

Creating A Clean, Affordable, Equitable and Resilient Energy Future For the Commonwealth

DER

Massachusetts Department
of Energy Resources

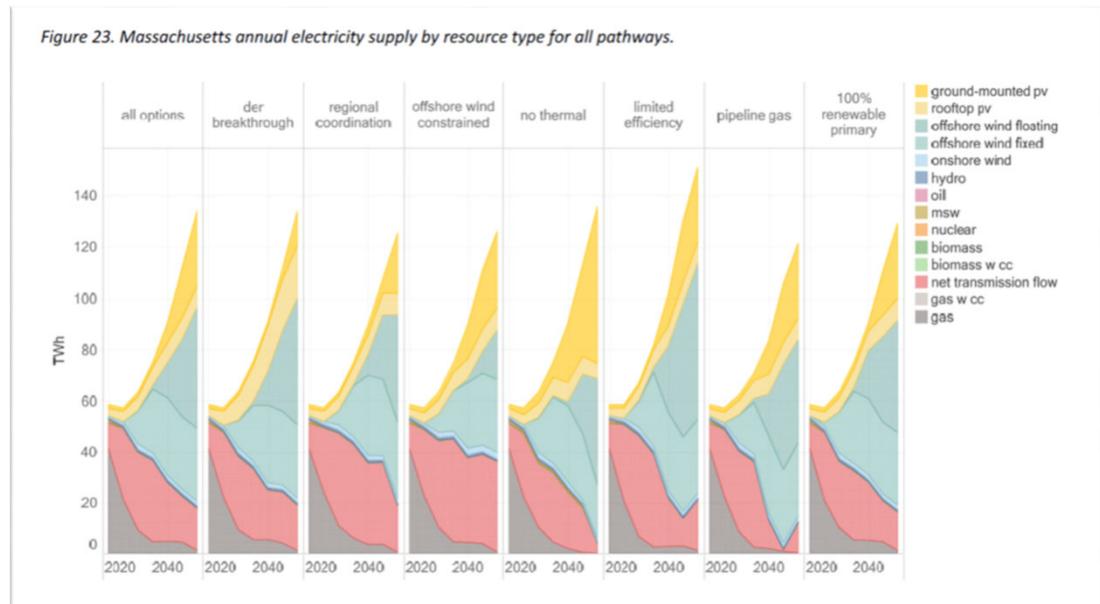
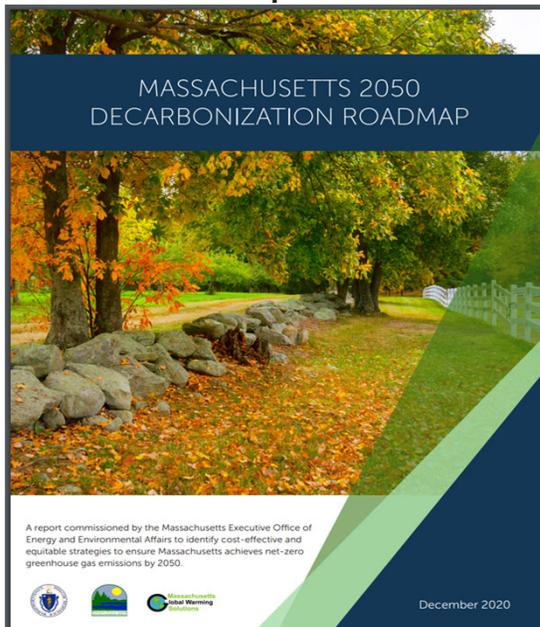
**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENERGY RESOURCES**

