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INSIGHT

STATE BY STATE: A ROADMAP THROUGH THE CURRENT US ENERGY STORAGE POLICY LANDSCAPE

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Energy storage resources are becoming an increasingly important component of the energy mix as traditional fossil fuel baseload energy resources transition to renewable energy sources. There are currently 23 states, plus the District of Columbia and Puerto Rico, that have 100% clean energy goals in place. Storage can play a significant role in achieving these goals by serving as a “non-wires alternative” that can provide added reliability and grid services as renewable resources such as wind and solar replace fossil fuel baseload resources.

The US storage market had a record-setting third quarter of 2023, adding 2,354 megawatts (MW) (or 7,322 megawatt-hours (MWh)) of installed capacity to the grid.[1] It is expected that the US storage market will install an estimated 63 gigawatts (GW) between 2023 and 2027.[2] As of 2023, there is approximately 8.8 GW of operational utility-scale battery storage in the United States.[3]

The installation of utility-scale storage in the United States has primarily been concentrated in California and Texas due to supportive state policies and significant solar and wind capacity that the storage resources will support. At the end of 2023, Texas had 7.3 GW of installed storage capacity, while California had 3.2 GW of installed capacity.[4] In 2022, CAISO, ERCOT, NYISO, PJM, and ISO-NE collectively had approximately 4.3 GW of standalone storage capacity, with another collective 24 GW expected to come online between 2024 and 2025.[5]

For the most part, battery energy storage resources have been developing in states that have adopted some form of incentive for development, including through utility procurements, the adoption of favorable regulations, or the engagement of demonstration projects.[6]

Approximately 16 states have adopted some form of energy storage policy, which broadly fall into the following categories: procurement targets, regulatory adaption, demonstration programs, financial incentives, and consumer protections.[7] Below we give an overview of each of these energy storage policy categories.

PROCUREMENT TARGETS

Procurement targets require utilities to acquire a specified quantity of energy storage typically by a specified deadline. To date, 11 states, California, Oregon, Nevada, Illinois, Virginia, New Jersey, New York, Connecticut,

Massachusetts, Maine, and Maryland, have adopted procurement targets.[8]

California was the first state to adopt a procurement target and initially mandated that the state's investor-owned utilities procure 1,325 MW of energy storage by 2020,[9] before adding 500 MW distributed storage[10] to the goal for a total of 1,825 MW by 2020. In 2015, Oregon directed their two largest Investor Owned Utilities to each install 5 MWh by 2020 (minimum), up to a maximum of 1% of 2014 peak load.[11] In 2017, the Nevada legislature directed the PUC to establish targets to procure 1,000 MW by 2030, with interim targets starting at 100 MW by December 31, 2020.[12]

New Jersey enacted their Clean Energy Act in 2018, which set a target of 2,000 MW of energy storage by 2030.[13] Massachusetts also set their target in 2018 through the Act to Advance Clean Energy, directing the Massachusetts Department of Energy Resources to set an energy storage target of 1,000 MWh by 2025.[14] Virginia's target was enacted by law in 2020, which set a 3,100 MW energy storage goal by 2035.[15] A law enacted in 2021 directed the Illinois Commerce Commission to establish storage procurement targets for all utilities serving more than 200,000 customers to achieve by 2032.[16]

Connecticut set its goal in 2021 to achieve 300 MW by 2024, 650 MW by 2027, and 1,000 MW by 2030.[17] Maine also set its goal in 2021 to achieve 400 MW of installed storage capacity by 2030, with an interim target of 300 MW by 2025.[18] New York originally set a goal to procure 3 GW of energy storage by 2030,[19] but New York Governor Kathy Hochul most recently announced plans to double that goal to reach 6 GW by 2030.[20]

In May 2023, Maryland became the 11th and latest state to enact an energy storage target, with a goal to deploy 3 GW of storage capacity by 2033.[21] The new law requires the Maryland Public Service Commission to establish the Maryland Energy Storage Program by July 1, 2025 and provides for incentives for the development of energy storage.[22]

Procurement targets are beneficial in that they provide supportive signals for investors and reduce regulatory uncertainty.[23] Procurement targets can also vary from broad MW requirements to more specific mandates that focus on the adoption of certain storage technologies. For example, California limited pumped storage to 50 MW of the total procurement goal. Procurement targets have been set at both the state utility commission level (e.g., California, Colorado, Massachusetts, Nevada, New York) and by state legislatures (e.g., Oregon, New Jersey).

