a mix of utility-scale and distributed storage projects. By the end of 2035, West Europe's energy storage market reaches 38.4GW/97.5GWh – 10 times cumulative installations in 2024. The 2035 forecast is broadly unchanged from the previous outlook, as utility-scale upgrades are offset by slightly weaker residential additions. Utility-scale and residential projects will drive the installations until 2035.

**Figure 69: West Europe's annual energy storage additions**

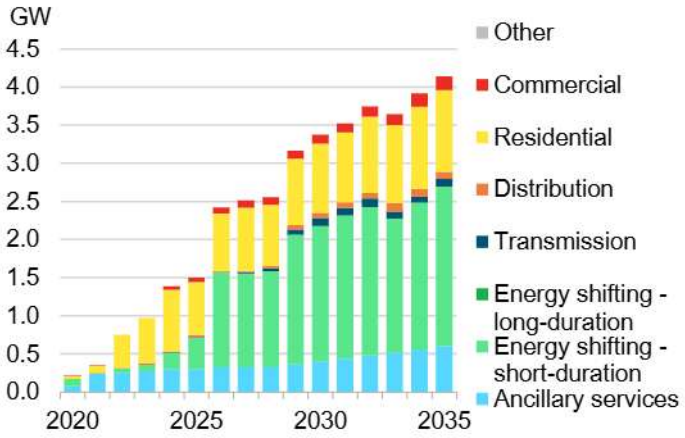
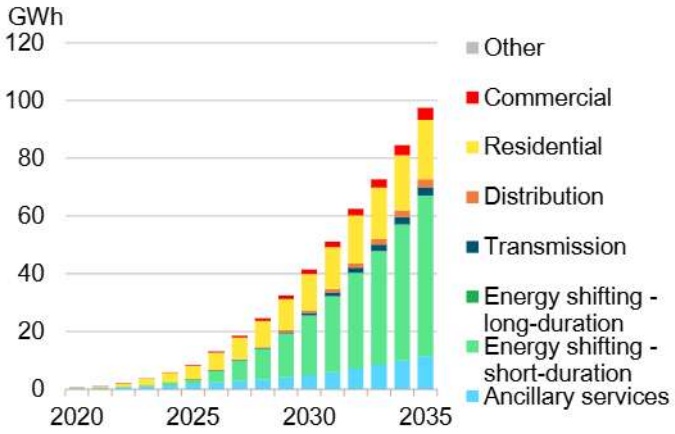



**Figure 70: West Europe's cumulative energy storage capacity**




*Source: BloombergNEF*

### Residential

On the residential side, **Austria** continues to dominate, adding 399MW in 2025 – nearly 60% of regional additions. Together with Switzerland and Belgium, the three markets delivered 624MW, or 90% of the region's total this year. Austria grows steadily from around 400MW of additions in 2024 to around 500MW by 2035. **Switzerland** experiences a sharp cut of residential PV in 2025 before resuming slow and steady growth as local utilities start to reflect lower power prices in their export tariffs. Meanwhile, **Belgium** shows incremental long-term growth, contributing 130-180MW of residential storage annually by 2030. We maintained our assumption around attachment rates for these markets, at 60% in Austria and 40% in Belgium and Switzerland. In the **Netherlands**, we kept attachment rates at 10% as solar export payments are on the decline and consumers are looking for ways to maximize their solar self-consumption.

### Utility-scale

On the utility-scale side, Belgium and the Netherlands lead with a strong pipeline totaling 9.8GWh of financed or permitted projects expected online by 2028. In the **Netherlands**, GIGA Storage's 300MW/1,200MWh Leopard project reached financial close in June and is due in 2027, while Lion Storage's 350MW/1,400MWh Mufasa project targets 2026. In **Belgium**, GIGA's Green Turtle and Blue Marlin projects add 4GWh of permitted capacity expected by 2028 but have yet to reach financial close, while Engie's 200MW/800MWh Vilvoorde plant is fully financed and scheduled to come online by year-end. Beyond lithium, **Switzerland** broke ground in June 2025 on an 800MW/1.6GWh flow battery – the largest of its kind in Europe – slated for commissioning in 2028. The flow battery is being developed by local asset developer FlexBase Group and will be integrated with a new AI data center and district heating system, at the interconnection point of German, Swiss and French transmission networks.

## East Europe

The East Europe region (Hungary, Czech Republic, Slovakia, Slovenia, Ukraine) is set to add 1.1GW/1.9GWh of projects in 2025, up 55% from 2024, and 12% higher than our previous estimates in gigawatt terms, as state tenders and new projects in the region are expanding the

utility-scale pipeline quickly (Figure 71). Following from a record year, BNEF expects 1.2GW/2.2GWh to be installed in 2026.

Cumulative energy storage capacity reaches 8.7GW/17.1GWh by 2030, 7% higher than our previous forecast (Figure 72). East Europe is seeing further additions to its commercial segment all the way to 2035, while residential and utility-scale projects are expected to come online earlier, through active tender schemes like in the Czech Republic. By the end of 2035, East Europe's energy storage market reaches 17.3GW/37.9GWh – 22 times cumulative installations in 2024. The 2035 forecast is down 2%, due to slightly weaker longer-term expectations in residential in Hungary. The utility-scale sector will drive installations until 2035.

