

DER

Massachusetts Department
of Energy Resources

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENERGY RESOURCES

Elizabeth Mahony, Commissioner

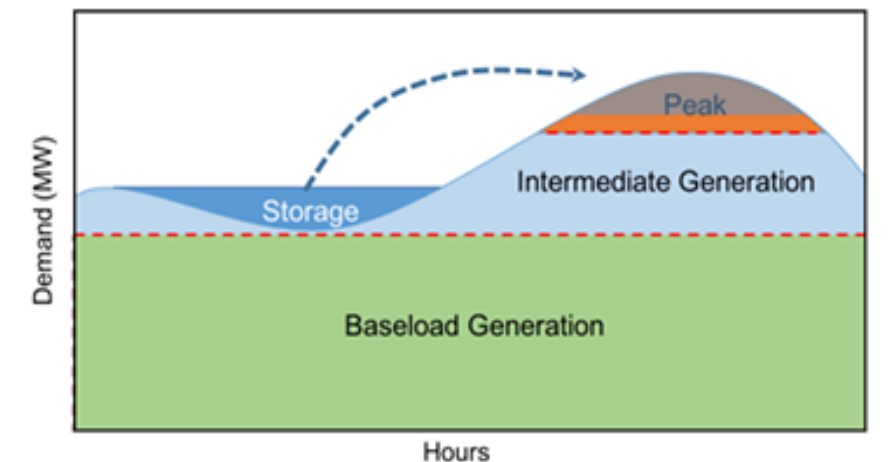
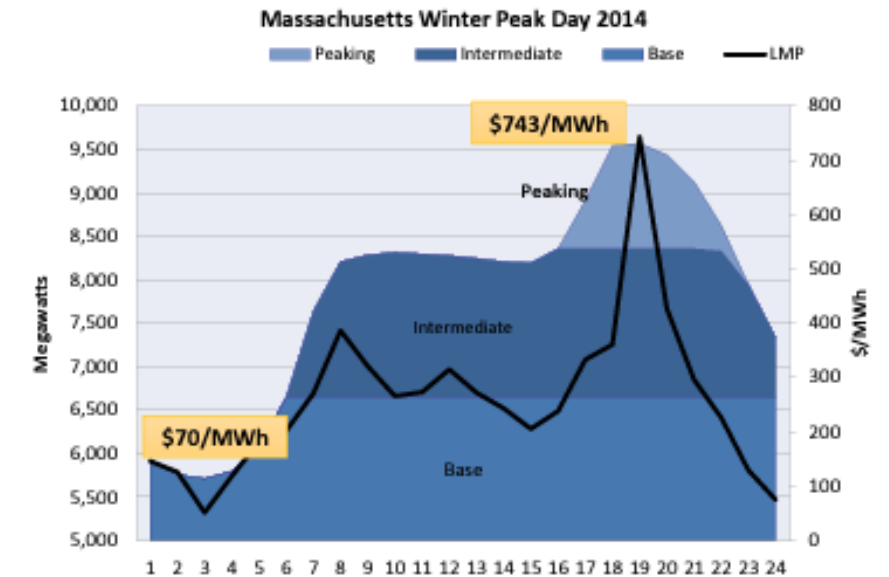
Energy Storage in Massachusetts

Joanna Troy, Director of Policy and Planning

May 17, 2023

Energy Storage in Massachusetts

- Governor Baker launched the **Energy Storage Initiative in May 2015**, with the goal of advancing the energy storage segment of the Massachusetts clean energy industry
- In September 2016, DOER released the **State of Charge: Energy Storage Report** with key findings and recommendations to advance energy storage policy in the Commonwealth:
 - Provide incentives to encourage BTM Storage where it can reduce cost of electricity and create system benefits through reduced peak demand and greater utilization of on-site generation
 - Include Energy Storage in the Commonwealth's energy portfolio standards
 - Establish and clarify regulatory treatment of utility owned storage, including support the use of storage as a peak demand savings tool in the EE plans
 - Allow storage in the clean energy procurements
 - Encourage ISO-NE market rule changes that unlock storage benefits
- On August 9, 2018, An Act to Advance Clean Energy, was signed into law. Section 20. of the Act established a 1,000 MWh **energy storage target** to be achieved by December 31, 2025.



