

MASSACHUSETTS ENERGY STORAGE POLICY

STORAGE POLICY SNAPSHOT:

Does Massachusetts have a renewables mandate?	YES. The current RPS is 13 percent but new legislation increases the standard by 2 percent a year beginning 1/1/2020. On 1/1/2030, the yearly increase will be reduced back to 1 percent unless further legislation revises this plan. By 2030, the RPS in Massachusetts is anticipated to be about 35 percent.
Does Massachusetts have a state mandate or target for storage?	YES 1,000 MWh by 2025
Does Massachusetts offer financial incentives for energy storage development?	YES
Does Massachusetts have a policy addressing multiple use applications for storage?	NO
Does Massachusetts have a policy that allows utility ownership of storage assets?	YES
Does Massachusetts allow or mandate the inclusion of energy storage in utility IRPs?	NO
Has Massachusetts modified its permitting or interconnection requirements specific to energy storage?	NO
Does Massachusetts allow customer-sited storage to be eligible for net metering compensation?	YES
Has Massachusetts revised its rate structures to drive adoption of behind-the-meter storage	UNCLEAR
Approximate development of storage capacity in Massachusetts	Including projects that are in a queue for state incentive funding and projects that are already operating, Massachusetts has

	approximately 190 MW of energy storage capacity
--	-------------------------------------------------

STORAGE POLICY ASSESSMENT

Massachusetts is among a handful of U.S. states that is currently on the forefront of establishing energy storage policies through legislation and regulatory directives. Like California, Hawaii, and New York, Massachusetts has created policy on critical energy storage issues that now serve as reference points and/or precedents for developing storage policy in other states. In fact, Massachusetts has been a front-runner in developing energy storage policy since 2015 with the creation of an Energy Storage Initiative (ESI) for the Commonwealth, which included comprehensive studies about the capabilities of energy storage, funding for storage demonstration projects, and the Commonwealth's authorization to establish a statewide energy storage target.

Some of the unique decisions that have framed Massachusetts' precedent-setting energy storage policy include:

- Massachusetts is one of the first states to provide comprehensive guidance focused on parting energy storage with solar panels;
- Massachusetts became the first state to allow behind-the-meter (BTM) energy storage to qualify for energy efficiency incentives;
- Massachusetts was one of the first states to adopt a target for storage and has ratcheted up the target to its current level of 1,000 MWh by 2025;
- Massachusetts includes storage as an eligible resource for the state's solar incentive program, the Solar Massachusetts Renewable Target (SMART); and
- Along with the SMART program, Massachusetts has several incentive funding mechanisms that are aimed at unlocking the full potential of energy storage, either as a stand-alone resource or as a hybrid resource with renewables (e.g., solar + storage).

With regard to incentive funding, Massachusetts has awarded approximately \$20 million in grants to 26 energy storage projects, doubling the state's original \$10 million commitment. The grants were awarded under the state's Advancing Commonwealth Energy Storage (ACES) program that is part of the ESI funded by the Massachusetts Department of Energy Resources (MA DOER).

Massachusetts is part of the New England Independent System Operator (ISO-NE), which over the last several years has experienced a number of challenges including the retirement of traditional power plants, diminished capacity of available resource<s and restrictions against building new transmission lines that would enable the development of power-generating resources. Energy factor factors prominently into the region's efforts to address these challenges at the wholesale level. To date, energy storage in Massachusetts has been primarily

limited to pumped hydro storage in Northwest Massachusetts that is provided as bulk energy to the ISO-NE. State-level incentive offerings are intended to spur storage deployment and enable broader opportunities for storage to participate in residential, commercial, and wholesale energy markets.

EXECUTIVE DIRECTIVES:

Support for energy storage in Massachusetts has been clearly articulated by the Commonwealth's governor and executive state agencies. Again, Massachusetts has earned its place as a state that has taken the lead on developing energy storage policy.

The Energy Storage Initiative

In May 2015, Governor Charlie Baker (R) introduced a conceptual Energy Storage Initiative (ESI) in Massachusetts to incentivize energy storage companies to do business in the state, accelerate early-stage commercial energy storage technologies, expand the market for these technologies, and develop policy recommendations to advance these goals. In response to the governor's directive, the Massachusetts Department of Energy Resources (MA DOER) and the Massachusetts Clean Energy Center (MA CEC) officially launched the ESI in 2015, which included a comprehensive study and funding for demonstration projects, to analyze opportunities to deploy electric energy storage on the Massachusetts grid and support the growth of storage companies in the Commonwealth.