Patrick Woodcock, Commissioner

**2022 AIA MA Government
Affairs Committee
Meeting:
Massachusetts State Energy Policy
JANUARY 12, 2022**

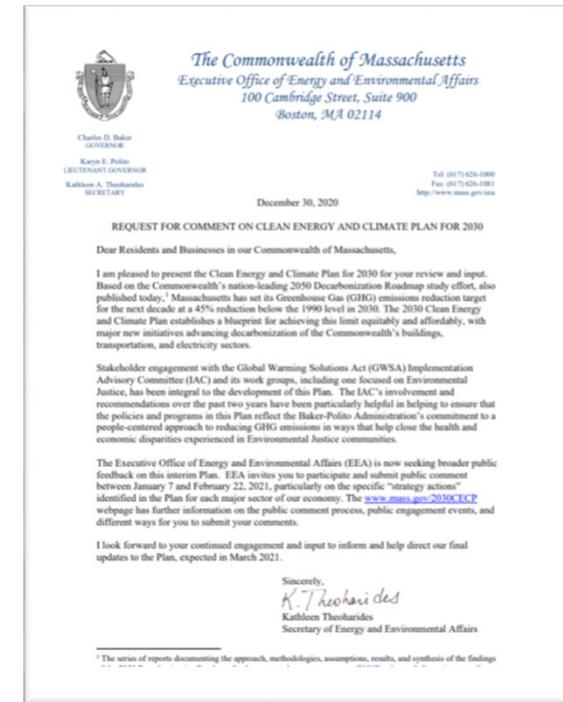
2050 Decarbonization Roadmap

- Decarbonization requires a comprehensive plan focused on a **rapid deployment of renewables**—
 - the siting and construction of offshore wind and ground-mounted solar generation at scale,
 - reliable balancing, and
 - planning for limited land and bioenergy resources.
- Meeting Net Zero Target will require a **transformation of energy systems** with impacts to energy flows, demand and supply, and costs
- Coordination across the Northeast will be necessary to transition to a clean, affordable, and reliable low-carbon, 21st century grid, including system planning and development of new markets by the grid operation



Preliminary Plan for 2025 & 2030 CECP

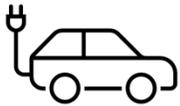
- Will be updating the CECP for 2025 and 2030 to align with the GWSA-provisions within the legislation
- Ensuring additional opportunities for engagement with stakeholders and members of the public
 - Early 2022: Public meetings on final 2025 & 2030 plan, including Natural Working Land baseline, goals, and plan
 - July 1, 2022: Adopt and submit final 2025 & 2030 CECP to Legislature



Major Transformations for this Decade, from Interim 2030 CECP



- **New Buildings:** Highly-efficient new construction
- **Existing Buildings:** ~1,000,000 Homes and ~350 million sq-ft of commercial property retrofitted with clean heating, high-efficiency insulation
- **Building Heat:** Significantly less residential and commercial gas usage than today



- **Light-Duty:** Over 750,000 new zero emission cars & trucks on the road
- **Med. & Heavy:** 20,000 new zero emission vehicles (ZEV) on the road + cleaner diesel fuel blends
- **Miles Travelled:** 15% reduction in light-duty commuter miles traveled

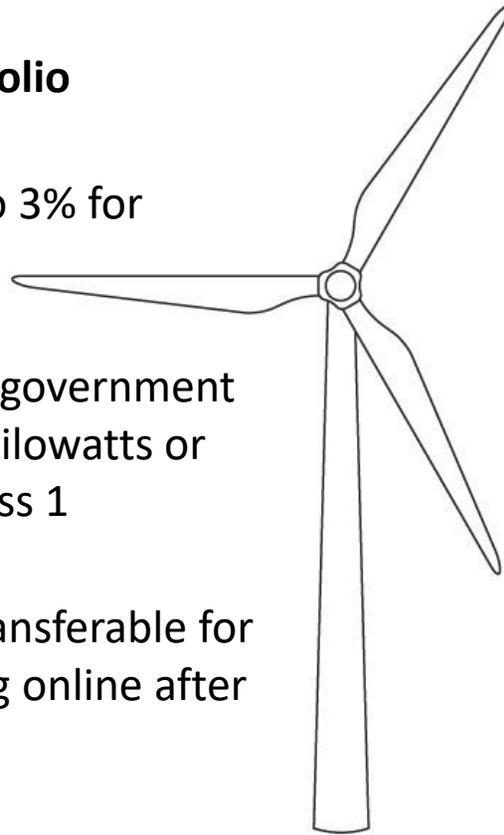


- **Generation:** 6,000 MW of new clean energy built and interconnected
- **Transmission:** First of several new regional transmission lines operational
- **System:** New ISO-NE transmission planning & clean energy markets are ready to add 1 GW offshore wind & 500 MW of solar every year, plus 2 or 3 more large transmission lines, through 2050