**Figure 71: East Europe's annual energy storage additions**

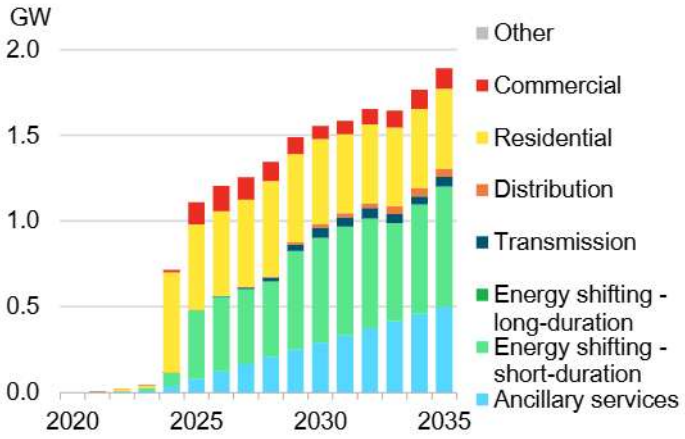
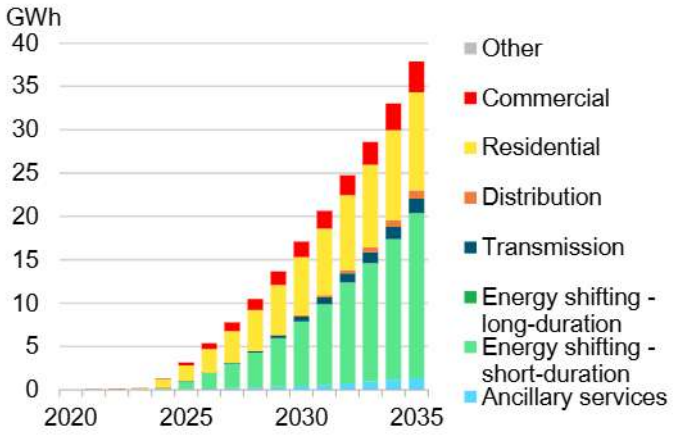



**Figure 72: East Europe cumulative energy storage capacity**




*Source: BloombergNEF*

## Residential and commercial

Residential markets front-load growth in the region, underpinned by higher PV additions through 2028 before declining growth to 2035. BNEF's **Czech Republic** residential PV forecast was cut sharply in the latest outlook – from 4.2GW to 3.5GW by 2030, and 6.3GW to 4.2GW by 2035 – while **Hungary** sees the opposite trend, rising from 100MW PV capacity to 361MW in 2024 and sustaining higher growth across the horizon. Overall, these led to less residential battery build as we maintained our 95% and 70% attachment rate for the Czech Republic and Hungary respectively. In the commercial segment, BNEF's latest forecast expects Czech PV volumes to come in much earlier, capping at 125MW yearly additions from 2032, while Hungary sees an increased forecast throughout, leading to 1.2GW battery build across the region in the period.

## Utility-scale

Utility-scale deployment is starting to take off. **Hungary** commissioned its largest battery to date in June 2025 – the 40MW/80MWh Dunamenti project – alongside new capacity in Szolnok and Soroksar, bringing 62.5MW/145.5MWh online this year. In Ukraine, local energy investment firm DTEK and US-based energy storage provider Fluence began rolling out a six-site 200MW/400MWh portfolio in July 2025, with completion due by October. Policy support is also strengthening in the **Czech Republic**, with the EU approving €279 million in March to contract 1.5GWh of energy storage by year-end, and the Lex OZE III amendment, taking effect in late 2025, which will allow stand-alone BESS grid connections – opening up ancillary services and wholesale arbitrage for the first time.

## 7.9. Middle East and North Africa

### Saudi Arabia

This is the first time we have analyzed Saudi Arabia separately from the rest of the Middle East and North Africa region to give the country more visibility, given the recent flurry of awarded projects and expected future growth. Saudi Arabia is set to add 2.1GW/7.8GWh of projects in 2025, double the capacity installed in 2024. Following a record year, BNEF expects 2GW/10GWh to be installed in 2026, outpacing annual build planned in the rest of the region.

Cumulative energy storage capacity reaches 12GW/48GWh by 2030 – on par with Saudi Arabia's storage deployment target calling for 48GWh by 2030. By the end of 2035, the Saudi energy storage market reaches 22GW/90GWh – nearly 20 times cumulative installations in 2024. The utility-scale segment, especially for energy shifting applications, will drive most installations until 2035 as the country targets 100-130GW of utility-scale solar and wind capacity by 2030.

**Figure 73: Saudi Arabia's annual energy storage additions**

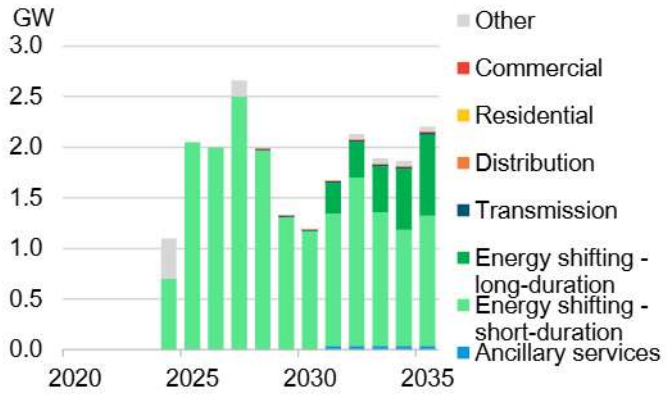
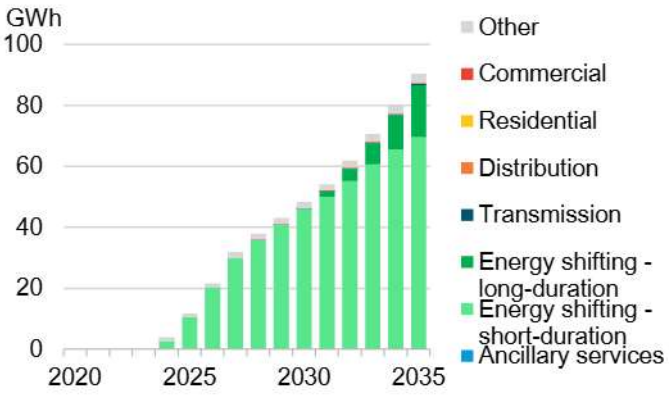



