# Energy Storage Initiatives in Massachusetts

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MASSACHUSETTS CLEAN ENERGY CENTER®

# State-Level Energy Storage Mandates across the U.S.

**California Mandate**

- 1.3 GW by 2020 under AB 2514

**Oregon Mandate**

- 5 MWh by 2020 under H.B. 2193

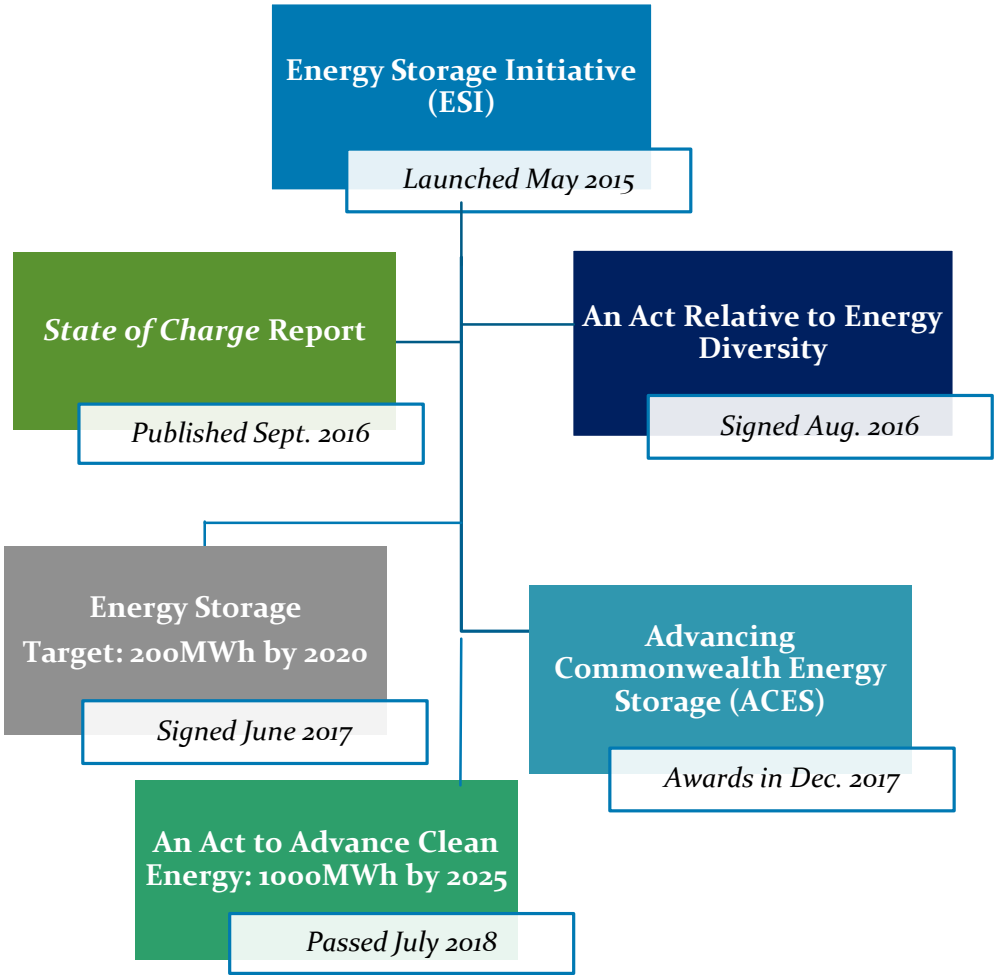
**Massachusetts Target**

- 1,000 MWh by 2025 under House No. 4857

**New York Target**

- 1,500 MW by 2025 (New York State Energy Storage Roadmap)

# Energy Storage Initiative and Actions




## Energy Storage Initiative (ESI)

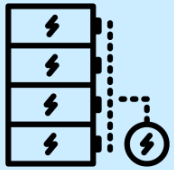
- Aims to find the most cost efficient and effective way to help transform the Commonwealth energy market
  - Market expansion, valuation of storage benefits
  - Policy recommendations and development
  - Technology development

# *State of Charge* Study and ACES

**State Of Charge Study**

DOER and MassCEC released the *State of Charge* study to analyze the potential benefits of incorporating energy storage technologies into Massachusetts' energy portfolio.