Climate Act & DOER – Renewable Energy

Renewable Energy Portfolio Standard (RPS)

- Increased from 2% to 3% for 2025-2030
- Municipal and other government solar facilities of 60 kilowatts or less to qualify for Class 1
- Excess RPS credits transferable for solar facilities coming online after January 1, 2021



Offshore Wind Generation

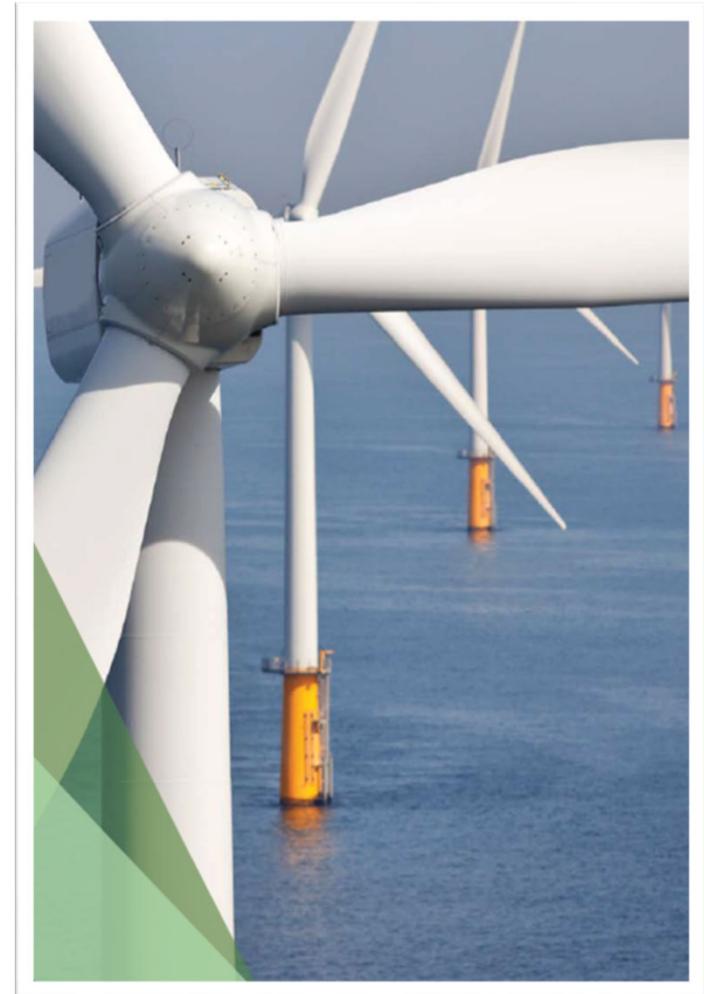
- 2016 authorization increased by 2400 Mw to 4000Mw
- DOER may require ECS to conduct procurements of transmission capacity for OSW

Electric Distribution Companies

- Allowed to own solar generation facilities in environmental high-risk areas with municipal approval
- Generating capacity cap of 10% of the state's total solar generation as of FY2020