**Figure 74: Saudi Arabia's cumulative energy storage capacity**




*Source: BloombergNEF*

State utility Saudi Electricity Company (SEC) is driving the uptake of energy storage projects, having financed 6.5GW/27GWh of capacity through the utility's engineering, procurement and construction (EPC) tenders. Another 1.1GW/2.7GWh of capacity has been awarded for off-grid applications: two tourism-related microgrid applications and one for the Neom Green Hydrogen project. The Saudi Power Procurement Company (SPPC) is currently running a 2GW/8GWh build-own-operate (BOO) auction and plans to award contracts in late 2025. SPPC plans to host annual auction programs totaling 8-16GWh of storage capacity through to 2030.

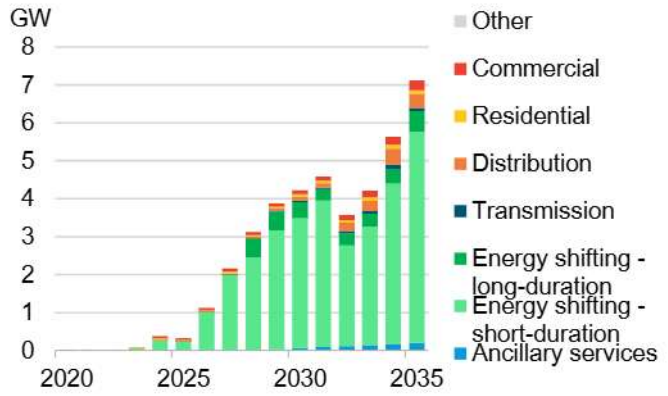
Some projects are coming online very quickly. In April, Sungrow announced they were supplying three battery storage projects totaling 7.8GWh of capacity for delivery to Saudi Arabia, which were commissioned in the summer. These projects were commissioned only 12 months after SEC awarded them in July 2024, highlighting the speed at which the sector has moved in Saudi Arabia so far. Still, these projects will likely be exceptions for quick development. Future projects to be awarded in SPPC tenders will likely take more time to commission due to a longer timeline for SPPC tenders.

### Rest of Middle East and North Africa

The Middle East and North Africa (MENA) region, excluding Saudi Arabia, is set to add 332MW/787MWh of projects in 2025, down 24% from 2024. Following from a down year, BNEF expects 1.1GW/3.9GWh to be installed in 2026.

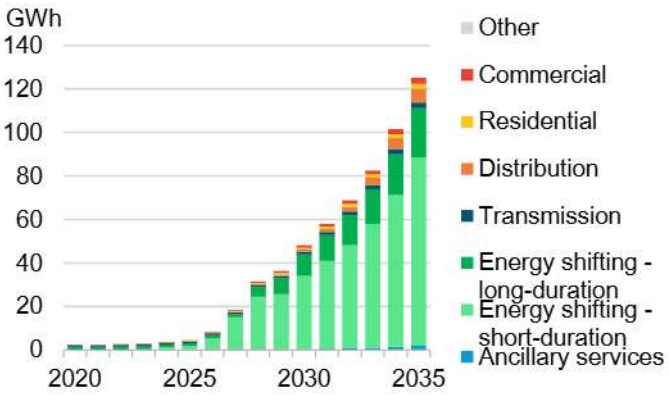
Cumulative energy storage capacity reaches 16GW/48GWh by 2030. Similar to Saudi Arabia, the utility-scale segment dominates the market, as many auction programs have awarded large-scale projects. On the other hand, the uptake of behind-the-meter storage is limited given the slow uptake of behind-the-meter solar systems. By the end of 2035, the MENA energy storage market reaches 41GW/125GWh – a 40-fold increase compared with cumulative installations in 2024. When combined with Saudi Arabia, the region's cumulative 2035 forecast of 63GW/215GWh is up 36% in gigawatt terms from our previous forecast due to quick development timelines and more countries tapping into new opportunities.

**Figure 75: MENA (excluding Saudi Arabia) annual energy storage additions**




*Source: BloombergNEF. Note: MENA is Middle East and North Africa.*

**Figure 76: MENA (excluding Saudi Arabia) cumulative energy storage capacity**




*Source: BloombergNEF. Note: MENA is Middle East and North Africa.*

In **Egypt**, the country's first utility-scale battery storage project was commissioned in July by Amea Power. The 180MW/300MWh battery storage system was added to Amea Power's existing 500MW solar plant in Aswan, commissioned in December 2024. Amea Power plans to build another 2.1GWh of energy storage projects, including a 300MW/600MWh battery storage system, due in 2026, to be co-located with 1GW Abydos II solar project. The state utility Egyptian Electricity Transmission Company (EETC) is procuring an increasing number of storage projects due to fear of grid constraints and curtailment risks during peak solar generation.