## Main Conclusions



Energy storage can potentially provide $800 million in system benefits to Massachusetts ratepayers

Recommends policies to promote development of 600 MW advanced energy storage in Massachusetts by 2025

# *State of Charge* Study and ACES

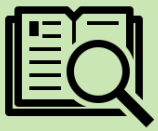
**Advancing Commonwealth Energy Storage (ACES) Demonstration Projects**

The ACES program is funding **energy storage demonstration projects** that pilot **innovative, broadly replicable use cases/business models** with multiple value streams in order to prime Massachusetts for increased commercialization/deployment of storage technologies.
The Baker Administration originally allocated $10 million but increased it to $20 million in December 2017.

## ACES Project Timeline

- June 9th, 2017 **Application Deadline** Complete ✓
- June-Aug. 2017 **Initial Reviews** Complete ✓
- Sep.-Oct. 2017 **Final Review and Recommendations** Complete ✓
- Nov. 2017 **Award Announcements** Complete ✓
- Feb. 2018-Present **Contracting** In Progress

26 proposals selected for award

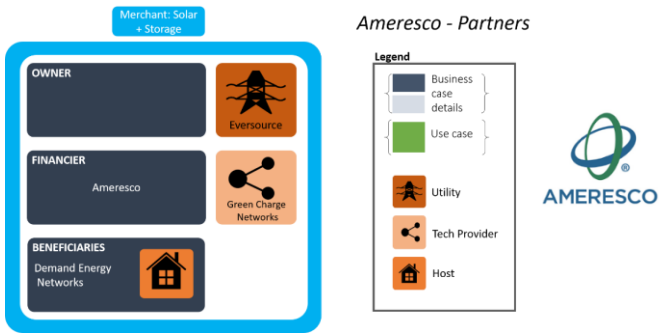


8 use cases from State of Charge, one new use case

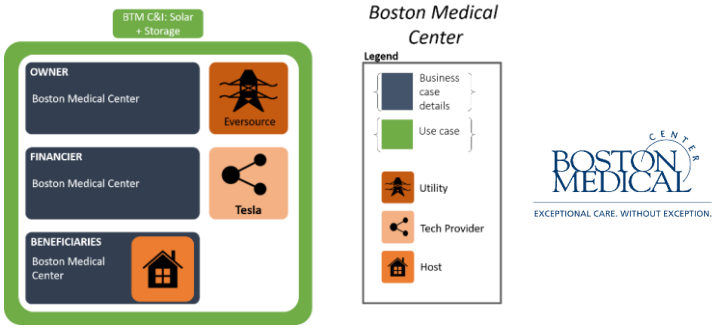
32 MW/85 MWh of energy storage proposed

$20 MM of Grant funding requested and $32 MM Cost share leveraged

# Example ACES Awards

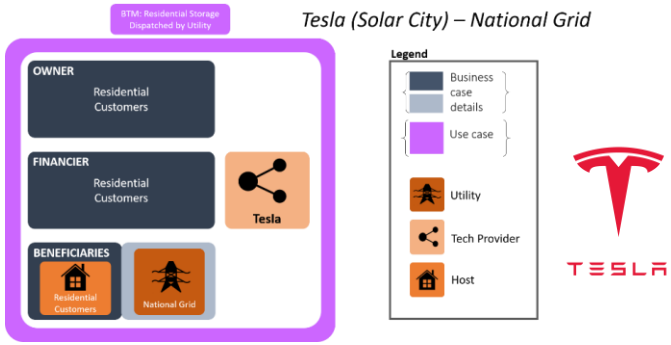



| | |
|---|---|
| **Use Case:** | Merchant, Solar+Storage |
| **Technology:** | Li-on Battery |
| **Capacity:** | 250kW/500kWh |
| **Host Site Type:** | Commercial |
| **Location:** | Somerville |
| **Benefits:** | • Demand charge reduction<br>• ISO NE demand response<br>• ISO-NE capacity tag reduction<br>• Customer resiliency<br>• Reduced power outage-related safety threats<br>• GHG reductions |