The stated goals of the ESI include:

- Attracting, supporting and promoting storage companies in Massachusetts;
- Accelerating the development of early commercial storage technologies;
- Expanding markets for storage technologies, and valuing storage benefits to clean energy integration, grid reliability, system wide efficiency, and peak demand reduction; and
- Recommending and developing policies, regulations and programs that help achieve those objectives.

The SMART Incentive Program

- The MA DOER created the Solar Massachusetts Renewable Target (SMART) Program in 2017 to create a long-term sustainable solar incentive program that promotes cost-effective solar development in the Commonwealth.
- The SMART program has been called the first in the nation to offer incentives to solar projects that are paired with storage.
- The SMART program will provide payments to residential solar users based on a fixed rate per kilowatt-hour (kWh).
- The SMART incentive pays solar customers for each kilowatt-hour produced and adds a premium for storage-paired production

- The SMART interconnection queue already includes more than 130 megawatts of storage.

The ACES Program

- In 2017, DOER and the MA CEC teamed up to launch the Advancing Commonwealth Energy Storage (ACES) initiative, the goal of the program is to identify valuable, replicable combinations of value streams to drive further energy storage deployment in the state.
- Through the ACES Program, Massachusetts has provided \$20 million in grants to about 25 energy storage projects that test various, multi-use business cases for energy storage.
- ACES projects encompass a wide range of use cases, from merchant solar-plus-storage and utility dispatched residential storage to resiliency/microgrids and transit applications.
- The technologies, while mostly calling for lithium-ion batteries, also include a flywheel, a vanadium redox flow battery and a zinc iron flow battery.
- In all, the ACES projects represent 32 MW and 85 MWh of energy storage capacity, of which 16 MW and 45 MWh are within electric distribution company territory. At year end, Massachusetts had 4 MW and 7 MWh of advanced energy storage installed.

LEGISLATION

Like other states that are leading the energy storage policy development effort, the Massachusetts Legislature has been a primary vehicle for defining high-level goals and guidelines.

H. 4568 (“An Act Relative to Energy Diversity”) (August 2016)

- The primary purpose of H. 4568 was to require utilities to competitively solicit and contract for approximately 1,200 MW of clean energy generation.
- Specific to storage, H 4568 directed the MA DOER to set a storage target for 2020 if deemed to be necessary.
- Established that any procurement target established by the MA DOER would need to be adopted by July 2017, and then electric companies would have to comply by the start of 2020. The law established that any storage targets established by the MA DOER would need to be re-evaluated no less than every three years.
- To qualify as energy storage, a system must reduce greenhouse gas emissions, cut demand for peak electrical generation, avoid new investment in generation, transmission or distribution assets, or improve the reliability of the grid.
- Significantly, the legislation also specified that electric distribution companies may own energy storage, which represented a significant policy change as previously storage had

been defined more narrowly as generation for the purpose of bidding into wholesale markets. This previous definition thus prohibited distribution companies from owning storage in Massachusetts' deregulated power market, where generation and distribution companies must be separate.

- Distribution companies in the state were successful in getting the prohibition against utility ownership of storage removed based on the argument that they would have to pay for T&D system upgrades, and thus they have an interest in procuring storage to defer more expensive infrastructure updates. The new law would allow them to install and own storage directly, simplifying the process.
- Following extensive public input, the MA DOER concluded that Massachusetts should set targets for energy storage systems, and an initial storage targeted was established (1,000 MWh by 2025)