Current Energy Storage Landscape

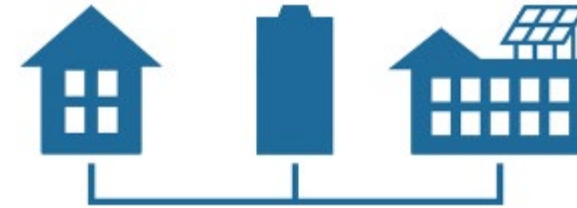
Front of the Meter



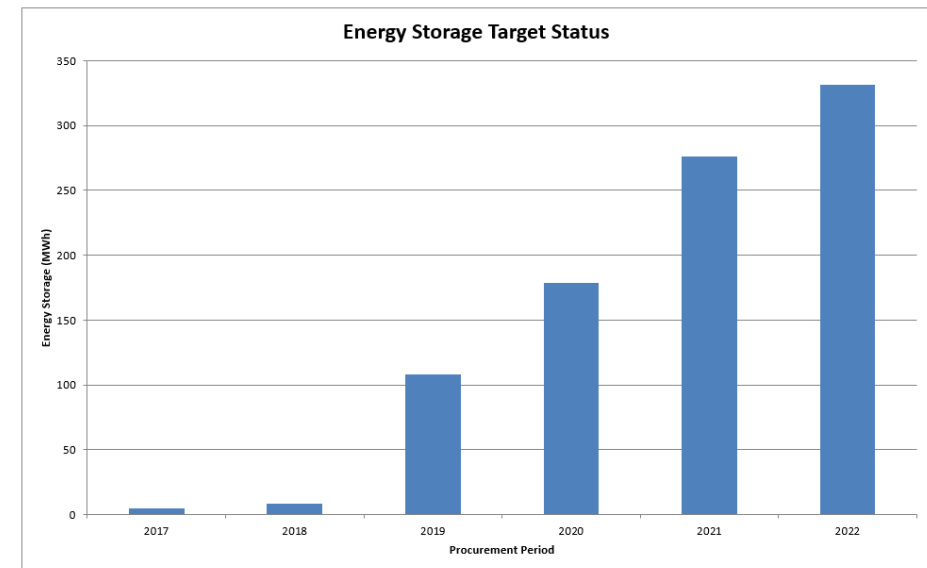
On March 21, 2023, ISO New England filed the finalized results of the 17th Forward Capacity Auction (FCA 17) with FERC

- Solar and wind generation accounted for 3.5% of all obligations in FCA 17 (including new and existing resources), a sixfold increase over five years ago, and they accounted for 35% of new generating resources.
- Battery storage, which was largely nonexistent five years ago, also accounted for 3.5% of total obligations secured in FCA 17, and 65% of new generating resources.

Behind the Meter

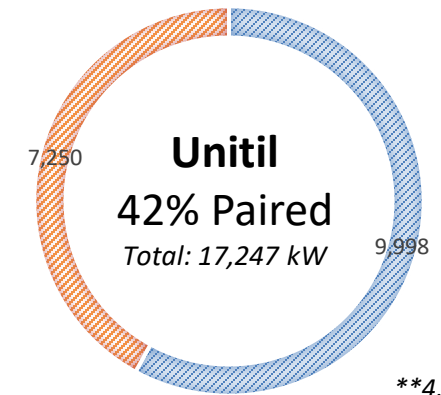
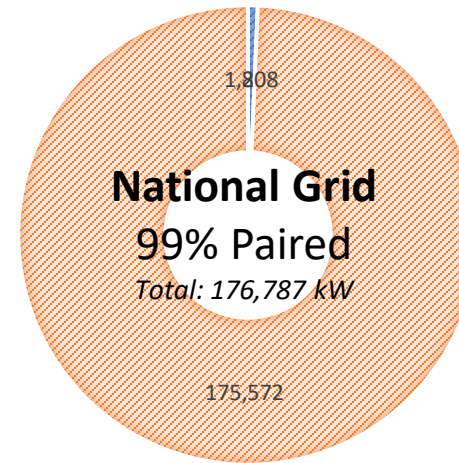
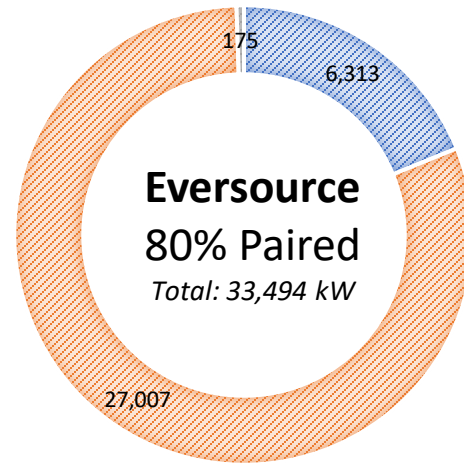


On February 15, 2023, EDCs reported 330 MWh of installed energy storage with an additional 2700 MWh of storage in the pipeline.