83C Offshore Wind Solicitations

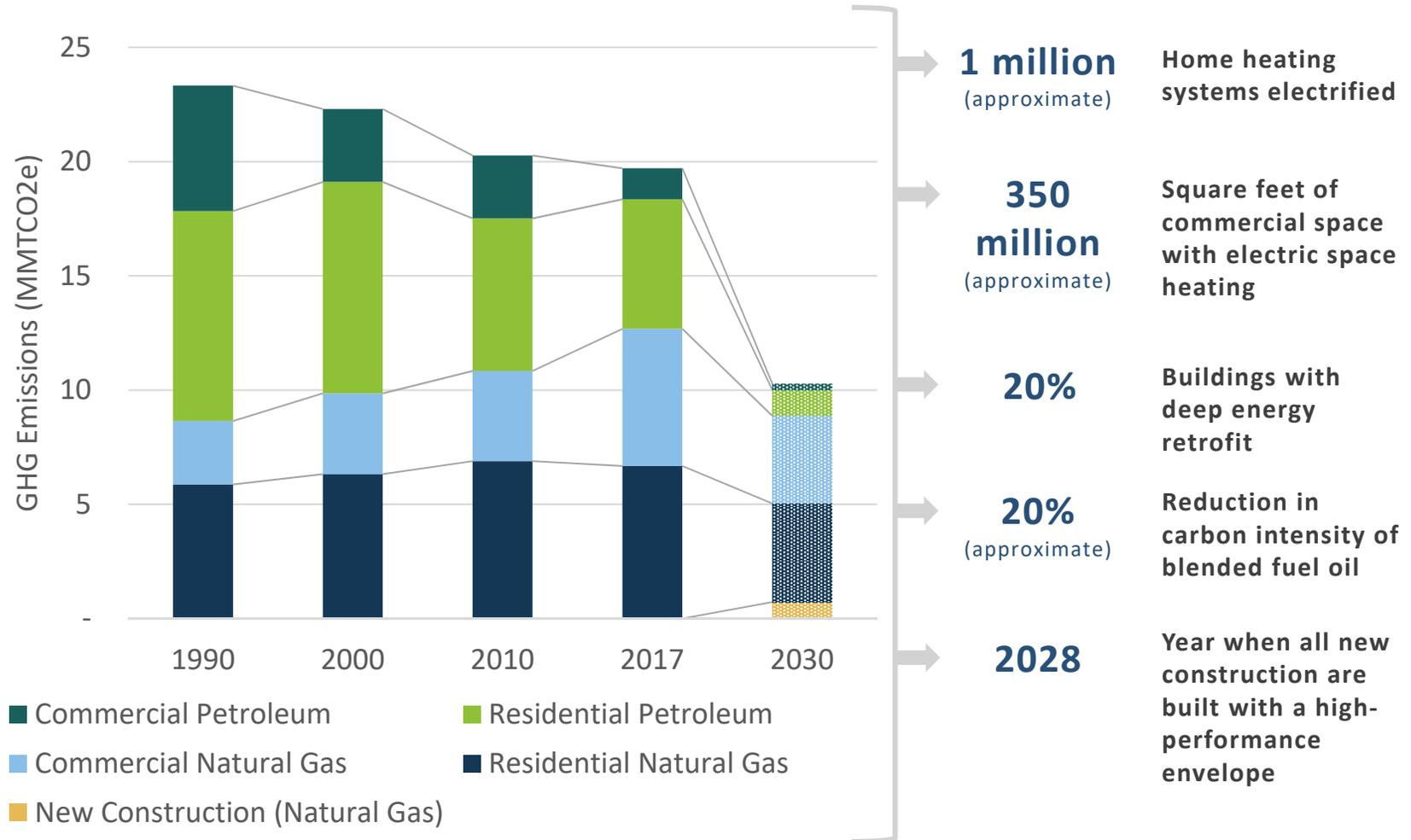
- Massachusetts has authorized 5,600 MW of offshore wind
- Successful procurements of offshore wind from
 - Vineyard Wind (800 MW) in 2018 and
 - Mayflower Wind (800 MW) in 2019
 - Mayflower Wind (400 MW) and Vineyard Wind (1200 MW) in 2021
- On December 17, the Baker-Polito Administration and the Commonwealth's EDCs announced the selection of two offshore wind projects, Mayflower Wind and Vineyard Wind, to move forward to contract negotiations to provide a combined total of 1,600 MW of clean and affordable energy to Massachusetts ratepayers
 - This procurement advanced critical economic development priorities for the Commonwealth while securing significant clean, affordable, and resilient energy for Massachusetts residents and businesses



