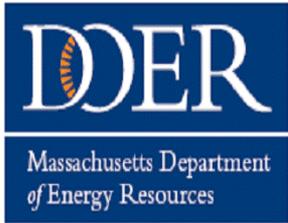




**AMERICAN COUNCIL
OF ENGINEERING COMPANIES OF
MASSACHUSETTS**

JUNE 4, 2019

**MASSACHUSETTS DEPT. OF ENERGY RESOURCES
COMMISSIONER JUDITH F. JUDSON**



MASSACHUSETTS ENERGY

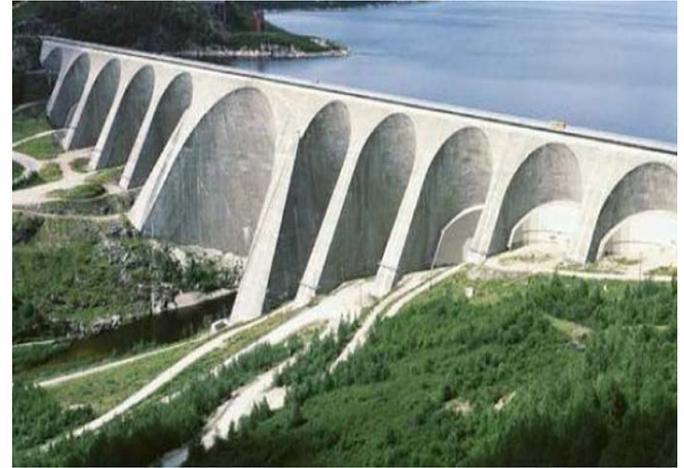
APPROACH

- Reduce and **stabilize the rising cost** of energy for consumers
- Continue the Commonwealth's commitment to a **clean energy future**
 - Global Warming Solutions Act: greenhouse gas reductions of **25% by 2020** and **80% by 2050** (1990 baseline)
- Ensure that we have a **safe, reliable, and resilient** energy infrastructure

CLEAN ENERGY PROCUREMENTS

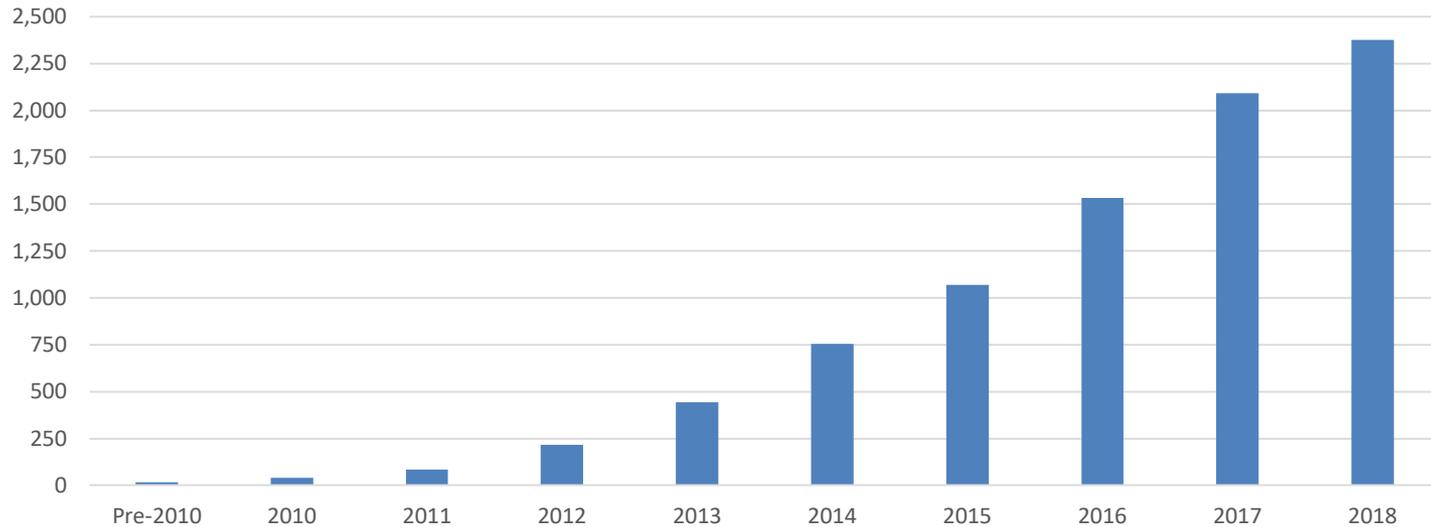
On path to 60% of Electricity being supplied by Clean Energy