Energy Storage using SMART Storage Adder

Distribution Battery
Capacity (kW)
that is Paired with
Distributed Generation



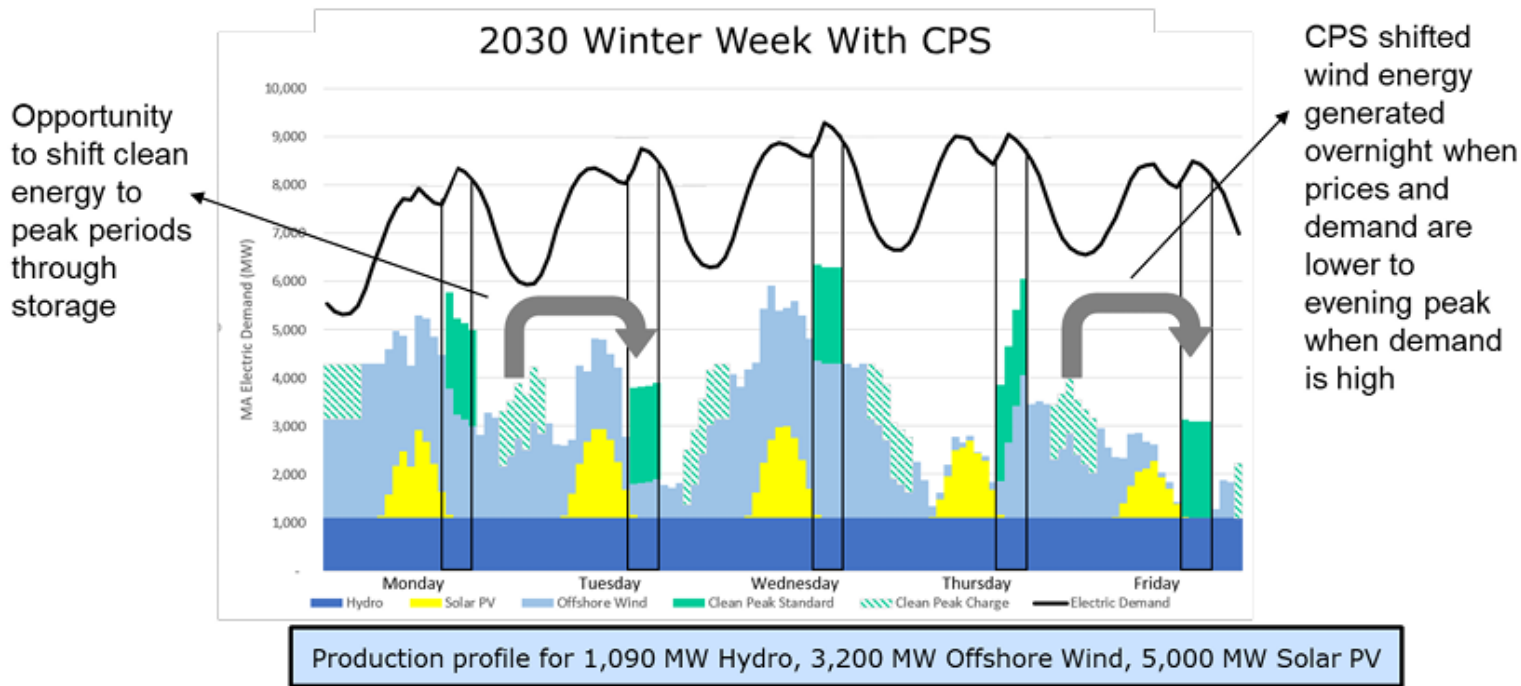
Size of Relative Graphs is Approximate

**4,000 kW of Capacity is
Unitil-Owned Storage at a
Substation

- The Solar Massachusetts Renewable Target (SMART) Program is DOER's incentive program established to support the development of solar in Massachusetts.
- Solar as a standalone technology has operational limitations and impacts that limit deployment and impose diminishing returns on additional installations
- The Storage Study found that peak demand accounts for a disproportionately high percentage of the cost of electricity for ratepayers in the Commonwealth. Solar alone does not necessarily coincide with peak demands, and as such may not address a root cause of higher electricity costs.
- DOER provides an energy storage adder (\$/kWh) as part of the SMART program that varies based on the capacity of the storage and the DG system