In addition to lots of activities in Saudi Arabia, Egypt, Israel and the United Arab Emirates (UAE), **Morocco** is the region's latest country to enter the storage market. In August, the Moroccan Agency for Sustainable Energy (MASEN) awarded two solar-plus-storage projects totaling 1.2GWh of storage capacity to ACWA Power.

## 7.10. Sub-Saharan Africa

### South Africa

South Africa is set to add 818MW/2,822MWh of energy storage capacity in 2025, a new record year for additions. The utility-scale segment is the largest, with 607MW/2,456MWh of projects

expected to come online, bringing cumulative utility-scale capacity to 1.8GW/4.8GWh at the end of 2025. Most of this will be driven by South Africa's Battery Energy Storage Independent Power Producers Procurement Program (BESIPPPP), which contracted 975MW/3,900MWh of utility-scale projects in its first two bid windows. The third bid window was completed in May 2025, adding another 615MW/2,460MWh to the pipeline.

By 2030, cumulative energy storage capacity reaches 11GW/40GWh – in line with battery build expectations in BNEF's Economic Transition Scenario in the *New Energy Outlook 2025* (web | terminal). By the end of 2035, cumulative energy storage capacity reaches 29GW/109GWh – a roughly 54-fold increase compared with cumulative installations at the end of 2024. The utility-scale segment continues to drive the market, with batteries expected to come online to provide firm capacity as South Africa retires nearly 15GW of ageing coal power plants by 2035.

**Figure 77: South Africa's annual energy storage additions**

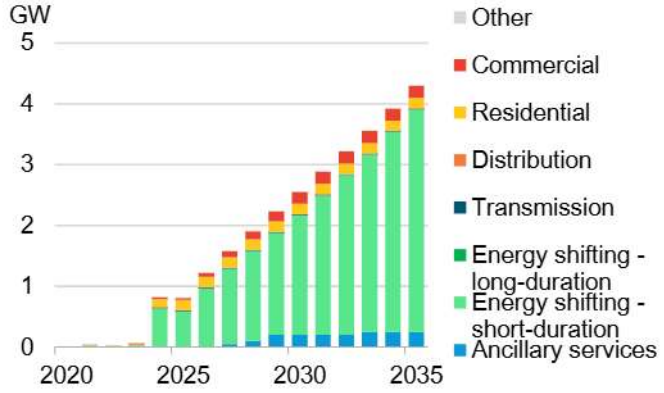
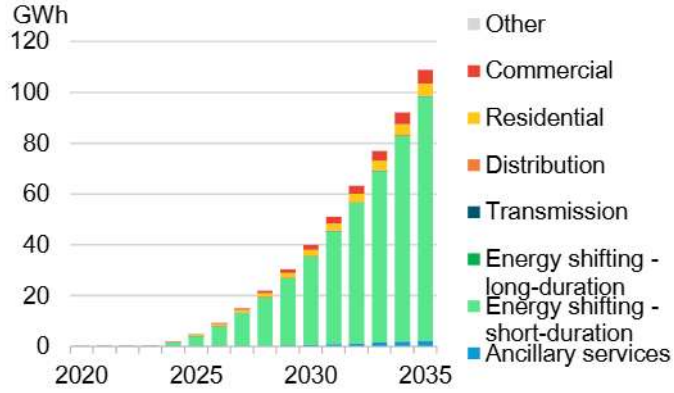



**Figure 78: South Africa's cumulative energy storage capacity**




*Source: BloombergNEF*

## Rest of Sub-Saharan Africa

The Sub-Saharan African region, excluding South Africa, is set to add 1,761MW/5,643MWh of projects in 2025, up nearly 10-fold from 2024. Our updated forecast considers the growth in lithium-ion battery imports across the region, particularly in Nigeria, Kenya, Ethiopia, Zimbabwe, Mali, Angola, Ghana and Senegal.

Cumulative energy storage capacity reaches 25GW/90GWh by 2030. The utility-scale segment, which includes all projects above 1MW, dominates the market over our forecast period. The uptake of smaller-scale systems, both for residential and commercial consumers, also grows quickly over the forecast period in tandem with the growth of small-scale solar. By the end of 2035, the rest of the Sub-Saharan Africa region reaches 73GW/269GWh.

Our updated forecast considers the potential for rapidly falling battery prices and a reduction in demand from the US to result in accelerated uptake in the next decade.

**Figure 79: SSA (excluding South Africa) annual energy storage additions**

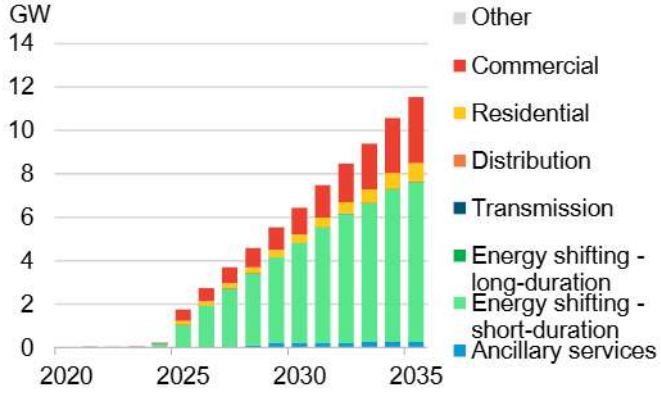
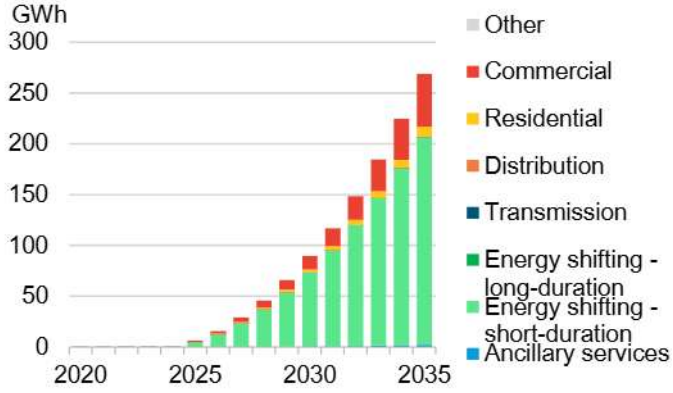



