

# **MASSACHUSETTS**

## **2019-2021 ENERGY EFFICIENCY PLAN**

**JUNE 20, 2019**

**MASSACHUSETTS DEPT. OF ENERGY RESOURCES**  
**MAGGIE McCAREY, DIRECTOR OF ENERGY EFFICIENCY**

# NATIONAL LEADER IN ENERGY EFFICIENCY

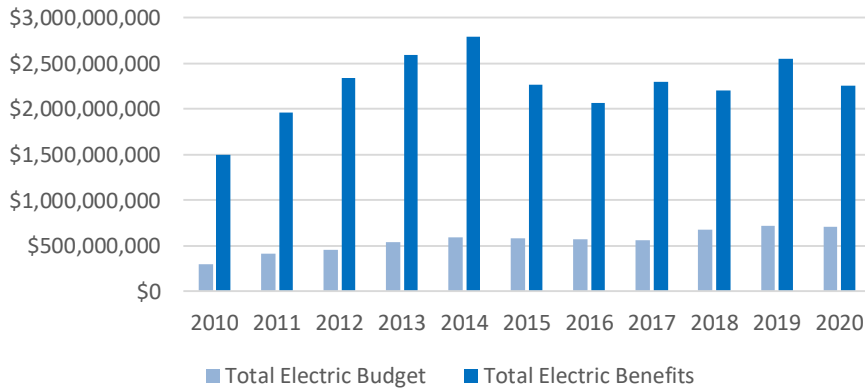
- Three Year Energy Efficiency Plans consistently set **aggressive goals**
- **Major source of GHG savings** in the 2020 Clean Energy and Climate Plan to meet **Global Warming Solutions Act** goals
- **65,000 jobs** and growing



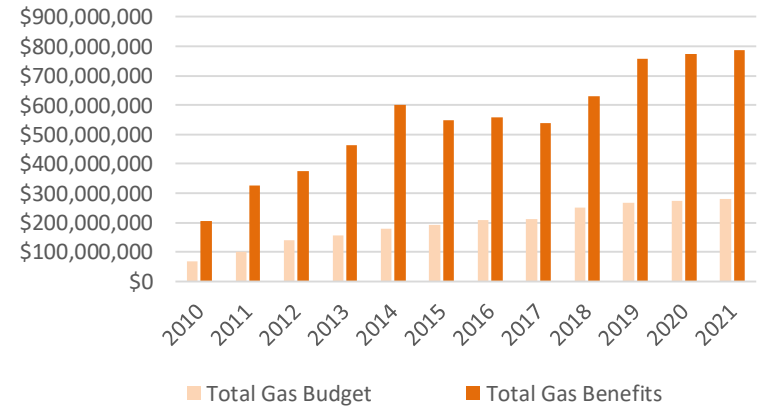
# Energy Efficiency Delivers

Over \$3 Benefits for every \$1 spent

### Electric Efficiency Programs



### Natural Gas Efficiency Programs



### Projected Annual Energy Use With and Without EE and PV Savings



### Projected Summer Peak Demand With and Without EE and PV Savings



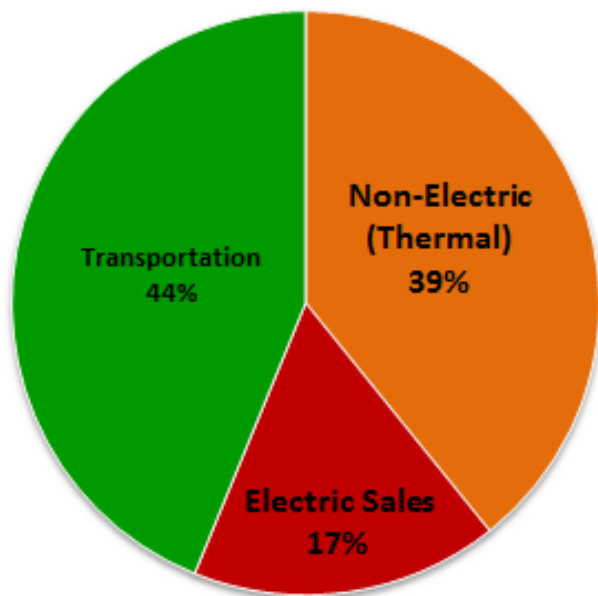
Note: Summer peak demand is based on the "90/10" forecast, which accounts for the possibility of extreme summer weather.