Clean Peak Standard

- The Massachusetts Clean Peak Energy Standard is designed to provide incentives to clean energy technologies that can supply electricity or reduce demand during seasonal peak demand periods established by DOER.
- The final regulation was filed with the state secretary on July 23, 2020, and took effect on publication in the Register on August 7, 2020.
- On August 15, 2021, the Department of Energy Resources (DOER) posted drafted guideline on resource eligibility and demand response



Eligible Technologies



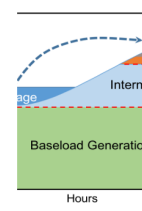
New RPS Class I generation units in operation on or after 1/1/19



Existing RPS Class I / Class II generation units (in operation prior to 1/1/19) that are paired with a Qualified Energy Storage System



Qualified Energy Storage Systems operating to primarily store and discharge renewable energy and installed on or after 1/1/19



Demand Response Resources, as defined by the Clean Peak Energy Standard

Connected Solutions

- Through MassSave, ConnectedSolutions incentivizes customers to curtail their energy when demand on the New England electric grid is forecasted to be at its peak, known as Demand Response. Customers are compensated on a pay-for-performance basis for the average kW they curtail during dispatch events over the summer season.
- Customers may co-participate in SMART and the CPS
- For a typical battery capable of a 5-kW continuous contribution during these events, customers would receive \$1,375 per year of participation through the ConnectedSolutions program.

Performance Incentive	For National Grid and the Cape Light Compact Customers: \$275 per kW
	For Eversource Customers: \$225 per kW
Discharge Events per Season	30 to 60
Months Discharge Events Can Occur	June through September
Time Discharge Events Can Occur	2 p.m. to 7 p.m.
5-year incentive lock	Yes



Energy Storage at ISO-NE

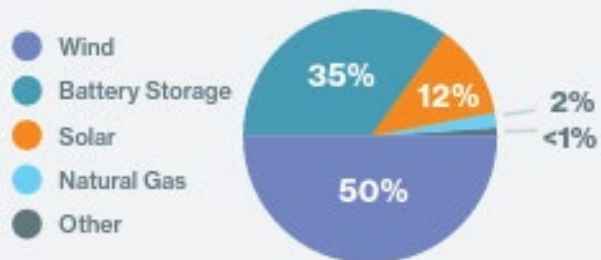
Massachusetts is a member of the New England States Committee on Electricity (NESCOE) and, with the other New England States, works with ISO-NE to support policies that achieve the states' objectives



- The New England planning processes do not allow storage to be considered as a **transmission asset** when addressing identified needs and therefore storage is not available for treatment as a transmission asset
 - This is predominantly because electric storage facilities have historically been treated as **market resources**
- Following NESCOE's advocacy for ISO-NE to change their tariff to allow for storage as a transmission asset, on December 29, 2022, ISO-NE filed Storage as Transmission-Only Asset or SATOA tariff- revisions with FERC
 - NESCOE filed comments in support of this filing in January 2023

Proposed Generation

Developers have proposed nearly 32,000 MW of new generating resources as of January 2023.