H. 4857 ("An Act to Advance Clean Energy") (August 2018)

- Established an increased energy storage deployment target for utility, third-party, and customer-owned systems of 1,000 MWh of by 2025. The law also empowered the MA DOER to consider a variety of policies to help achieve this target.
- Expanded Massachusetts' Renewable Portfolio Standard by increasing the annual RPS growth rate from the previous 1 percent annually to 2 percent from 2020 to 2029, dropping back down to 1 percent thereafter.
- The law created the Clean Peak Standard for the state (the first of its kind in the nation), which requires retail suppliers to provide a minimum percentage of retail sales during seasonal peak periods from eligible renewable, energy storage, and demand response resources.
 - The legislation defines a clean peak resource as "a qualified RPS resource, a qualified energy storage system or a demand response resource that generates, dispatches or discharges energy to the electric distribution system during seasonal peak periods, or alternatively, reduces load on said system."
 - The MA DOER was charged with setting the baseline for compliance and promulgating regulations to implement the new program.
- Established that distribution companies are allowed to consider and solicit for non-wire alternatives for the resiliency of their distribution systems;
- Requires the MA DOER to study the feasibility of mobile battery storage systems.
- H. 4857 also established policy for solar, offshore wind, grid modernization & resiliency, and energy efficiency, all of which are closely related to storage policy.
 - **Solar**– Addresses the unfair and inefficient mandatory residential demand charge approved in Eversource's recent rate case, requiring Eversource to refile with the Department of Public Utilities (DPU) a modified Monthly Minimum Reliability Contribution (MMRC) proposal to meet new criteria that protect customers.

- **Offshore Wind**— Allows the DOER, after studying needs, benefits, and costs, to conduct additional offshore wind procurements of up to 1,600 additional MW by 2035 (doubling the original 1,600 MW authorization enacted in 2016).
- **Grid Modernization & Resiliency** – Requires utilities to file annual resiliency reports with the DPU and authorizes the utilities to hold competitive solicitations for non-wires alternatives to distribution grid investments from third party developers. These project proposals will be evaluated for their ability to reduce greenhouse gas emissions, replace aging infrastructure, and provide benefits to stressed, congested, or severe weather-prone areas of the electric grid.
- **Energy Efficiency** – Promotes energy efficiency by enabling more advanced technologies, such as renewable resources, energy storage, strategic electrification, and other clean energy technologies to qualify under Massachusetts’ energy efficiency programs. Also requires cost-effectiveness evaluation to be conducted at the sector level (e.g., “commercial retrofits”) rather than measure level, and allows for the consideration of other benefits beyond “system benefits.”

Pending Legislation

As of August 2019, pending legislation in Massachusetts Legislature could result in a 100-percent renewables goal for the state.

- **S 2545** (2019) (“An Act to Promote a Clean Energy Future”) (approved by the Senate in June 2019), still under review in the House: This bill would increase existing Renewable Portfolio Standard requirements in Massachusetts from a current level of 13 percent in 2018 to procuring 49 percent of their electricity from renewables in 2030, 79 percent in 2040 and 100 percent in 2047. If SB 2545 is passed by the Massachusetts House and signed by the governor, Massachusetts would join Hawaii as the only U.S. states with 100 percent renewable energy targets.
- **H 4318** (March 2018): Gov Baker proposed this legislation that encourages electricity and natural gas distribution companies to consider energy storage as part of their joint electric and natural gas efficiency plans. H 4318 does not propose to require that the LDCs include energy storage in their analyses, instead suggesting that the LDCs include energy storage as part of their efficiency and load management programs. The bill remains pending in the Massachusetts House of Representatives.

REGULATIONS

Along with the legislative activity summarized above, regulatory policy set at the Massachusetts Department of Public Utilities also has created precedent-setting policy for energy storage in Massachusetts.

D.P.U. 17-146: Energy Storage Paired with Net Metering Facilities; Net Metering Participation in the Forward Capacity Market

On October 3, 2017, the Massachusetts DPU opened the docket D.P.U. 17-146 to investigate two issues: whether energy storage systems paired with net metering facilities are eligible for net metering and what should be done to clarify the rights of net metering facilities to participate in the Forward Capacity Market (“FCM”), in which a regional grid manager (ISO New England in this case) pay electricity generation resources simply for staying available, even if they happen not to be used.

- These two issues have been under investigation for a number of years in Massachusetts, stemming from filings made by storage market participants seeking clarity on state and wholesale market policies. Consider the following:
 - In June 2015, SolarCity filed a petition for an advisory ruling on whether a project that combined solar generation and energy storage was eligible to net meter as a Class II net metering facility. SolarCity resolved the issue underlying its petition outside of the DPU process and withdrew its petition before further proceedings took place.
 - National Grid proposed ratemaking treatment for the costs and proceeds associated with bidding the capacity of net metering facilities into the FCM.
 - In July 2016, Genbright petitioned the DPU for a declaratory order regarding net metering facilities’ rights to participate in the FCM and for clarification on the applicability of net metering regulations to energy storage projects.
 - In May 2019 In May of this year, Tesla filed a petition for declaratory relief and an advisory ruling with respect to the eligibility of energy storage and solar facilities to net meter where (1) the solar net metering facility has a capacity of less than 60kW, (2) the battery storage charges only from the solar net metering facility, and (3) the battery storage does not export power to the grid. The DPU issued a narrow ruling specific to Tesla only, that such facilities “should be eligible to net meter,” but reserved broader policy issues for this new docket.
- On February 1, 2019, the Massachusetts DPU issued two orders within the context of D.P.U. 17-146:
 - D.P.U. 17-146 (A)
 - The order defined “energy storage system” for net metering purposes ('ESS') as: a commercially available technology that is capable of absorbing energy, storing it for a period of time and thereafter dispatching electricity; provided, however, that an energy storage system shall not be any technology with the ability to produce or generate energy."
 - The order also allowed net metering facilities to be paired with ESS but limited the permissible configurations. It allowed configurations in which:

- The energy storage system (ESS) is charged only from the net metering facility and cannot export to the electrical grid;
 - The ESS is charged only from the net metering facility but is programmed to allow exports to the electrical grid; and
 - The ESS is charged from both the net metering facility and the electrical grid, but cannot export to the electrical grid.
 - The Department did not allow configurations where the ESS is unrestricted as to charging source and can export to the electrical grid.
- D.P.U. 17-146 (B)
 - The DPU further addressed capacity market issues in D.P.U. 17-146 (B), in which the MA DPU accepted a compromise proposal from stakeholders.
 - Under the compromise proposal, Distribution Companies are required to monetize the capacity of DG Facilities in one of two ways:
 - Directly monetize the capacity by qualifying and bidding that capacity into the FCM to obtain a capacity supply obligation (CSO) commitment (“Option 1”); or
 - Register the DG Facility in the FCM to passively earn performance incentive payments under ISO-NE’s PFP rule (“Option 2”)
 - The Order also determined the conditions under which energy storage can participated in FCMs, as follows:
 - For Class I net metering facilities, which are 60 kW or less, capacity rights stay with the facility owner.
 - For ESS paired with net metering or SMART facilities, the capacity associated with the ESS (distinct from the capacity of the associated net metering or SMART facility) will also stay with the facility owner.
 - For Class II (more than 60 kW but less than or equal to 1 MW) and Class III net metering facilities (more than 1 MW but less than or equal to 2 MW), and for SMART facilities using the alternative-on-bill crediting mechanism, capacity rights will automatically transfer to the electric distribution company, which will then be required to participate in the forward capacity market either by obtaining a capacity supply obligation, or registering to passively earn performance incentive payments.
 - For an existing Class II or Class III net metering facility, the capacity rights remain with the facility owner if a distribution company has not previously asserted title to the capacity rights

and a host customer has either qualified the facility in a Forward Capacity Auction or submitted a qualification package in the most recent a Forward Capacity Auction prior to the date of the Order.

- Facilities that are behind the meter or that are paired with ESS will have an option to buyout the capacity rights from the EDC according to a set formula. Although commenters had suggested broader buyout options, the Department believed that limiting the buyout mechanism to these circumstances was the appropriate balance for returning value to ratepayers at this time.
- The Department deferred a decision on the capacity rights of Qualifying Facilities, an issue of relevance to SMART participants, suggesting that the matter will be decided in connection with an ongoing review of its QF regulations in D.P.U. 17-54.
- **D.P.U. 19-55 (“Interconnection of Distributed Generation”) (2019)**
 - The MA DPU opened this docket on May 22, 2019, to investigate the interconnection of distributed generation ("DG") in Massachusetts.
 - The MA DPU has expressed its intention that energy storage interconnection be included in the definition of DG in this docket despite defining DG as "technologies that generate electricity".)
 - Orders from this docket proceeding are still pending.

THE FUTURE OF ENERGY STORAGE IN MASSACHUSETTS

It is clear that Massachusetts has made great strides in developing energy storage policy and other states continue to look at the Bay State for insights as to how to approach complex policy issues in their own states. However, there are number of storage policy issues that remain “top of mind” for policymakers in Massachusetts and as of August 2019 remain unsettled. These issues include:

- Storage’s eligibility to participate in the state’s net metering program;
- Which entity will have capacity value of storage that participates in ISO-NE’s forward capacity market;
- Restrictions against “gaming the system” at the distribution level should all forms of energy storage be allowed to participate in the state’s net metering program;
- Revision to existing tariffs and rate design in the state to further accommodate the participation of storage

Updated August 20, 2019