- Hydroelectric power - New England Clean Energy Connect 1200 MW / 9.5 TWh
- Offshore wind 1st solicitation - Vineyard Wind 800 MW
- Offshore wind 2nd solicitation for up to 800 MW released May 2019
- DOER released study on May 31st on the necessity, benefits and costs of an additional 1600 MW of offshore wind
 - Requiring addition solicitations in 2022 and 2024



NATIONAL LEADER IN SOLAR

Cumulative Installed Solar PV Capacity (MW DC)



90,000+ installed projects, 2,300+ MW

Solar in all 351 cities and towns

NEW SOLAR INCENTIVE PROGRAM

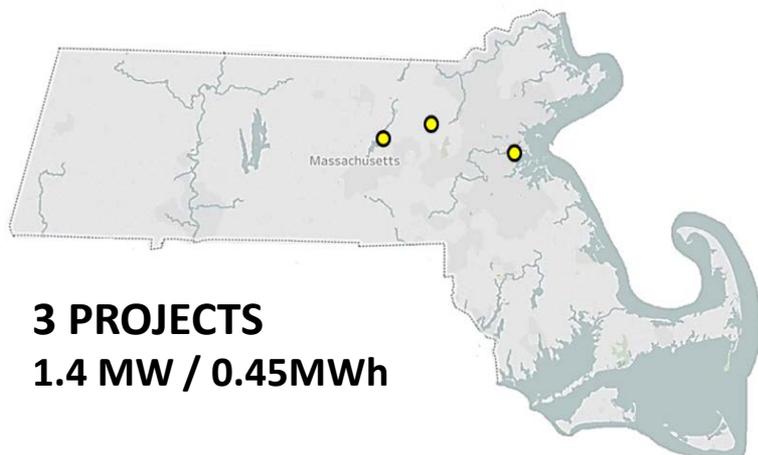


- Launched November 26
- Long term certainty with 10 – 20 years of fixed revenue streams
- Alternative on-bill credit mechanism
- Incentives for projects on brownfields, landfills, parking lots, rooftops
- \$4.7 billion in cost savings to ratepayers when compared to previous solar programs
- 1st in the nation – solar + storage incentive

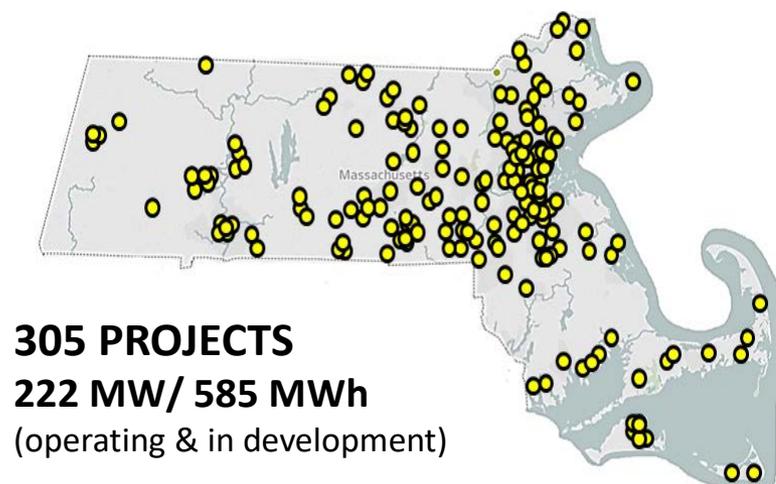
MASSACHUSETTS ENERGY STORAGE SUCCESS

Since launching our **Energy Storage Initiative** in 2015, Massachusetts has become a national leader for policies and programs for storage deployment