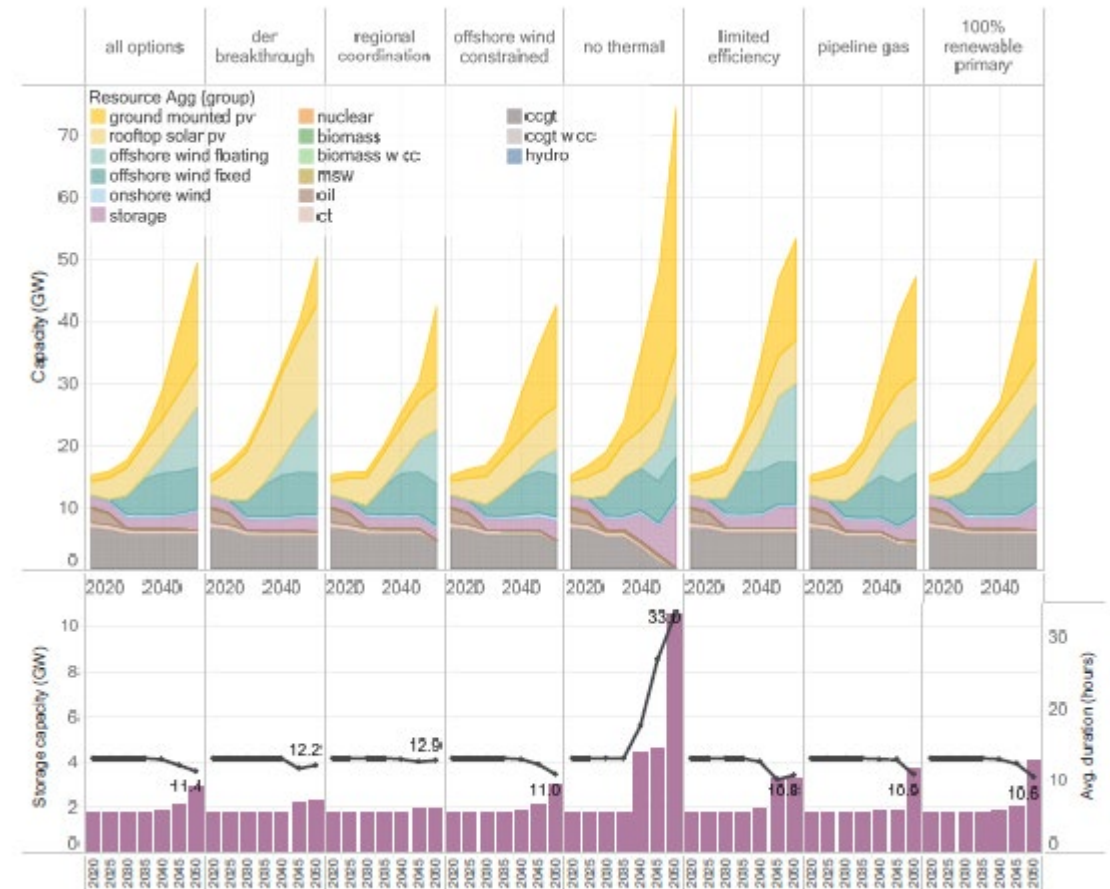
Battery storage technologies are emerging at the customer and grid level: more than 11,000 MW proposed

Planning for the Future: 2050 Decarbonization Roadmap and 2050 CECP

The Executive Office of Energy and Environmental Affairs undertook a planning process, the 2050 Decarbonization Roadmap, published in December 2020, to identify cost-effective and equitable strategies to ensure Massachusetts reduces greenhouse gas emissions by at least 85% by 2050 and achieves net-zero emissions.

Key Energy Storage Takeaways

- New battery electric storage for **shifting renewable energy supply in time played only a minor role in balancing** the bulk power system. This was due to the combined effects of the timing of renewable generation in a wind-heavy system, existing pumped storage capacity, and the capabilities of transmission ties with Quebec. **However, flexible end-use demand proved valuable for reducing transmission and distribution costs**, suggesting a potentially important role for storage in similar applications.
- Retiring existing natural gas power generation in the absence of unforeseen **breakthroughs in long-duration energy storage** technology will lead to dramatic cost increases for providing alternative strategies for electricity balancing.



Massachusetts electricity capacity by year and pathway. (Bottom) Average duration (hours) for energy storage in each year.

Planning for the Future: Long Duration Energy Storage Study

- Section 80 of Chapter 179 of the Acts of 2022 (“An Act Driving Clean Energy and Offshore Wind”) requires the Department of Energy Resources (DOER), in consultation with MassCEC, to conduct a study on mid- to long-duration energy storage.
- Goals of the Study include investigations into:
 - The cost-effective deployment and utilization of both new and existing mid-duration and long-duration energy storage systems
 - The necessity, costs and benefits of requiring distribution companies to jointly and competitively conduct energy storage systems solicitations and procurements of up to 4,800 GWh of stored energy from renewable generation
 - Other methods to help increase the utilization of energy storage systems
 - The state of energy storage systems currently in development
 - Cost effectiveness of providing tax incentives
 - The cost effectiveness of financing mechanisms and incentives
 - The location patterns of energy storage systems currently in use; and
 - Opportunities for future expansion in energy storage

MassCEC, DOER, and E3 will be conducting stakeholder sessions to present interim work products, address technical questions, and collect feedback on the Study. The sessions will be held on June 7 and August 16, 2023. Both will take place via Zoom from 9:30 to 11:00 am ET

<https://www.masscec.com/energy-storage>

Register for June 7

Register for August 16

THANK YOU!