Buildings Sector: ~ 9.4 MMTCO₂e Reduction

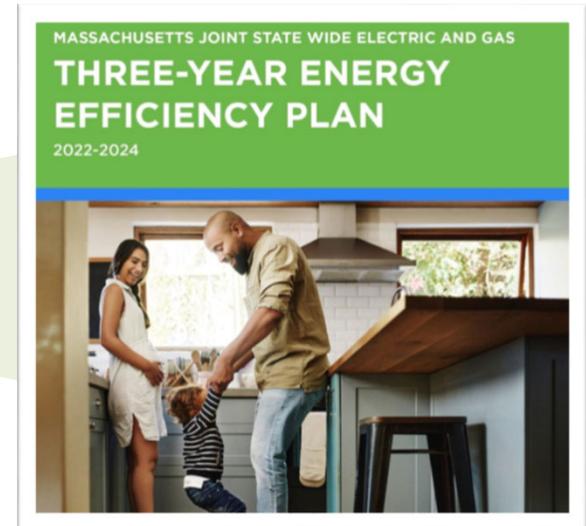
Where are emissions reductions expected to come from?
Historical & Projected MA GHG Emissions

What do the emissions savings translate to?
Key Metrics



Climate Act & 2022-2024 Energy Efficiency Plan

- On October 27th, the Energy Efficiency Advisory Council (EEAC), chaired by DOER, voted unanimously to approve the Mass Save program administrators' 2022-2024 statewide Three-Year Energy Efficiency Plan for Mass Save
- This \$4 billion investment plan represents a transformational shift of these programs to better align with Massachusetts' climate requirements and environmental justice goals with strong commitments to electrification, weatherization and equity
- Climate Act added new GHG goals and Social Cost of Carbon



2022-2024 EE Plan Key Priorities

Equity

- DOER convened an EEAC Equity Working Group to establish equity recommendations, targets, budgets, and reporting
- Partnerships: \$6 million for Community First partnerships to partner with municipalities and community-based organizations to increase participation in EJ communities
- Moderate Income: \$136M earmarked for enhanced incentives for moderate income customers and pre-weatherization barrier funding
- Language Isolated Residents: Commitment to developing language access plan (\$9M investment)
- Performance-incentive for benefits in EJ communities with low participation rates as well as moderate income



Electrification and GHG Goals

- The plan meets the Secretary's GHG goal of 847,000 metric tons of CO₂e reduced in 2030
- \$800 million investment for increased goals for electrification in residential, low and moderate income, and commercial sectors
- Reduction in budget and limiting support for fossil fuel heating (oil, propane, gas)
- All electric new construction incentives starting in 2022 (residential and commercial buildings)
- Two new deep energy retrofit offerings for commercial and affordable multi-family buildings in 2022
- Continuing successful Passive House incentives for multi-family new construction

Climate Act and Building Code

2008 Green Communities Act

- **Base Energy Code:**

“To adopt and fully integrate the latest International Energy Conservation Code (IECC) and any more stringent amendments thereto as part of the state building code, in consultation with DOER.”

MGL CH143, Section 94(o)

- Created DOER Green Communities Program and **Stretch energy code:**

“minimize, to the extent feasible, the life-cycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies.”

MGL CH25a. Section 10(c)