2015



2019



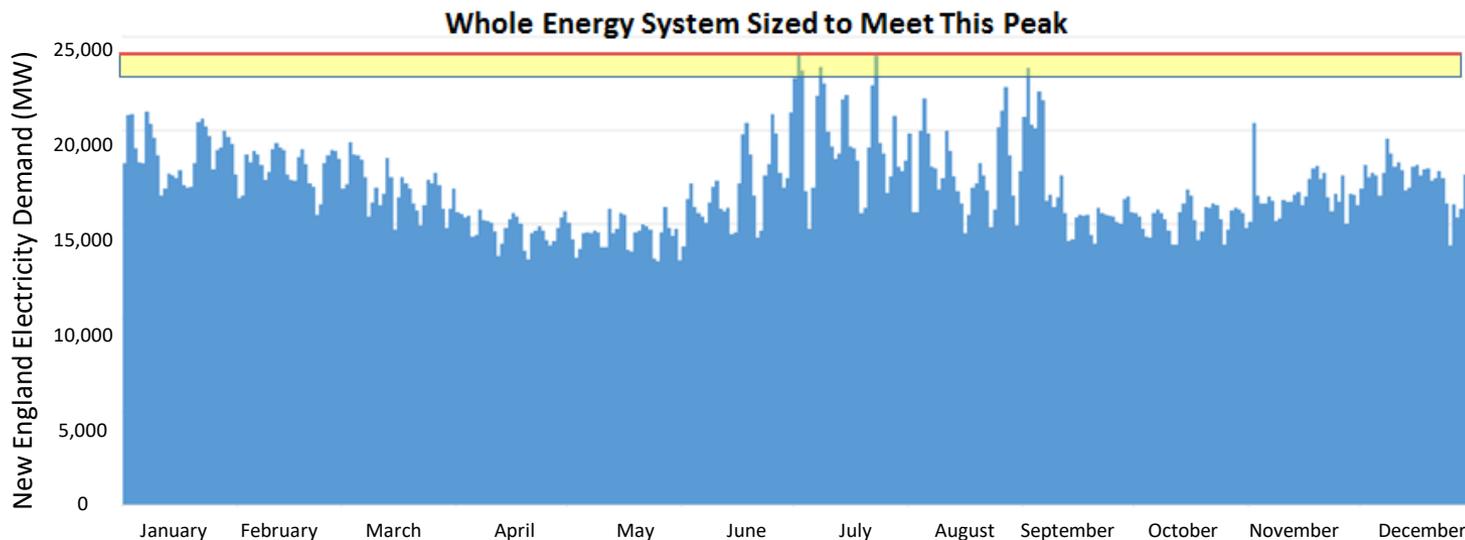
BENEFITS OF STORAGE

Recent advances in new storage technologies have made wide-scale storage of electricity possible

Historically the inability to store electricity (other than pumped hydro storage), required the power grid to be sized for the highest annual peak demand resulting in inefficiencies, underutilization of assets, and high cost.

Storage is “Game Changer”:

- Allows use of energy generated during low cost periods to serve load during expensive peak
- Defers investment in transmission and distribution “wires”, reduces need for “peaker” plants
- Enables wind and solar energy to be used when the sun isn’t shining and the wind isn’t blowing
- Provide resiliency during severe weather
- Benefits increase as we electrify transportation and thermal sectors



In 2015 :
The top 1% of
Hours accounted
for 8% of MA
Spend on
Electricity

**Top 10% of
Hours accounted
for 40% of
Electricity Spend**

KEY POLICY ACTIONS AND MILESTONES TO PROMOTE STORAGE DEPLOYMENT

2016

- DOER and Mass Clean Energy Center published “**State of Charge**” **Energy Storage Study**
- Storage included in **Comprehensive Energy Legislation**
 - Defined storage, clarified utilities may own storage, and authorized DOER to set target