**Figure 80: SSA (excluding South Africa) cumulative energy storage capacity**




*Source: BloombergNEF. Note: SSA is Sub-Saharan Africa.*

# Section 8. Methodology

## A.1. Coverage

This Energy Storage Market Outlook is a forecast of the global stationary energy storage market from 2025 to 2035. A total of 34 countries and regions are covered (Table 8), which includes 47 unique markets, territories or country groupings aggregated into highlighted areas. We show some country results in aggregate, such as Europe – South, Europe – West, Europe – East, Europe – North, Other Latin America, Middle East and North Africa, and Sub-Saharan Africa. In this outlook, Saudi Arabia got a country-level forecast for the first time.

**Table 8: Energy Storage Market Outlook regional coverage**

| Country/sub-regional grouping | Region | Markets included |
|---|---|---|
| Canada | AMER | |
| US | AMER | Alaska, California, ERCOT, Florida, Hawaii, MISO, New England, New York, Northwest, PJM, Southeast, Southwest, SPP |
| Mexico | AMER | |
| Brazil | AMER | |
| Chile | AMER | |
| Other Latin America | AMER | Argentina, Venezuela, Belize, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay |
| UK | EMEA | |
| Germany | EMEA | |
| France | EMEA | |
| Italy | EMEA | |
| Poland | EMEA | |
| Portugal | EMEA | |
| Spain | EMEA | |
| Europe – East | EMEA | Hungary, Czech Republic, Slovakia, Slovenia, Ukraine |
| Europe – North | EMEA | Norway, Sweden, Finland, Denmark, Latvia, Estonia, Lithuania |
| Europe – South | EMEA | Bulgaria, Croatia, Greece, Hungary, Romania, Cyprus, Malta, North Macedonia |
| Europe – West | EMEA | Austria, Belgium, Netherlands, Switzerland, Luxembourg |
| Turkey | EMEA | |
| South Africa | EMEA | |
| Sub-Saharan Africa | EMEA | Angola, Benin, Botswana, Burkina Faso, Central African Republic, Chad, Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Eswatini, Gabon, Gambia, Ghana, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe |
| Saudi Arabia | EMEA | |

| Country/sub-regional grouping | Region | Markets included |
|---|---|---|
| Middle East and North Africa | EMEA | Egypt, Israel, Jordan, Algeria, Bahrain, Iran, Iraq, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Tunisia, Turkey, United Arab Emirates, Yemen |
| Australia | APAC | |
| China | APAC | |
| India | APAC | |
| Japan | APAC | |
| South Korea | APAC | |
| Indonesia | APAC | |
| Malaysia | APAC | |
| Thailand | APAC | |
| Philippines | APAC | |
| Vietnam | APAC | |
| Other SE Asia | APAC | |
| Rest of World | | All other markets |

*Source: BloombergNEF. Note: Blue indicates regions analyzed separately for the first time in the 2H 2025 Energy Storage Market Outlook.*

## A.2. Outlook comparison

This Energy Storage Outlook builds upon the *1H 2025 Energy Storage Market Outlook* (web | terminal). This forecast considers the existing project pipeline[4], current market activity, climate targets and related policy framework, planned auctions, company announcements and analyst judgment. We also use BNEF wind and solar forecasts[5] as guidelines to estimate renewable-plus-storage capacity and *New Energy Outlook* scenarios – the Economic Transition Scenario and Net Zero Scenario – to understand bounds of capacity build (web | terminal).

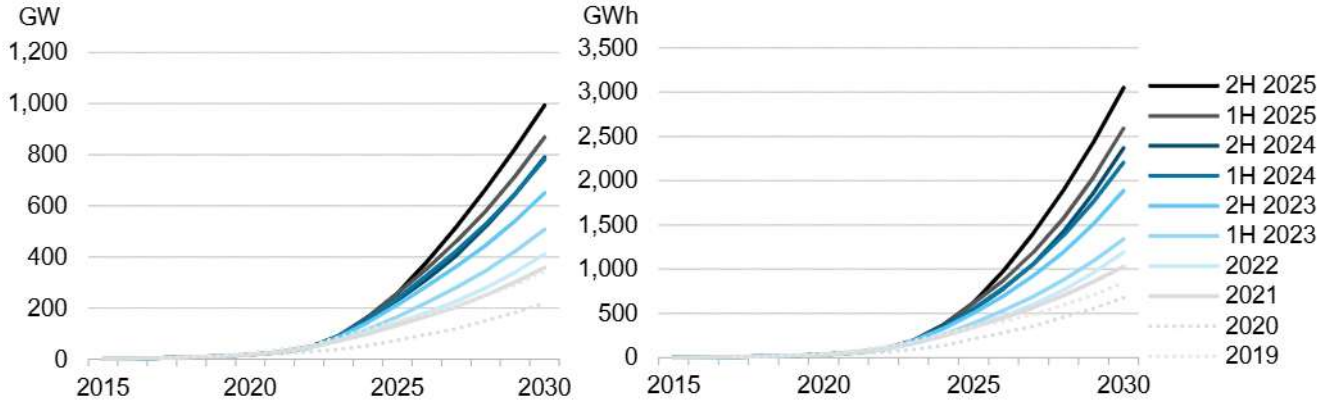
### Comparison to 1H 2025 Energy Storage Market Outlook