2021 Climate Act

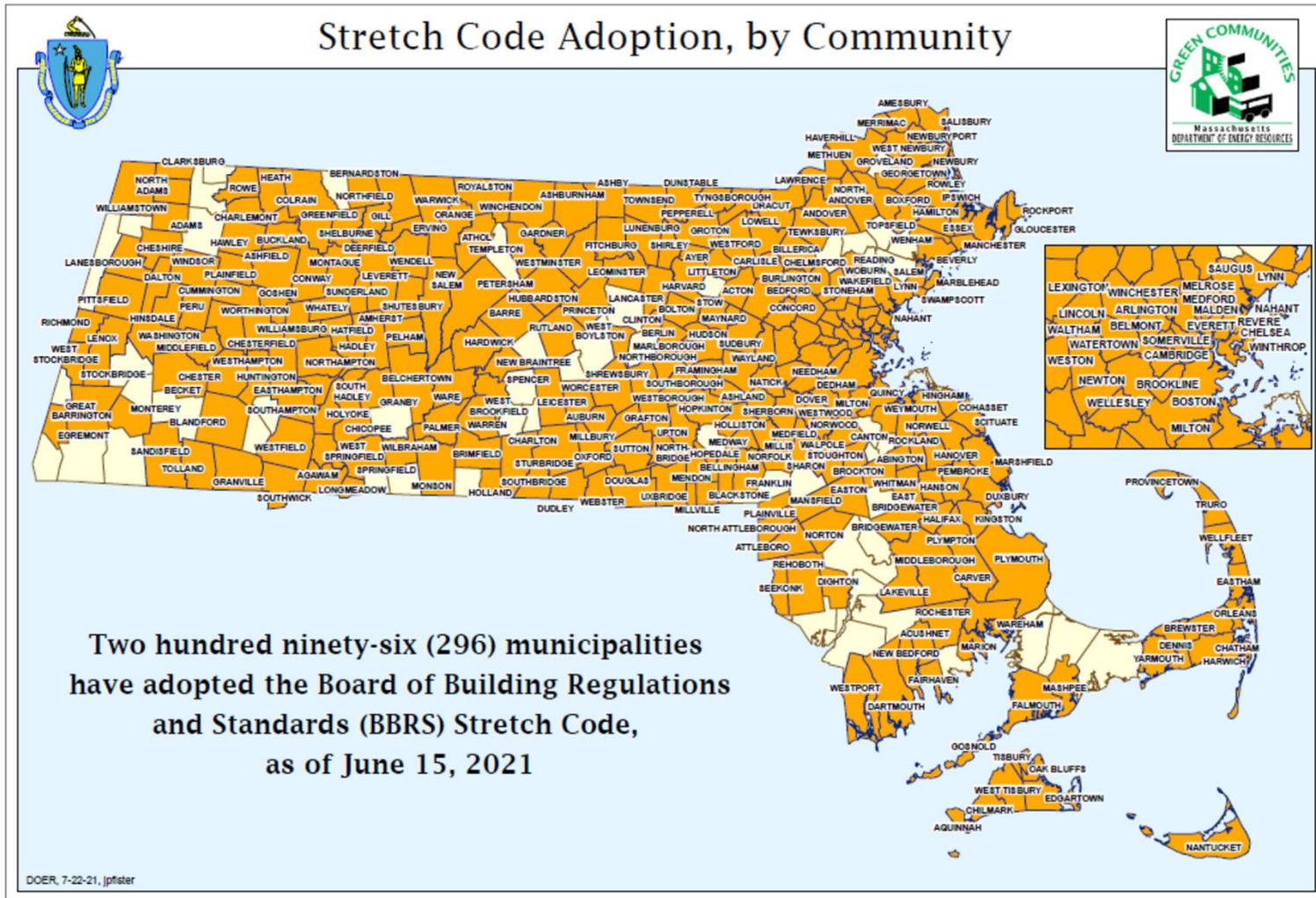
- At least 50% emission reduction in 2030 (sub-limits for buildings sector)
- DOER to update the Stretch Code from time to time, in consultation with BBRS
- DOER to develop: a **Municipal opt-in specialized stretch energy code** that includes:
 - net-zero building performance standards
 - a definition of net-zero building
 - designed to achieve MA GHG emission limits and sub-limits.
 - may be phased in by building type

*Session Laws of 2021 Chapter 8:
Section 31*

Statutory Timeline

- **July 2022:** EEA must establish specific 2025 and 2030 emissions reduction targets for buildings sector
- **December 2022:** DOER must promulgate specialized stretch code
- **Early 2023:** New IECC Base Energy Code expected to go into effect
- **2030:** Massachusetts must achieve 50% reduction in greenhouse gas emissions