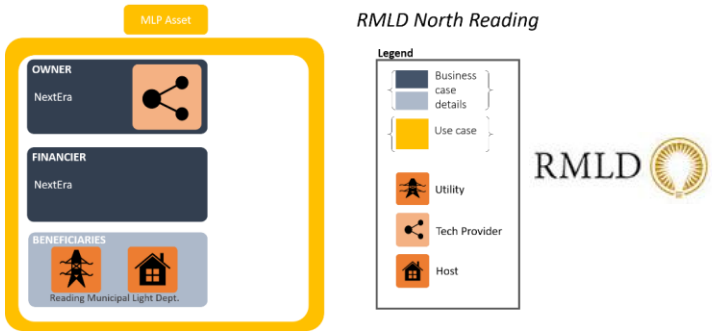

| | |
|---|---|
| **Use Case:** | BTM C&I |
| **Technology:** | Li-on Battery |
| **Capacity:** | 520kW/1044kWh |
| **Host Site Type:** | Hospital |
| **Location:** | Boston |
| **Benefits:** | • Demand charge reduction<br>• ISO-NE capacity tag reduction and frequency regulation<br>• Critical equipment support, resiliency and backup power through voltage support<br>• Support of low income communities<br>• Upgrade deferral<br>• Wholesale market costs reduction, grid congestion relief<br>• GHG reduction |

# Example ACES Awards




*Tesla (Solar City) – National Grid*

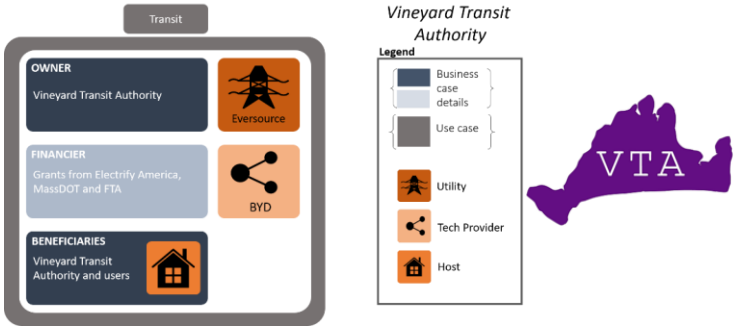
| | |
|---|---|
| **Use Case:** | BTM – Residential Aggregated Storage Dispatched by Utility |
| **Technology:** | Li-on battery |
| **Capacity:** | 5KW/13.2kWh |
| **Host Site Type:** | Multiple Residential Sites |
| **Location:** | Nantucket |
| **Benefits:** | • Customer backup power<br>• ITC if solar<br>• Increased renewable integration<br>• Utility benefits including capacity and transmission savings<br>• Congestion relief on Nantucket |




*RMLD North Reading*

| | |
|---|---|
| **Use Case:** | Municipal Light Plant (MLP) Asset |
| **Technology:** | Li-on battery |
| **Capacity:** | 5,000kW/10,000kWh |
| **Host Site Type:** | Utility |
| **Location:** | Reading |
| **Benefits:** | • ISO NE capacity and transmission savings including reserve margin<br>• Energy arbitrage<br>• Potential ISO-NE demand response and frequency regulation (load reconstitution risk)<br>• Voltage control<br>• Resiliency<br>• Microgrid capability |

# Example ACES Awards

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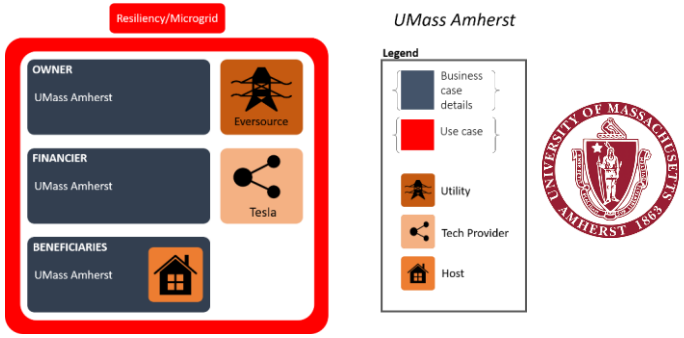
|---|---|
| **Use Case:** | Transit |
| **Technology:** | Li-on battery |
| **Capacity:** | 500kW/1400kWh |
| **Host Site Type:** | Transit site |
| **Location:** | Martha's Vineyard |
| **Benefits:** | • Fuel savings (diesel to electricity)<br>• Solar+storage powering EV charging<br>• Operational flexibility<br>• Service resiliency<br>• Distribution system efficiency<br>• GHG reductions<br>• Health benefits |