Our *1H 2025 Energy Storage Market Outlook* (web | terminal) suggested that global cumulative capacity could hit 869GW/2,590GWh in 2030 (Figure 81). In this report, we estimate that global cumulative energy storage capacity reaches 993GW/3,051GWh, or 18% higher in gigawatt-hour terms and 14% more in gigawatt terms compared with the previous outlook. Our global cumulative forecast is higher because of growth expected in emerging markets such as Italy, Sub-Saharan Africa and Southeast Asia in addition to continued growth in the two largest markets in China and the US.

[4] For more on existing project pipeline, see BNEF's proprietary *Energy Storage Project Database*, which tracks energy storage project development by country and application.

[5] For more on renewable outlooks, see *3Q 2025 Global PV Market Outlook* (web | terminal) and *1H 2025 Global Wind Market Outlook* (web | terminal).

**Figure 81: Comparison of historical Energy Storage Outlooks – cumulative capacity**




*Source: BloombergNEF. Note: Charts compare long-term outlooks. All data are in the accompanying dataset.*

## Historical forecast accuracy

BNEF has been producing global energy storage forecasts since 2014. Here we compare our historical forecasts with the cumulative global build in 2024 (167GW/380GWh). We significantly underestimated the 2024 energy storage market size in our 2020-2022 forecasts; in our 2020 forecast, in particular, we heavily discounted forecasts to account for the pandemic, overestimating its negative impact on build.

**Table 9: BNEF's historical forecasts of global energy storage capacity in 2024 versus actual capacity**

| Forecast year | Cumulative installation forecast in 2024 | Difference in power capacity output | Difference in energy capacity output |
|---|---|---|---|
| **2024 (actuals)** | **165GW/375GWh** | **-** | **-** |
| 2024 (2H) | 159GW/359GWh | -4% | -4% |
| 2024 (1H) | 157GW/344GWh | -5% | -9% |
| 2023 (2H) | 143GW/329GWh | -15% | -14% |
| 2022 | 106GW/249GWh | -55% | -50% |
| 2021 | 100GW/248GWh | -65% | -51% |
| 2020 | 53GW/136GWh | -211% | -175% |
| 2019 | 118GW/269GWh | -40% | -39% |
| 2018 | 84GW/202GWh | -197% | -85% |
| 2017 | 34GW/69GWh | -390% | -443% |

*Source: BloombergNEF*

## A.3. Battery shipment analysis methodology

For our battery shipment analysis, BNEF used only batteries exported from China and Korea, two of the major battery exporters for ESS. Data used was based on monetary monthly values from Sinoimex for batteries under the HTC Code 8507.60, which is for lithium-ion batteries. This data is accessible using this tool: *Battery Supply Chain Trade Flows Data Tool* (web).

For the US, we were able to use data from the US International Trade Commission to segment out EV batteries more accurately from non-EV battery imports (HTC Codes 8507.60.0010 and 8507.50.0020, respectively). Export data is available at a country level, which allowed us to adjust some assumptions at a regional level (we only applied a different assumption for the US in this iteration).

**Table 10: Battery shipment analysis assumptions**

| Factor | Assumptions by year | | | | | | BNEF context |
|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | |
| Battery prices ($/kWh) | 150 | 141 | 151 | 145 | 125 | 120 | Based on volume weighted battery pack prices in *BNEF's 2024 Lithium-ion Battery Price Survey* (web \| terminal). 2020-2022 prices were not adjusted for 2023 inflation, though they are in real 2022$. 2023 and 2024 prices were updated from last outlook to reflect higher average prices for batteries outside China (to approximate prices closer to non-China prices). 2025 prices based on a $5/kWh reduction in prices (estimated) for the year. |
| Nameplate to usable capacity ratio | 10% | 10% | 10% | 10% | 10% | 10% | Energy storage projects will have more battery capacity than the expected usable capacity that is designed. Battery suppliers do this to assure enough energy storage capacity to consider depth of discharge, expected degradation and redundancy. BNEF assumed this to be 10%, but this varies by project. |
| Delay to commissioning (months) | 12 | 12 | 12 | 12 | 12 | 12 | We assume that batteries take about 12 months from time they enter import port to the time they are commissioned. In the US, we assumed an 18-month delay (as projects have experienced delays at different parts of project development timeline). |
| Inventories | 0% | 10% | 30% | 30% | 30% | 30% | Post-pandemic and especially with the ramp-up of battery cell manufacturing in China, companies have increasingly been importing batteries without necessarily a specific order or project delivery contracted, in anticipation of demand growth. |
| Inventories delay (months) | 12 | 12 | 12 | 12 | 12 | 12 | This is the assumed time it takes for inventories to translate to capacity available for deployment. System integrators/providers may stockpile for future delivery. Residential storage distributors may have over-estimated market capacity and have more inventories than they had planned for. |
| EV imports (% of GWh) | 65% | 80% | 80% | 90% | 80% | 80% | Except for the US, where data for EV battery imports have a separate import code, we have estimated the share of exports of battery capacity for EVs. |
| Non-EV and non-ESS battery capacity (GWh baseline for consumer electronics) | 6,085 | 7,795 | 11,271 | 8,678 | 8,678 | 8,678 | Capacity calculated assuming a baseline of imports each year is for non-EV and non-ESS batteries. Assumes 2018 imports are the baseline and we applied the growth rate of consumer electronics battery output in China between 2019 and 2024 as the assumed growth rate for non-EV/ESS batteries overseas. Assumed 2024 and 2025 demand remained flat. |

*Source: BloombergNEF*

## A.4. Transmission and distribution forecast

Our model estimates battery storage systems are used for preventing network congestion, and deferring transmission and distribution grid upgrades for at least 10 years. In 2024, we updated our model to reflect falling battery and energy storage system prices. Although wire solutions are typically more cost-effective than batteries used only as grid assets and excluded from energy markets, the aggressive decline in battery prices this past year increases the economic build-out of storage capacity as grid investment deferral.