Source: ISO New England, 2019 CELT Report (May 1, 2019)

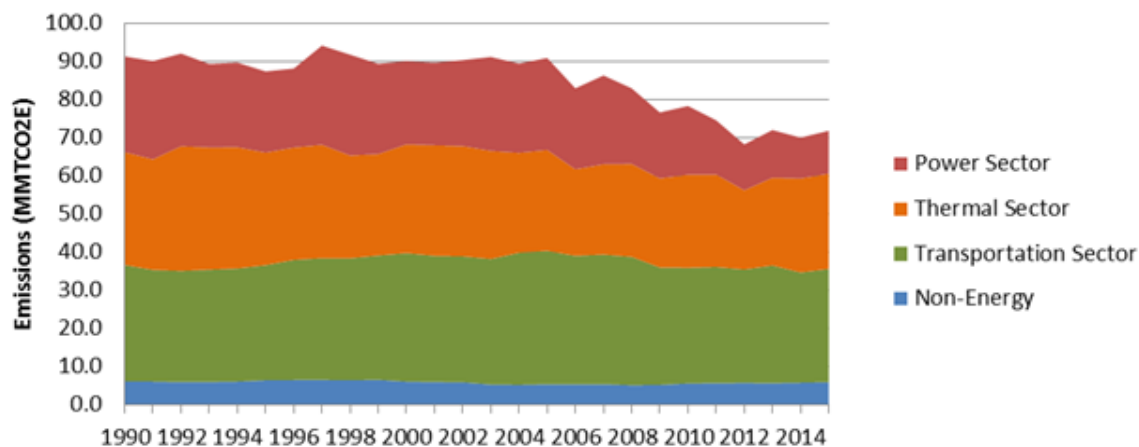
# MASSACHUSETTS COMPREHENSIVE ENERGY PLAN: ENERGY USE AND EMISSIONS BY SECTOR

## Massachusetts Energy Demand

*Total: 1,074 Trillion BTU in 2016*



## Massachusetts Greenhouse Gas Inventory

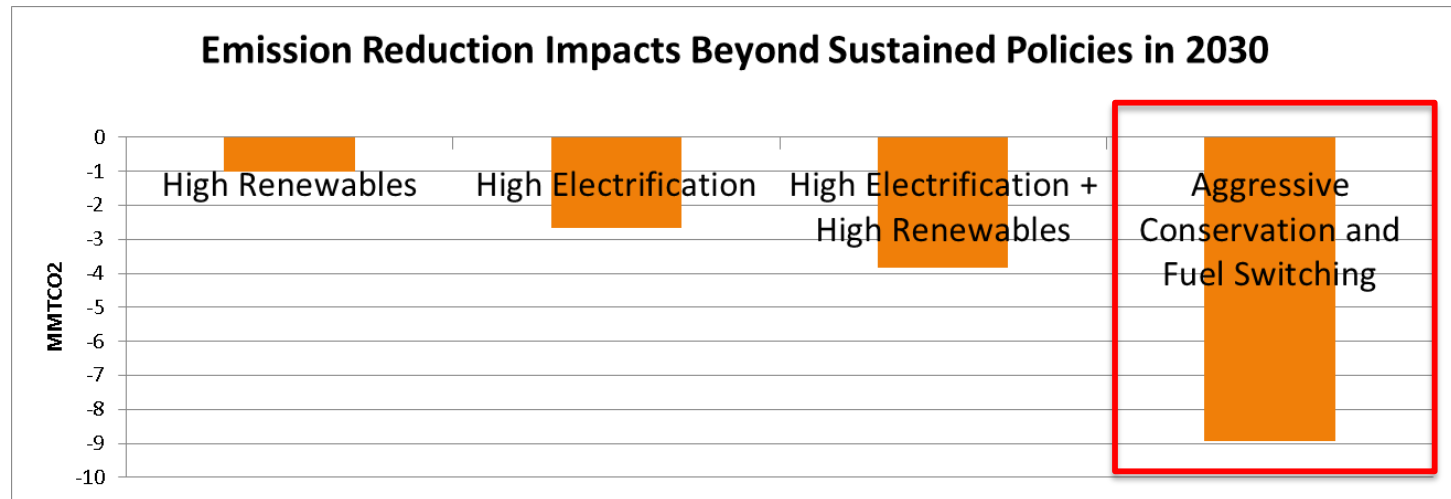


**Electric generation is our smallest use of energy in the Commonwealth, but it is where we have made the greatest progress in reducing emissions**

# FINDINGS AND IMPACT ON EMISSIONS

## THERMAL SECTOR

- Leverage investments made in the clean energy sector through electrification
- Promote fuel switching from more expensive, higher carbon intensive fuels to more efficient technologies (electric air source heat pumps, renewable thermal, 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



