Energy Storage in NYISO

Energy Storage Boosts Electric Grid Reliability & Lowers Costs

Energy markets that have evolved to integrate more energy storage are realizing significant benefits. Across the United States, energy storage facilities have become essential infrastructure, enhancing grid reliability and cost savings.

In Texas, energy storage has played a critical role in managing the state's rapidly rising electricity demand and volatile weather. During a single winter storm in Texas, energy storage helped keep the lights on and homes warm while saving the ratepayers more than $700 million in energy costs. That same year, throughout the Summer of 2024, energy storage resources enabled Texas to withstand historic electricity demand and Summer heat – providing reliability services that saved families and businesses more than $750 million compared to 2023. In California, energy storage has reduced the risk of black outs and brown outs – and in 2022, played a key role in preventing a costly grid failure.

Communities are also seeing the direct benefits of deploying local energy storage. In Nevada, a single energy storage facility built on the site of a retiring power plant will contribute to utility bill reductions of up to 20%. In regions with the greatest reliability challenges, energy storage has demonstrated its unique ability to enhance grid resilience while also making electricity more affordable.

Energy Storage Can Help the Region Address Rising Demand for Electricity

Since 2019, US energy storage deployment has grown 25x with almost 29 GWs now connected to the grid, representing enough capacity to cumulatively power 22 million homes. In 2024, energy storage was the second most deployed resource, yet NYISO lags other regional electric grids because of outdated market rules and restrictive modeling practices.

More than 12 GWs of energy storage resources were added to the grid in 2024 reinforcing its status as one of the fastest growing and most rapidly deployed energy resource. As NYISO anticipates a historic rise in peak energy capacity needs, other regions that have faced increasing electricity demand have relied on energy storage as a cost-effective, scalable solution to bolster grid reliability and expand capacity.

ENERGY STORAGE IS READY TO QUICKLY FILL THE GAP

NYISO's annual and peak load is expected to grow an additional 12 GWh and 1 GW by 2030 while the state makes progress toward reducing emissions. Storage is a key solution to quickly boost reliability and make progress toward the state's goals.

- New energy storage capacity can be built in **12-18 months** to meet time-sensitive reliability needs
- Texas built more than **5 GWs of energy storage in 1 year** to address new reliability needs & support economic growth
- New York currently has about **1 GW** of pending projects and **36 GW** in the Interconnection Queue.

AMERICAN CLEAN POWER

New York State is Taking Action: 6 GWs Storage Target Drives Deployment

New York State has set an ambitious goal to deploy 6 GW of energy storage by 2030, a cornerstone of its clean energy agenda. To support this objective, the state developed the Energy Storage Roadmap, outlining strategies to expand storage capacity and remove deployment barriers. New York introduced several programs, including tolling agreements, index credits, and other incentives to create stable revenue streams for storage projects, enabling their participation in capacity markets and grid services. Collectively, these programs aim to accelerate storage deployment, strengthen grid resilience, and facilitate greater renewable energy integration. NYSERDA reports that deploying energy storage in the state could generate over 30,000 jobs and deliver approximately $2 billion in energy cost savings for businesses and families.

NYISO Reforms Can Integrate Energy Storage and Improve Reliability

Most market structures and rules were originally designed to accommodate traditional generation assets, often creating barriers that prevent energy storage technologies from realizing their full potential. By modernizing market designs and introducing new market products that reflect versatility of energy storage, regional electric grids can fully leverage its capabilities.

Accelerating the adoption of ramping and uncertainty products in the NYISO market could be pivotal in integrating more energy storage and optimizing grid operations. Through the Balancing Intermittency Project Phase 1, NYISO has proposed procuring additional 10-minute and 30-Minute Reserves to cover the unexpected ramp requirements stemming from real-time forecast errors (and day-ahead forecast error for the 30-minute product), thereby adding much of the functionality of a ramp product to existing reserves products.

NYISO Ramping Product	Role of Energy Storage	Grid Benefits	Recommended Enhancements to Current Design
Day Ahead Uncertainty Product: A market tool to ensure sufficient availability to meet forecasted net demand	This market tool ensures sufficient resources are available on the next day to meet net demand forecasts, including a margin for uncertainty. Storage is always on and therefore meets availability needs at low cost, reducing the burden on traditional steam generators that must incur substantial start-up costs. Storage also provides greater flexibility to the grid to accommodate low-cost renewable generation. By optimizing energy use across hours, storage enhances the efficiency of the generation fleet.	By providing needed availability at lower cost, storage enhances the overall efficiency of the generation fleet, reduces excessive cycling of baseload fossil generators, reduces unneeded renewables curtailment, and ensures grid stability during periods of high demand.	**Increase Operating Reserve Demand Curve Maximum Value Above the Current $750/MWh Threshold** to reflect system value in scarcity conditions and ensure price signals incentivize resource availability. **Comprehensively address the need for availability to meet day-ahead forecasts for net demand,** by addressing the "physical energy gap" between cleared day-ahead physical supply and forecasted demand (due to insufficient purchases and/or virtual supply) either through procurement of additional 30-minute reserves, or via the **NYISO-proposed 60-minute capability and 4-hr duration** reserve product to more cost effectively meet system needs.
Ramp & Uncertainty Product: A market mechanism designed to manage fast, short-term fluctuations in net load.	This market tool ensures sufficient resources are available on the next day to meet net demand forecasts, including a margin for uncertainty. Storage is always on and therefore meets availability needs at low cost, reducing the burden on traditional steam generators that must incur substantial start-up costs. Storage also provides greater flexibility to the grid to accommodate low-cost renewable generation. By optimizing energy use across hours, storage enhances the efficiency of the generation fleet.	By quickly responding to short-term load changes, storage reduces reliance on slower, less flexible resources, ensuring the grid remains stable. This prevents inefficient cycling and ultimately reduces excessive renewable curtailment, improving efficiency	**Include expected ramp in market procurement.** While these reliability needs are already met through NYISO's multi-interval dispatch, they are not necessarily appropriately priced and can lead to the need for out-of-market payments and insufficient incentive for flexibility. **Increase Demand Curve Maximum Value Above the Current $40/MWh Threshold** demand curve to reflect high system value of incremental reserves during times of high up-ramps (which will deplete available reserves in subsequent intervals)