### Transmission and distribution-level services

We estimated the total opportunity for transmission and distribution-level services from energy storage based on the amount of network investments over the period of an economic analysis. We start with global investment in grid reinforcements, estimate the portion of this investment where energy storage projects could be competitive and then approximate an uptake trajectory based on a qualitative assessment of country-level conditions.

Increasing levels of distributed energy resources (DERs) and changing demand patterns on the grid are creating new network constraints. During periods of high output from DERs, networks can experience congestion and low voltages. During periods of low output from DERs and low power consumption, such as overnight, networks can experience high voltages. Energy storage applications can help address these issues as well as several other constraints (Table 11). Our analysis focuses on the prevention of network congestion as we feel this will be the dominant driver of T&D storage applications.

**Table 11: Use cases and outlook for transmission and distribution storage applications**

| Use case | Description |
|---|---|
| Prevent network congestion | Delay or mitigate the need to replace network element that is expected to overload by offloading it during high load conditions |
| Provide voltage control | Mitigate over- and under-voltage by injecting/absorbing either active or reactive power into the grid |
| Black-start the grid | Restore power to an islanded system after a blackout |
| Reduce energy losses | Reduce power transfers through a network element to lower losses |
| Improve power quality | Balance loading on each phase of a power line to reduce harmonics, lower neutral current and balance phase voltages |
| Reduce reverse power flows | Reduce or eliminate reverse power flows on a feeder or distribution network, mitigating the need for upgrades |

*Source: BloombergNEF. Note: Row in green highlights the use case reviewed for this report.*

The overall calculation for T&D energy storage capacity consists of five steps outlined below.

**Step 1 – Calculate grid investment for each market**

In the *New Energy Outlook Grids 2024* publication we look at total grid investment globally through to 2050, according to our *2024 Power Grid Investment Outlook* (web | terminal). The capital required to reinforce systems and connect renewables to networks grows over time, reaching an estimated $483 billion by 2030, up from $326 billion in 2023 shared between T&D grids.

Energy storage, along with other distributed energy resources, can be used to defer or offset larger investments in T&D. Additions to T&D infrastructure are rarely incremental and will instead

involve adding anywhere from 25% to 50% more capacity to a given site. To capture the "lumpiness" of wire solutions, we assumed that a battery project for transmission grid deferral is 25% smaller than the comparable grid upgrade capacity. The case for energy storage to defer grid investments depends on various factors such as the cost of the T&D installation, the peak to average demand ratio, the demand growth rate at the site, and whether energy storage can also be used to provide other services.

**Step 2 – Apply a total addressable market size factor**

To determine the potential market share for energy storage projects, we defined a typical grid and battery project for both T&D applications. For simplicity, we only consider the case of addressing network congestion. We assume that a series of grid elements are underrated, and a utility must decide between two alternatives based on cost alone.

**Table 12: Cost of reference projects to determine energy storage market share**

| Voltage | Project alternative | Project scope | Mean cost estimate ($ million, real 2024) | |
|---|---|---|---|---|
| | | | 2024 | 2050 |
| Transmission | Grid | 230kV 50-kilometer transmission line, associated switchgear and auxiliary equipment | 57 | 57 |
| | | Cost of project delivery time being five years longer (with approximated interest costs) | 3 | 3 |
| | Battery | 113MW/450MWh battery project connected at 230kV with substation and grid connection | 185 | 127 |
| Distribution | Grid | 35kV distribution line, 35kV transformer, associated switchgear and auxiliary equipment | 3.9 | 3.9 |
| | Battery | 10MW/40MWh battery project connected at 200kV system | 12.1 | 8.3 |

*Source: BloombergNEF. Note: Grid costs are based on typical values. BNEF assumes 230kV power lines cost on average $1.4 million per kilometer, and 35kV power lines cost $0.30 million per km. The average cost estimate is based on both overhead and underground cables. The remaining costs are for substation equipment. Battery costs are based on global benchmark costs.*

Actual projects can vary a great deal based on site-specific factors. In some cases, there may be additional substation upgrades required or the required power line may be longer. To capture this uncertainty, we assume that both grid and battery project costs are normally distributed with 90% of the project costs contained within ±33% of the value stated in Figure 83.[6]

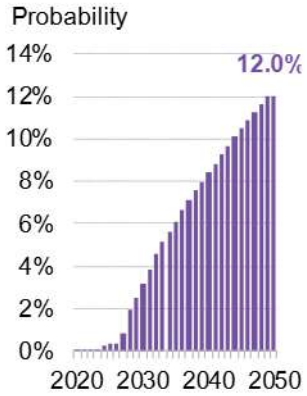
Over time, energy storage projects become more competitive relative to grid projects due to falling battery costs. There are also indications that the cost of building new power lines is rising due to longer permitting processes, higher engineering standards and lower public acceptance. For this analysis, we kept the cost of constructing new power lines constant as the cost rise seen over the past five years is not significantly greater than general inflation.