REGULATORY ADAPTION

Regulatory adaption refers to changes made in state energy regulations designed to create opportunities for storage.[24] All of the states with a storage policy in place have a renewable portfolio standard or a nonbinding renewable energy goal. Regulatory changes can broaden competitive access to storage such as by updating resource planning requirements or permitting storage through rate proceedings.

As a general matter, many states require utilities to produce integrated resource plans (IRPs) to demonstrate how that utility will be able to meet long-term demand projections using a combination of generation, transmission, and energy efficiency investments while also minimizing costs. In recent years, certain states have required that utility resource plans include energy storage, namely Arizona, California, Colorado, Connecticut,

Florida, Hawaii, Indiana, Kentucky, Massachusetts, Michigan, New Mexico, North Carolina, Oregon, Utah, Virginia, Washington, Missouri, Minnesota, Maryland, and Maine.[25]

Even still, incorporating storage into IRPs can be a challenge since storage is different from conventional electricity generators and demand-side resources. For example, storage has unique operational constraints, can be interconnected at various points, can serve a variety of applications, and has policy and regulatory uncertainty that may affect system profitability.

DEMONSTRATION PROGRAMS

Demonstration programs refer to instances where a state explicitly authorizes, and in some cases funds, energy storage for the purpose of exploring operation and gathering data. Demonstration programs are beneficial in that they allow states to study the benefits and logistics of energy storage deployment on an incremental basis.

Five states have adopted a programmatic approach to storage demonstration projects:

- Washington has provided \$14.3 million through its Clean Energy Fund to utilities to deploy four utility-scale energy storage projects with the intention of testing different energy storage technologies and use cases[26]
- Massachusetts has provided \$20 million in grant funding to storage projects through The Advancing Commonwealth Energy Storage program to demonstrate various use cases[27]
- Utah law has permitted utilities to invest in storage resources[28]
- New York, under its Reforming Energy Vision Program, acts as facilitator between developers and utilities by opening a request for proposal for projects, coordinating the projects review by an independent evaluator, and then matching the projects with utilities[29]
- Maryland has approved a pilot program for utilities to develop projects under different ownership frameworks[30]

FINANCIAL INCENTIVES

Financial incentive policies typically come in the form of direct subsidies or tax credits made available to end-use customers for installing behind-the-meter storage resources. Behind-the-meter development has progressed in jurisdictions that adopted time-of-use (TOU) rates, which pair higher energy rates with time periods that experience high demand. TOU rates are intended to send an economic signal to customers, and may influence them to reduce usage or meet demand through customer-sited resources such as storage.[31]

California has implemented the largest financial incentive policy with its Self-Generation Incentive Program (SGIP), which set aside \$450 million in funding for behind-the-meter storage.[32] In 2022, Maryland became the first state to offer state income tax credit for energy storage that provides up to \$5,000 for residential customers and up to \$75,000 for commercial and industrial customers, subject to a program total of \$750,000 per year.[33]

In September 2022, New Jersey Board of Public Utilities (BPU) published its New Jersey Storage Incentive Program (SIP) proposal,[34] which included incentive programs for both front-of-meter and behind-the-meter for standalone energy storage devices. 38% of the incentive will be structured as a fixed annual incentive to be paid in dollars per kilowatt-hour of energy storage capacity.

The remaining portion of the SIP incentive will be structured as a pay-for-performance where front-of-meter storage resources will be compensated based on the amount of carbon emissions abated through the operation of the storage device. Behind-the-meter storage resources will be compensated based on the successful injection of power into the distribution system. The proposal also states that the BPU would like to maximize private investment in energy storage systems and will allow private investors to own and operate the energy storage resources, collect revenue from the wholesale electricity market, utilize behind-the-meter resources to manage energy usage at the distribution level to reduce electricity costs, and participate in a Distributed Energy Resource Aggregation service.

The BPU proceeding to finalize the proposal remains ongoing. On August 8, 2023, the BPU opened a request for information seeking comments on revisions to its September 2022 energy storage incentive framework. The BPU was specifically seeking stakeholder opinions on the advantages or disadvantages of utility control of energy storage systems (the current program proposal does not allow for utility ownership), what current and estimated fully installed unit costs of energy storage systems are expected through 2030, and whether distributed storage resources that can provide grid services should be allowed to opt in to either front-of-the-meter or behind-the-meter programs.