Braintree MLP
2 MW / 4.2 MWh ESS
ESI-ACES Grant



Sterling
2 MW / 3.9MWh ESS
Community Resilience Grant



Holyoke
3 MW / 6 MWh ESS
Peak Demand Grant

2016/2017

- **Funded Grant and Demonstration opportunities**
 - \$20 million Advancing the Commonwealth Energy Storage (ACES) Program
 - \$40 million Community Energy Resilience
 - \$4.6 million Peak Demand Reduction
 - Utility demonstrations of storage in energy efficiency programs
 - Eligible for Green Communities technical assistance grants

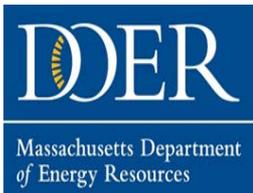
KEY POLICY ACTIONS AND MILESTONES TO PROMOTE STORAGE DEPLOYMENT

2017

- 200 MWh storage target in MA by Jan 1, 2020
 - 3rd state in nation to set a target for storage deployment
- DPU approves electric distribution companies proposals for utility storage
 - National Grid-owned solar approved to pair with storage
 - Eversource rate case approved \$45 million for storage on Cape Cod & Martha's Vineyard
 - National Grid announces “non wires” solution to peak demand on Nantucket

2018

- DOER launches SMART solar incentive program with 1st in nation to have an incentive for storage paired with solar
- Legislation increases storage target to 1,000 MWh by 2025
- 1st in nation Clean Peak Standard
- Storage in 2019 – 2021 Three Year Statewide Energy Efficiency Plan – specific goals for active demand reduction
- 8 storage projects totaling 956 MW submitted applications in the ISO-NE interconnection queue

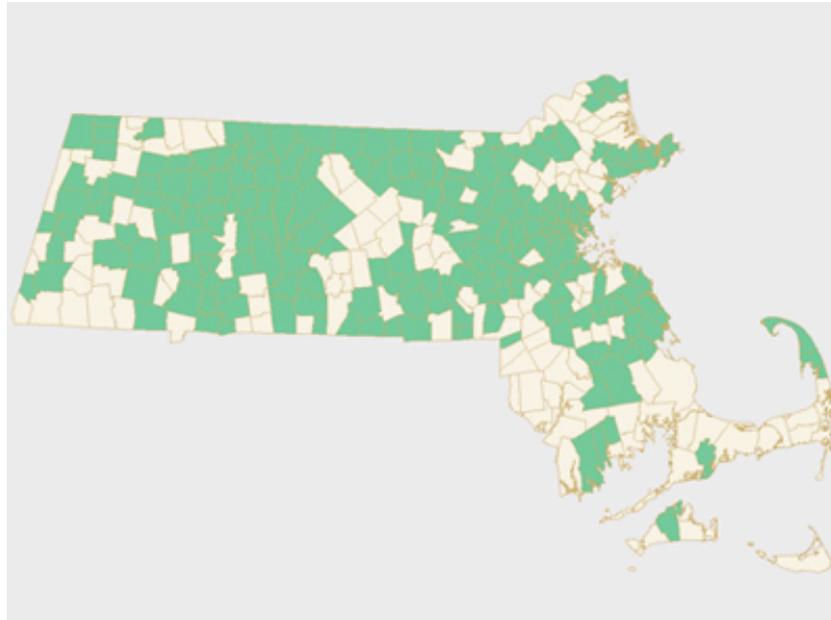


CLEAN PEAK STANDARD

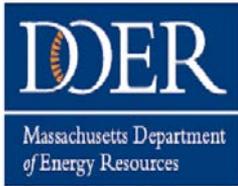
2018 legislation tasked DOER with establishing a Clean Peak Standard (CPS)

- First in the nation program of its kind
- CPS incentivizes use of clean technologies – storage, renewables, demand response – during times when costs and emissions are at their highest
- Current MA RPS are designed to increase clean energy without regard to when it is delivered to the grid