Storage projects for network upgrade deferral are often justified by their faster deployment. We have assumed that it takes on average five years longer to construct a transmission grid project than a battery project. We accounted for this difference in deployment time by increasing the grid project cost by 5%, which approximately reflects five years of paying a 2% interest on a loan for half the project cost. With the costs of these two projects sorted, we then calculated the likelihood that a given battery project would cost less than its grid project alternative in each year. As battery

[6] Commonly referred to as a P90 estimate.

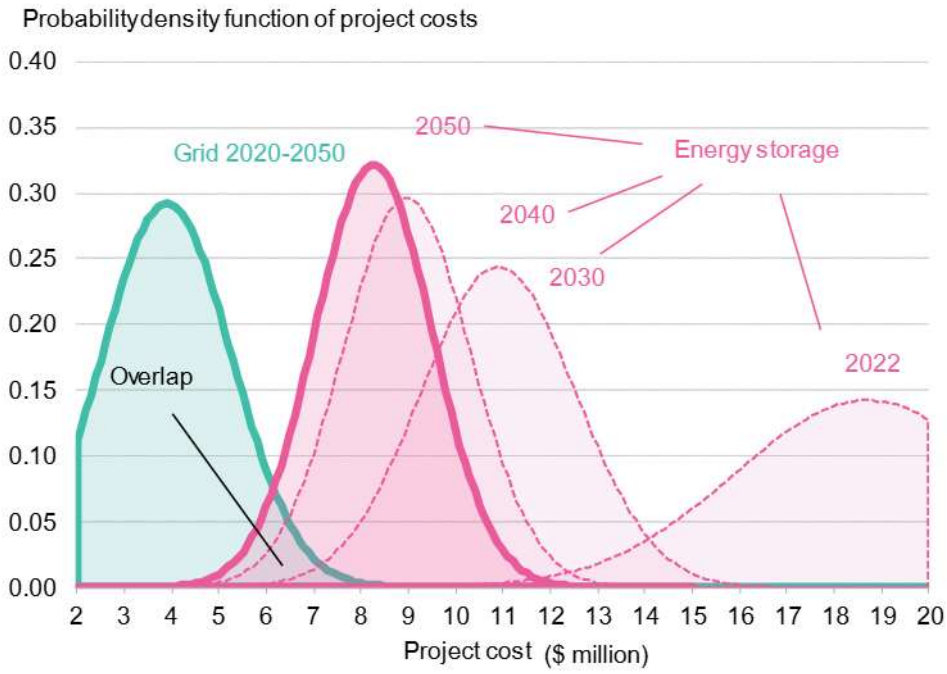
prices fall, the range of cost estimates gradually approaches the cost of the grid alternative until they eventually overlap (Figure 83).

**Figure 114: Probability battery project costs less than grid transmission project**




*Source: BloombergNEF*

**Figure 83: Cost profiles of competing grid and battery distribution alternatives**




*Source: BloombergNEF. Note: The width of the energy storage profiles changes to maintain a +/- 15% P90 cost estimate. Area under each probability density function totals to 1.00.*

We find that by 2050 the likelihood an energy storage alternative is cheaper than a traditional grid project is 12% for transmission projects and 12.3% for distribution projects (Figure 114), up significantly due to lower battery costs. These figures represent the portion of grid reinforcement costs that could be replaced by battery projects. We multiply these percentages by the amount of network reinforcements to obtain the potential market size for distribution and transmission battery projects, respectively.

**Step 3 – Apply a country-specific adoption curve**

Finally, these market sizes are adjusted for each country based on analysts' assessments of the regulatory frameworks in their markets to see if an alternative to traditional network reinforcement would be permitted and properly remunerated by the regulator. A more favorable regulatory environment results in a more rapid uptake of energy storage. The regulatory environment differs for transmission and distribution storage.

The scoring framework to determine this uptake level evaluates the following metrics, where a higher number of positive answers translates to a faster adoption curve for transmission and distribution storage:

1. Does regulation in the country/region allow for transmission/distribution storage projects?
2. Does the country/region already have transmission/distribution storage projects?
3. Are there transmission/distribution project permitting issues/delays in the country/region?
4. Is the grid very sparse in the country/region?
5. Is there known congestion in the country/region?

6. Is there a regulatory requirement to look at non-wire alternatives in the country's/region's long-term grid plans?
7. Are there financial incentives to consider non-wire alternatives?
8. Are utilities in the country/region innovative?
9. *For distribution grid storage only: Does the country/region have a local flexibility market(s)?*
10. *For distribution grid storage only: Does the country/region expect high deployment of fast and ultrafast electric vehicle chargers before 2030?*

**Step 4 – Convert to GW and GWh from US dollars**

Using a battery cost, we convert to a capacity of battery storage projects that would be deployed. The cost in 2024 is $254/kWh and 2050 is $133/kWh. We also compare the near-term results with the T&D storage projects in our energy storage project database. We take the greater number between our forecast and the projects in our database.

**Step 5 – Subtract cannibalization**

Our model accounts for the potential cannibalization effect that behind-the-meter storage assets could have on total energy storage build. A portion of behind-the-meter storage assets will be available to the grid through a combination of tools and mechanisms such as virtual power plants or time-of-use pricing. Optimized dispatch of these assets could help alleviate grid constraints that would otherwise warrant utility-scale development.

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