CONSUMER PROTECTIONS

Consumer protection policies establish rights for customers who install energy storage. Two states have adopted legislation guaranteeing protections to customers who install energy storage. In 2017, Nevada enacted legislation prohibiting customers who own an energy storage resource from being placed in a separate rate class solely for that reason and also required utilities to develop optional TOU rates.[35] In 2018, Colorado enacted a law providing utility customers a right to install storage and directed the Colorado Public Utility Commission to adopt rules to ensure the interconnection process to do so was efficient.[36]

It is apparent that energy storage resource procurement has been growing, and will continue to do so, in certain regions of the United States. This growth is largely a result of the various law and policy tools that states have utilized setting procurement targets, developing programs to better understand the technologies, and providing funding to implement projects. All of these mechanisms act as indicators to both the market and other states to continue the growth of this industry.

OTHER INSIGHTS IN THIS REPORT

- An Update on Utility-Scale Energy Storage Procurements
- The IRA at a Year and a Half: IRS Guidance and Impact on the Energy Storage Industry
- The Project Financing Outlook for Global Energy Projects
- How Recent FERC Orders Are Regulating Electric Storage, QFs, and Inverter-Based Resources
- Energy Legislation Updates in the European Union and United Kingdom

CONTACTS

If you have any questions or would like more information on the issues discussed in this Insight, please contact any of the following:

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[1] Wood Mackenzie Power & Renewables/American Clean Power Association, US Storage Energy Monitor, at 5 (Dec. 2023).

[2] *Id.*

[3] 2023 Early Release Battery Storage Figures, US Energy Information Administration, Figure 6 (June 2023).

[4] U.S. battery storage capacity expected to nearly double in 2024, US Energy Information Administration, (Jan. 9, 2024).

[5] *Id.*

[6] See *generally* Pacific Northwest National Laboratory, Energy Storage Policy Database.

[7] Pacific Northwest National Laboratory, Energy Storage Policy Database.

[8] SP 213 setting a goal for Maine to achieve 400 MW of installed storage capacity by 2030, with an interim target of 300 MW by 2025.

[9] AB 2514 (2013).

[10] AB 2868 (2016).

[11] HB 2193 (2015).

[12] SB 204 (2017).

[13] The Clean Energy Act, P.L. 2018.

[14] An Act to Advance Clean Energy, HB 4857 (2018).

[15] HB 1526 (2020).

[16] SB 2408 (2021).

[17] SB 952 (2021).

[18] SP 213 (2021).

[19] Climate Leadership and Community Protection Act, SB S6599 (2019).

[20] New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage, 18-E-0130 (Dec. 28, 2022).

[21] HB 910 (2023).

[22] *Id.*

[23] A Review of State-Level Policies On Electrical Energy Storage, Jeremy Twitchell, Current Sustainable/Renewable Energy Reports, at 37 (April 2019).

[24] *Id.*

[25] See, Pacific Northwest National Laboratory, *Energy Storage Policy Database*; Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap, 15-03-011, Jan. 2018; Decision Amending and Adopting Rules, C18-1124, Dec. 12, 2018; PURA Investigation Into Distribution System Planning of the Electric Distribution Companies – Electric Storage, 17-12-03RE03, July 28, 2021; Instituting an Investigation to Reexamine the Existing Decoupling Mechanisms for Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., and Maui Electric Company, Limited, 2013-0141, April 21, 2017; H.4857 (2018); HB 2193 (2015); SB 966ER (2018); Order Establishing Special Contemporary Resource Planning Issues, EO-2020-044, Oct. 30, 2019; S.216B.2422 (2019); HB 1414 (2017); LD 528 (2021).

[26] See Grid Modernization Program, Clean Energy Fund 1, Washington State Dept. of Commerce.

[27] Advancing Commonwealth Energy Storage, Massachusetts Clean Energy Center.

[28] SB 115 (2016).

[29] New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage, New York State Energy Research and Development Authority (Dec. 28, 2022).

[30] SB 573 (2019).

[31] A Review of State-Level Policies On Electrical Energy Storage, Jeremy Twitchell, Current Sustainable/Renewable Energy Reports, at 37 (April 2019).

[32] *Id.*

[33] SB 215, Energy Storage Systems – Income Tax Credit and Grant Program (May 12, 2022).

[34] New Jersey Energy Storage Incentive Program Straw Proposal, Docket No. QO22080540, September 29, 2022.

[35] AB 405 (2017), Nevada State Legislature.

[36] SB 18-000 (2018), Colorado State Legislature.