**Greatest amount of emissions reductions are achieved by combining increased use of clean energy in all sectors while simultaneously decreasing overall energy consumption**

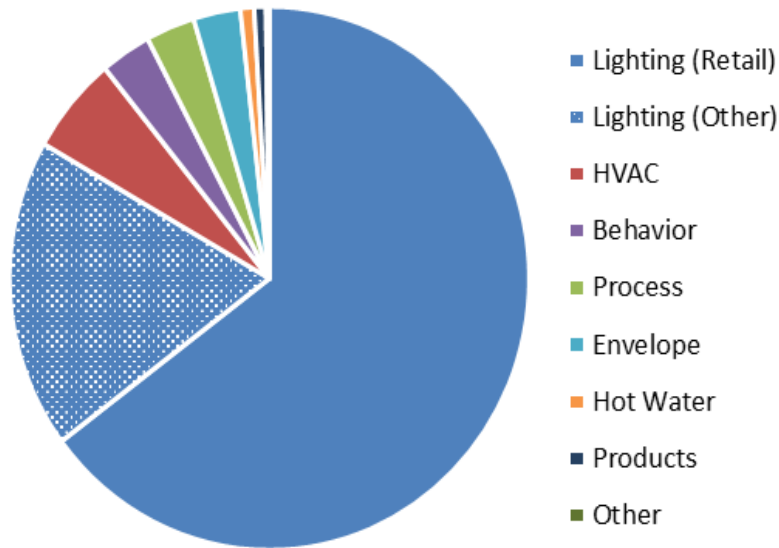
# MASSACHUSETTS ENERGY EFFICIENCY OVERVIEW

- **Green Communities Act (2008)** requires all cost-effective energy efficiency and demand reduction
- **An Act to Advance Clean Energy (2018):**
  - Expands allowable energy efficiency investments to include active demand management (including storage), strategic electrification, and fuel switching to clean energy sources.
  - Broadens electric efficiency plans to “energy” efficiency plans.
  - Changes Department of Public Utilities cost-effectiveness review to sector-level.