| | |
|---|---|
| **Use Case:** | Resiliency/Microgrid |
| **Technology:** | Li-on battery |
| **Capacity:** | 1,000KW/400 kWh |
| **Host Site Type:** | Education |
| **Location:** | Amherst |
| **Benefits:** | • ISO-NE capacity and transmission savings<br>• Energy arbitrage<br>• Ancillary revenue<br>• GHG reduction<br>• Wholesale market cost reduction<br>• Energy cost reduction<br>• Reduced use of peak energy/capacity<br>• Resiliency and microgrid support |

# Energy Storage Safety Training, Codes and Standards

## Safety Training, Codes and Standards

- *State of Charge* study recommendations include clarification and development of safety training, codes and standards
- Will ensure robust market and facilitate smooth deployment of energy storage

## Moon Island Project

- Primary purpose: demonstrate, inform, and support the development of storage fire safety training, codes and standards with a solar plus storage system
- Secondary purpose: provide energy resilience to the Boston Fire Department training facility
- Collaboration: MassCEC, Boston Fire Department, City of Boston, DNV-GL

PHASE 1
**Engineering Design**
In Progress

PHASE 2
**Implementation**
Not Yet Started

# Other Energy Storage Programs/Incentives

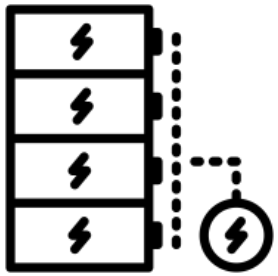
**Peak Demand Management Program**

In July 2017, Massachusetts DOER awarded peak demand reduction grants. Of these, 3 grants totaling nearly $3.1 million aimed to reduce peak demand with energy storage.

**CCERI**

**Community Clean Energy Resiliency Initiative (CCERI)** is a grant program to protect communities from energy service interruptions caused by severe climate events.

- Focus on critical infrastructure, technical assistance, resiliency
- $40 million in allocated funds; three rounds of grants to date



Icons sourced from the Noun Project at thenounproject.com

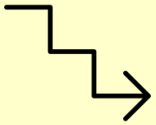
# Relevant Programs/Incentives on the Horizon

## SMART Program

Massachusetts Department of Energy Resources (DOER)'s solar incentive program, with storage adder. The goal of this program is to create a long-term sustainable solar incentive program that promotes cost-effective solar development in the Commonwealth.

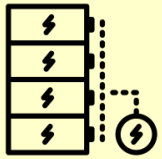
## Main Provisions

Applies to electric distribution companies and owners of solar tariff generation units



Covers 1,600MW declining block program

Offers 10- or 20-year fixed-price terms depending on unit capacity



Adder based on relative size and duration of storage

Icons sourced from the Noun Project at thenounproject.com

# Relevant Programs/Incentives on the Horizon

## Clean Peak Standard

On July 31st, 2018 the MA Legislature passed "An Act to Advance Clean Energy" (Bill H.4857). This bill is the result of a compromise between an aggressive Senate bill and a modest House bill on clean energy.

## Main Provisions

Increases the renewable portfolio standard (RPS) from 1% to 2%, bring overall RPS to 35% by 2030

Establishes a clean peak standard (CPS)

Sets an energy storage goal of 1,000 MWh by 2025

Authorizes the solicitation of an additional 1,600MW of offshore wind by 2035

Icons sourced from the Noun Project at thenounproject.com

# Thank you!

Email us with questions to energystorage@masscec.com
Visit us at www.MassCEC.com