GREEN COMMUNITIES



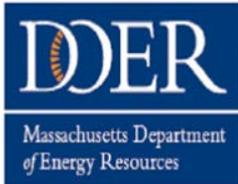
- 240 Green Communities, home to 78% of the state's population
- Over \$100 million in funding provided to towns and cities for clean energy and energy efficiency projects
- Commit to reducing municipal energy consumption by 20% in 5 years



NATIONAL LEADER IN ENERGY EFFICIENCY

- **#1 eight years in a row** for energy efficiency programs and policies
- Three Year Energy Efficiency Plans consistently have the most aggressive goals in U.S.
 - \$9.3 billion in benefits
 - Electric savings goals to reflect expansion in programs like fuel switching and peak demand
 - Highest gas savings goals to date





3 YEAR ENERGY EFFICIENCY PLAN: 2019 – 2021

New Initiatives

- **Fuel Switching:** customers will be provided information on cleaner fuel options for heating with new incentives for customers to fuel switch to air source heat pumps and other renewable heating options.
- **Active Demand Reduction:** Programs that help offset the most expensive hours of the year to
- **Passive House Incentives:** Training and rebates achieve greater energy efficiency in new construction
- **Home Energy Scorecards:** Through in-home energy audits, providing information to customers on the benefits of energy efficiency upgrades
- **Improved Outreach:** Enhanced strategies and community outreach efforts targeting increased participation and savings for renters, moderate income customers and non-English speaking customers

COMPREHENSIVE ENERGY PLAN

Executive Order No. 569, *Establishing an Integrated Climate Change Strategy for the Commonwealth*, directed a **Comprehensive Energy Plan (CEP)** that includes:

- Projections for energy demands for **electricity, transportation** and **thermal conditioning**
- Strategies for meeting these demands in a regional context
- Prioritizes meeting energy demand through conservation, energy efficiency, and other demand-reduction strategies

CEP Modeling and Analysis

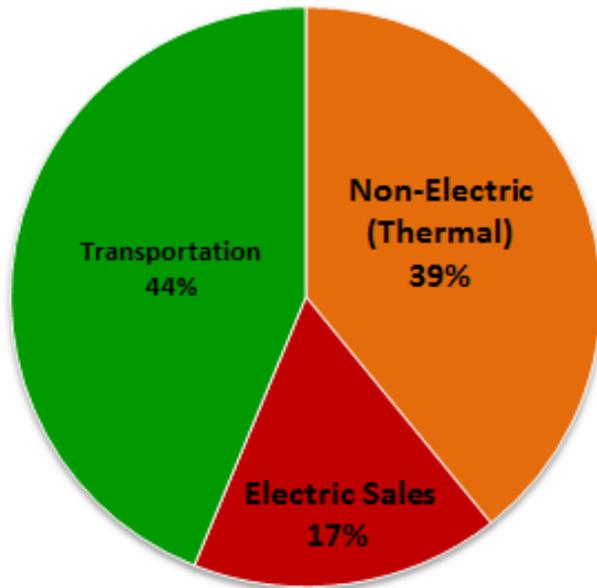
- Examine impacts of policies to reduce GHG emissions on cost and reliability from now to 2030
- Modeled under average conditions and extended cold weather conditions

Provide policy guidance on which strategies will best balance costs, emissions and reliability