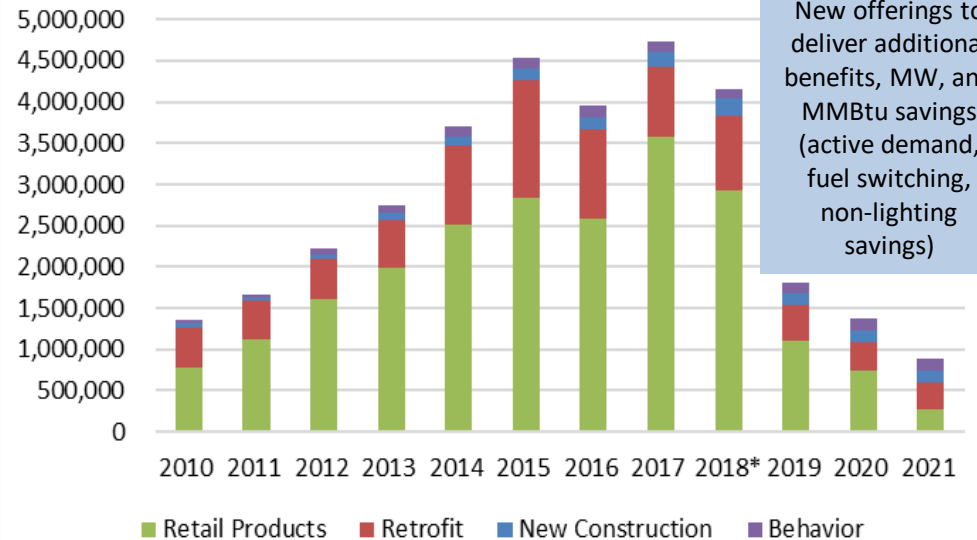


# 2019-2021: Future of Residential Lighting and Energy Efficiency

2016-2017\* Residential Lifetime Electric Savings



Residential Lifetime Electric Savings (MWh)



New offerings to deliver additional benefits, MW, and MMBtu savings (active demand, fuel switching, non-lighting savings)

Net-to-gross ratios for residential lighting decrease in 2019-2021 due to rising baselines, federal standards, and market adoption of LEDs.

Market Transformation → Fewer *claimable* energy efficiency savings, market and capacity benefits remain

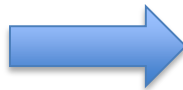
# 2019-2021 EE PLAN GOALS

**Gas Plans:** Highest gas savings goals to date

**Electric Plans:** Electric savings goals reflect expansion in programs like fuel switching and peak demand:

Statewide Goals	2019-2021
Net Lifetime MMBtu Savings	261 million
CO2e Reductions (tons)	2.6 million
Total Budget	\$2.8 billion
Total Benefits (includes <b>NEW</b> avoided GHG benefits)	\$9.3 billion
Electric Savings as % of Sales	2.7 %
Gas Savings as % of Sales	1.25 %

MWH Reduction  
MW Reduction



**MMBtu Reduction** (electric, oil, propane, etc.)

**MWH Reduction** (excluding fuel switching)

**Peak Demand Reduction** (Summer, Winter), including *active* demand



# 2019-2021 THEMES: ENERGY OPTIMIZATION AND FUEL SWITCHING

New energy efficiency goals for electric programs:  
**MMBtu of total energy reduction**