Today: Base Code or Stretch Code



Starting in 2023 – 3 Muni options: Base, Stretch, or Specialized Stretch

Base Code

- New buildings in towns and cities that are not a green community
- 55 communities
- IECC with MA Amendment
- BBRS with DOER input
- BBRS updating to be effective in early 2023

Stretch Code

- New Buildings in towns and cities that are now / or become a green community
- 296 communities
- DOER, coordination with BBRS
- DOER updating to align with base code update

Specialized Stretch

- New Buildings in towns and cities that choose to opt-in to this code
- Currently zero communities but interested
- DOER, coordination with BBRS
- To be available for opt-in end by Dec 2022

Stretch Code – Goal of Analysis: Achieve Least-Cost Decarbonization

Energy Code Analysis

- DOER commissioned analysis of different building code standards specific to the Massachusetts climate
- Building Type Variety: 12 building use types and size-specific analysis to align with needs of different building types
- Analyzed up-front costs, operational costs, total cost of ownership, and GHG emissions

Residential Low-Rise Team



NORES CO

Commercial & Large Multi-Family Team



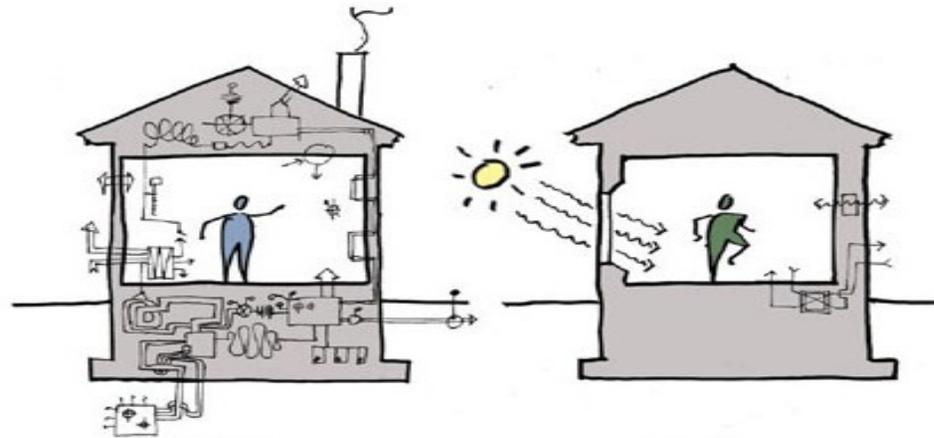
12 Building Types for In-depth Analysis

- Small office
- Large office
- Office-lab
- Elementary school
- High school
- Large multi-family tower
- 4 story multi-family
- Multi-family mid-rise podium
- 6-unit multi-family
- Townhouse
- Single family Small
- Single family Large



Focus on Envelope & Heating

- Less HVAC
- Less HVAC cost
- Less moving parts
- Less maintenance
- Improved resilience
- Easier to electrify

