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The Growing Role of Energy Storage in Clean Energy Policy

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States across the country have been ramping up clean energy generation in recent years. Much of this growth has been driven by state initiatives, such as financial incentives and renewable portfolio standards, coupled with the declining costs of renewable energy technologies. Many states see clean energy generation as the key to decarbonizing both the transportation and power sectors, together responsible for 55% of greenhouse gas emissions in the United States.

The need to take swift action toward decarbonization has driven clean energy policies in many states. As policymakers grapple with how best to design laws to drive down the nation's carbon emissions, energy storage technologies have emerged as a critical component of policies that maximize the benefits of clean energy technologies.

There are several types of energy storage technologies in use today, with pumped-hydro providing the most storage capacity and battery storage being the fastest-growing. The U.S. Energy Information Administration reports that as of the end of 2018, 869 megawatts (MW) of large-scale battery storage was in operation in the United States.

When it comes to increasing the value of clean technologies, storage allows renewable energy to be stored and used later as needed, rather than at the time it is generated. This facilitates use of renewable energy during peak periods of high demand, which may not coincide with peak wind or solar production. It also reduces the need to curtail renewable generation— excess generation can be stored for use when demand is high. According to the U.S. Energy Information Administration, 90% of all U.S. "renewable plus storage" projects—which store renewable energy—are located within nine states. Texas is the leader when it comes to total planned and operating renewables plus storage capacity, followed by Nevada and California.

Did You Know?

- In 2018, pumped hydroelectric facilities provided 94% of all energy storage in the U.S., and the remaining 6% was provided by advanced battery, thermal energy, compressed air and flywheel systems.
- In addition to supporting renewable energy, energy storage also increases resiliency by making the electric grid more stable and resistant to disruptions, reducing the need for fossil fuel plants.
- New Jersey lawmakers proposed SB 2484 to implement a comprehensive clean energy equity policy designed to deliver community solar, energy efficiency and storage technologies to low-income communities.

State Action

State legislatures have shown an increased interest in pursuing legislation designed to bolster the role of energy storage in achieving clean energy goals. NCSL tracked over 260 energy storage-related measures under consideration by state legislatures in 2019 and 2020—a significant increase over the 88 storage-related bills NCSL tracked in 2017 and 2018. Notably, a handful of recently enacted energy storage initiatives were incorporated into sweeping clean energy legislation focused on decarbonization.

Before this uptick in activity, California and Oregon enacted legislation to support energy storage. Both states enacted energy storage procurement requirements, with California enacting legislation to developing its targets in 2010 and Oregon codifying its targets in 2015. California has enacted aggressive procurement targets in addition to an expansive incentive program that provides millions in support for large-scale and residential energy storage.

Nevada and Colorado also enacted targeted energy storage legislation. Nevada's SB 204, enacted in 2017, directed the state public utilities commission (PUC) to establish biennial energy storage procurement targets for certain utilities. In March 2020, the Nevada PUC finalized a procurement target of 100 MW by 2020, increasing to 1,000 MW by 2030. Colorado's HB 1270, enacted in 2018, directed the state PUC to develop rules for utility procurement of energy storage resources.

In addition to legislation, several states implement storage procurement policies through regulation. While state legislatures have continued to consider and enact targeted energy storage policies, a growing number of states are weighing energy storage initiatives as part of broad clean energy legislation focused on decarbonization.

In 2018, Massachusetts enacted clean energy legislation creating the legal framework for the nation's first clean peak standard. In mid-2020, regulators finalized the program's implementing regulations, which require utilities to supply a minimum percentage of retail electric sales with "clean peak resources." These include renewable energy, renewables plus storage, and demand response resources designed to reduce customer consumption during peak periods or to reduce load. New Jersey also enacted a clean energy bill in 2018 that advances renewable energy and energy storage technologies. In part, the bill establishes an energy storage procurement goal of 600 MW by 2021 and 2,000 MW by 2030.

New York's landmark climate and clean energy law, enacted in 2019, establishes statewide targets for installed capacity of clean energy resources, including those for solar, offshore wind, energy efficiency and energy storage. The Legislature further directed the PUC to establish parameters around storage projects designed to achieve New York's new statewide target of 3 gigawatts (GW) of storage capacity by 2030. These parameters include designing programs to ensure that storage projects "deliver clean energy benefits" to disadvantaged communities.

Washington's 2019 climate and clean energ law also carves out a role for energy storage in meeting newly established clean energy targets. It directs utilities to rely on renewable energy and storage in acquiring new energy resources to meet a statutory target that all retail sales of electricity be greenhouse gas-neutral by the beginning of 2030.

The Virginia Clean Economy Act, signed into law in April 2020, enacts a number of provisions that move Virginia toward a decarbonized economy. The law establishes a 100% carbon-free target and mandatory energy efficiency standards for the state's utilities. It also advances solar energy, offshore wind and energy storage technologies. With regard to energy storage, the act requires the state's largest utilities to acquire or construct at least 3.1 GW of energy storage resources by the end of 2035.

Federal Action

In 2018, the Federal Energy Regulatory Commission (FERC) issued Order 841, which directs regional energy system operators to remove barriers for energy storage in wholesale markets. The order paved the way for full participation of energy storage resources in energy, capacity and ancillary services markets. Earlier this year, the U.S. Court of Appeals for the District of Columbia Circuit upheld Order 841 as a proper use of FERC's jurisdiction over wholesale markets.

In September 2020, FERC issued Order 2222, a final rule allowing bundled behind-the-meter distributed energy resources to participate in wholesale energy markets. The order defines distributed energy resources to include electric storage, distributed generation, demand response and energy efficiency, among other technologies.

Additional Resources

- Fact Sheet: Energy Storage, Environmental and Energy Study Institute
- U.S. Grid Energy Storage Factsheet, University of Michigan Center for Sustainable Systems
- Energy Storage Policy Database, U.S. Department of Energy, Pacific Northwest National Laboratory
- "Battery Storage in the United States: An Update on Market Trends," U.S. Energy Information Administration

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