## Heat Pump Goals

37,993 Residential  
Customers

6,082 Low Income  
Customers

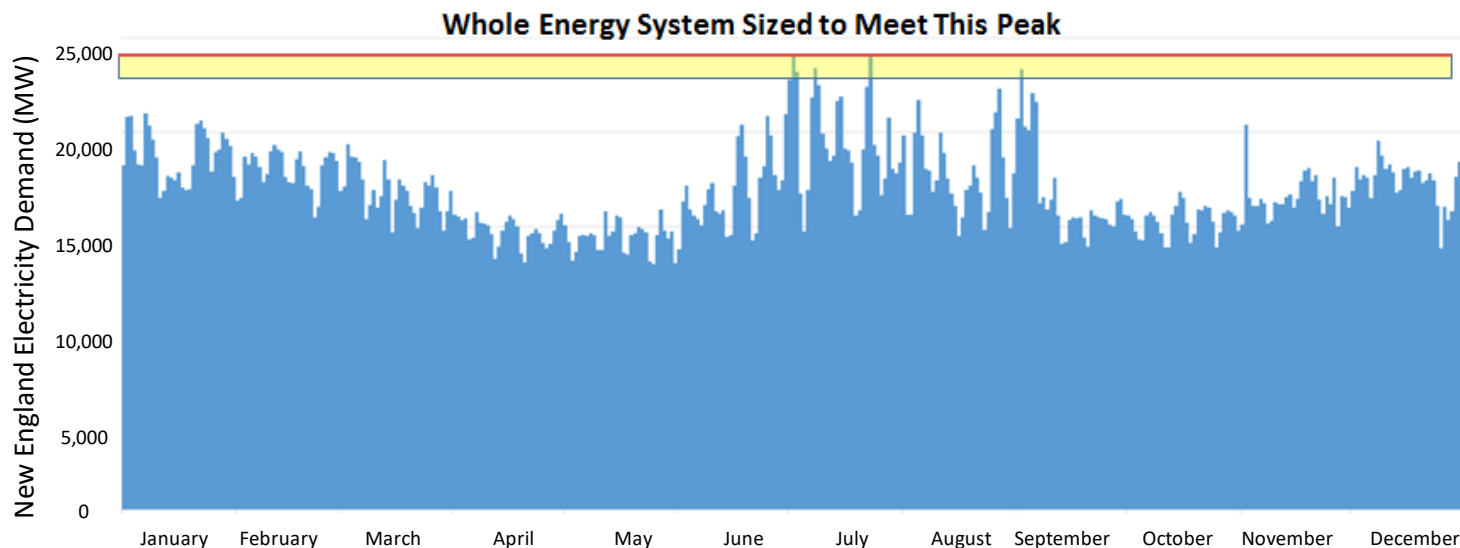
17,890 C&I Units

- Consumer education through **fuel-neutral heating and hot water recommendations** during in-home assessments
- **New incentives** for customers to fuel switch to air source heat pumps and other renewable heating options.
- Offsetting higher emitting fuels like oil and propane.

# 2019-2021 THEMES: PEAK REDUCTION

- Focus on reducing energy usage during times when **demand** is highest on the system and costs are highest for customers
- **New Statewide Active Demand Reduction Programs** include residential direct load control, energy storage, C&I load curtailment
- New **shareholder performance incentive** for utilities for active demand benefits

Goal	2019-2021
Summer MW Total	693
Winter MW Total	544
Active Summer MW	200
Active Winter MW	50



**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**

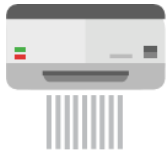
## 2019-2021 THEMES: WINTER RELIABILITY

- Focus on **natural gas savings** (therm savings goals increased over 12% from previous plan)
- Continued focus on **insulation/weatherization**
- Utilizing **active demand technologies** in winter, including storage
- **LED streetlight** conversions

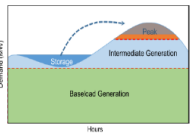


# 3 YEAR ENERGY EFFICIENCY PLAN: 2019 – 2021

## Summary of 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 through load reduction and active dispatch including energy storage.



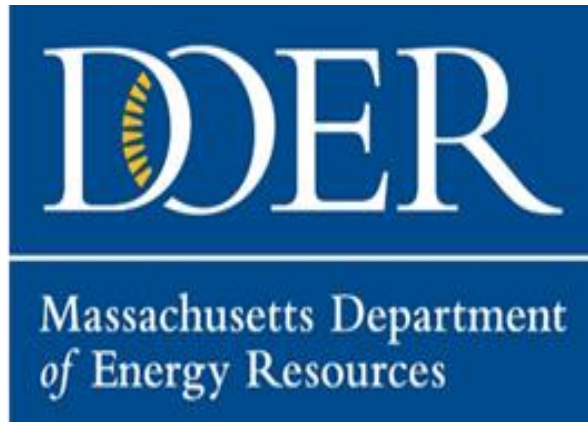
**Passive House** – training and rebates achieve greater energy efficiency in new construction



**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, and small businesses



**THANK YOU**