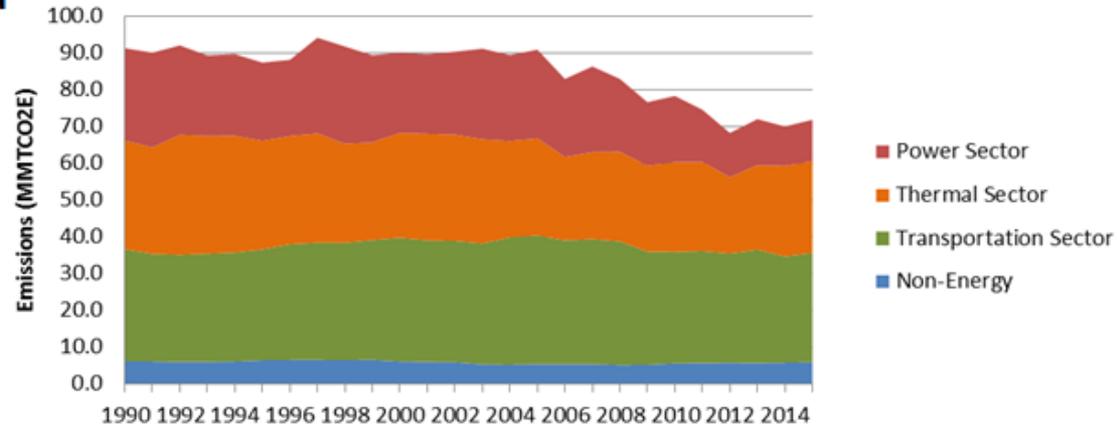
MASSACHUSETTS ENERGY USE AND EMISSIONS BY SECTOR

Massachusetts Energy Demand

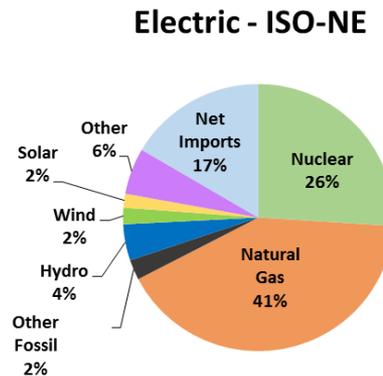
Total: 1,074 Trillion BTU in 2016



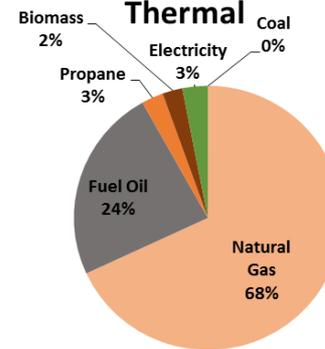
Massachusetts Greenhouse Gas Inventory



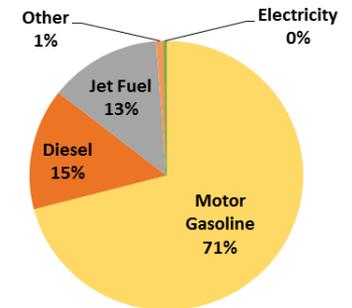
Electric - ISO-NE



Thermal



Transportation



Electric generation is our smallest use of energy in the Commonwealth, but it is where we have made the greatest progress in reducing emissions

CEP POLICY PRIORITIES AND STRATEGIES

THERMAL SECTOR

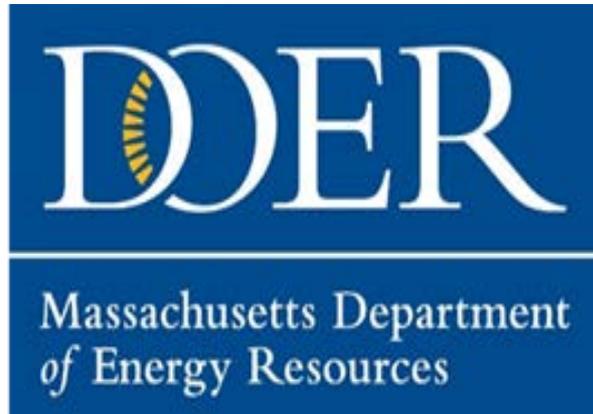
- Leverage investments made in the clean energy sector through electrification
- Promote fuel switching from more expensive, higher carbon intensive fuels to (electric air source heat pumps and biofuels)
- Reduce thermal sector consumption
- Drive market/consumer demand for energy efficiency measures and fuel switching
- Invest in R&D for clean heating fuels such as renewable gas and biofuels that can utilize investments already made in heating infrastructure

ELECTRIC SECTOR

- Prioritize electric energy efficiency and peak demand reductions
- Increase cost-effective renewable energy supply
- Support grid modernization and advanced technologies
- Examine strategies to lower natural gas prices and mitigate natural gas constraints

TRANSPORTATION SECTOR

- Increase the deployment of EVs and charging infrastructure.



THANK YOU