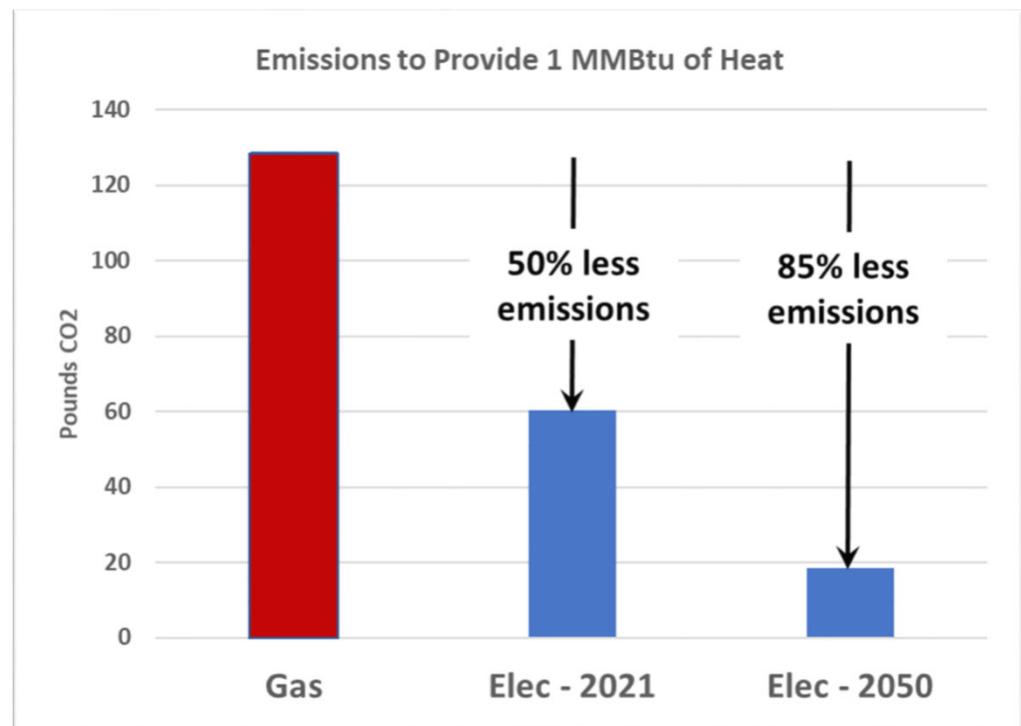


Current Code

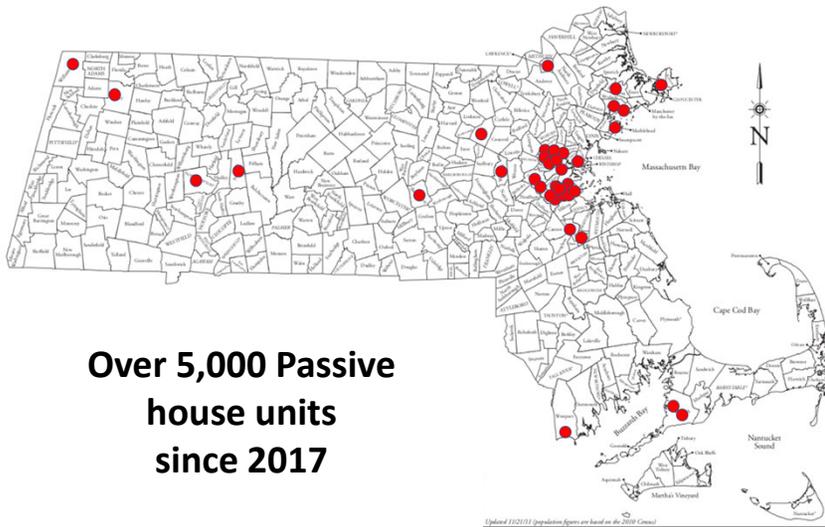
Future Code

Electrification in Residential & Commercial

- Electric heating
 - 50% less emissions (2021)
 - 85-100% less emission (2050)
- Critical that buildings migrate toward electrification



Passive house & Multi-family



Over 5,000 Passive house units since 2017



Winthrop Center



The Distillery Boston, MA



Bunker Hill Boston, MA



North Commons North Hamptons, MA



Harbor Village Gloucester, MA



Depot Village Hanson, MA

What is Passive house? A building standard that includes:

- Super-efficient building envelope (approx. HERS 34)
- Improved indoor air quality with high performance ventilation

Net impact: Improved health, comfort, resiliency, and building quality, reduced HVAC equipment sizing, and low cost to maintain and operate

- **Passive house Growth.** Passive house is rapidly growing in 6+ unit multi-family with over 5,000 units in the Mass Save® incentive program pipeline versus less than 20 in 2018. New Mass Save incentives launched in 2019 (\$3,000 per unit)
- 133 MA firms have Certified Passive house consultants, \$1.7m for Mass Save training of 3,600 people in 2022-2024.
- **Multi-Family.** Passive house becomes most cost-effective for typical 4-8 story multi-family buildings.