



# Massachusetts Decarbonization Policies, Plans, and Progress

Massachusetts Executive Office of Energy and Environmental Affairs

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Secretary Bethany A. Card

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## Over a Decade of Decarbonization in Massachusetts

**2008** Global Warming Solutions Act and Green Communities Act are signed into law, establishing target emissions reductions and expanding energy efficiency and renewable energy programs.

**2016** Governor Baker signs Executive Order 569, establishing an integrated climate strategy for the Commonwealth and An Act to Promote Energy Diversity authorizing large procurements of offshore wind and hydroelectric resources.

**2018** Governor Baker signs An Act to Advance Clean Energy into law, which includes the Clean Peak Standard and sets new targets for offshore wind, solar, and storage technologies.

**2020** Baker-Polito Administration establishes Net-Zero as the Commonwealth's GHG emissions limit for 2050, publishes a Decarbonization Roadmap to 2050, and releases an Interim Clean Energy and Climate Plan for 2030.

**2021** Governor Baker signs An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy, a comprehensive climate change law built upon the Decarbonization Roadmap framework.



# 2050 Decarbonization Roadmap

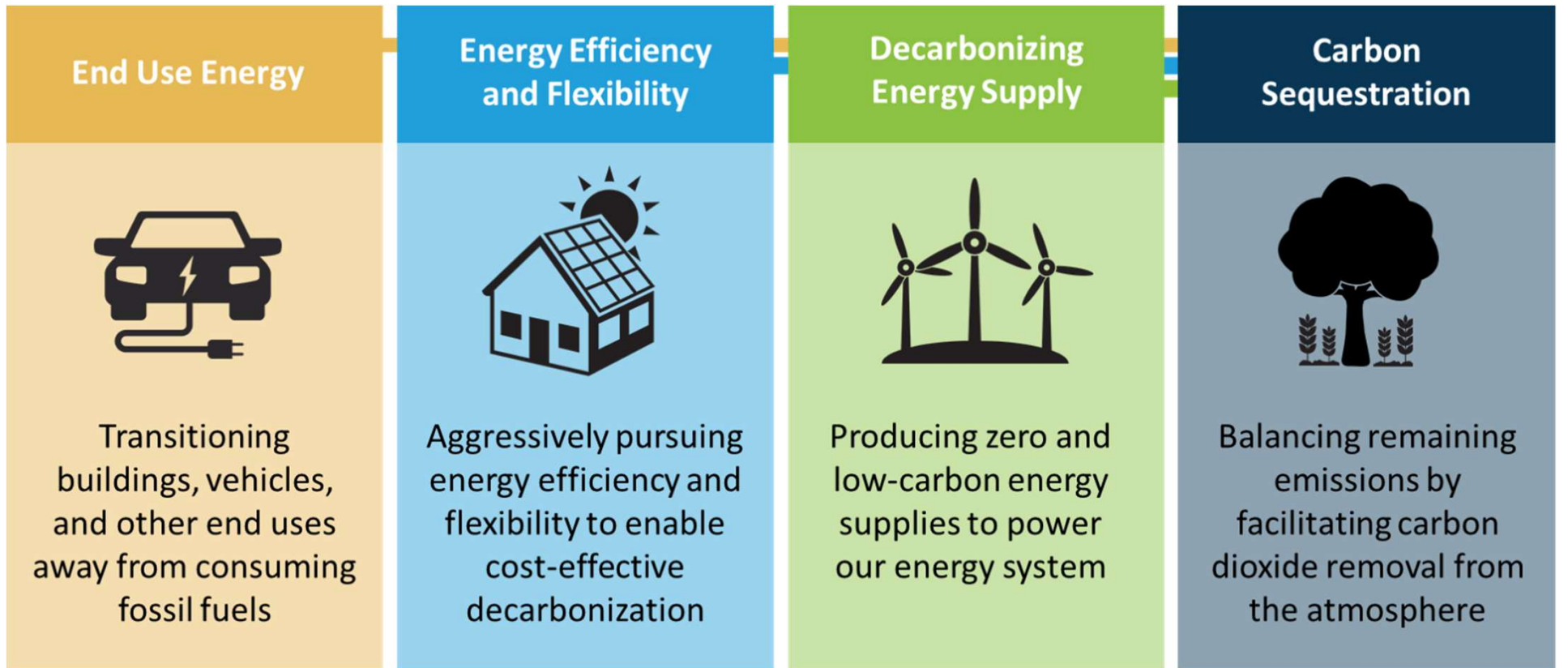
## Achieving Net-Zero in 2050

- Massachusetts' Decarbonization goals, policies, and programs all target achieving net-zero greenhouse gas emissions economy-wide in 2050.
- Reducing emissions to achieve Net Zero requires a holistic systems approach of complementary and integrative actions.
- To successfully decarbonize, the Commonwealth must:
  - Almost completely transition energy "end-uses" away from fossil fuels;
  - Deploy higher levels of energy efficiency and flexibility;
  - Rapidly decarbonize the energy supply to become predominantly reliant on renewable electricity generation; and,
  - Remove carbon from the atmosphere by preserving and enhancing natural and other sequestration resources
- Benefits of Achieving Net Zero in 2050:
  - Precipitous drop in air pollution
  - Significant savings in health costs
  - Creation of thousands of quality local jobs in Massachusetts





# Four Pillars of Decarbonization





## End Use Energy – Heating and Transportation

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### Building Sector

- Most buildings in the Commonwealth rely on fossil fuels for space and water heating
- High-performance heat pumps provide clean, energy-saving heat and air conditioning for most homes
- Commission on Clean Heat will provide recommendations to sustainably reduce the use of heating fuels and minimize GHG emissions from buildings

### Transportation Sector

- Switching from internal combustion engine vehicles to zero emission vehicles is the primary strategy for reducing emissions from light-duty transportation
- Reducing vehicle miles traveled through public transportation and better bike and pedestrian infrastructure will further reduce emissions
- Medium- and heavy-duty transportation, aviation, and shipping transportation emissions will transition to battery, hydrogen fuel cell, and low-carbon fuels
- California recently released its new vehicle standards to reach 100% net zero light-duty vehicles on the road in 2050



# Energy Efficiency and Flexibility

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Energy efficiency will help offset the increase in electricity demand associated with reducing end-use fossil fuels.

## Energy Efficiency Programs include:

- Building weatherization, including air sealing, insulation, and installing triple-pane windows
- Energy efficient appliances

## Grid Flexibility

- Distributed Energy Resources (DERs)
- Demand-Response and other grid modernization technologies

## Mass Save Program

- The Mass Save program offers energy efficiency incentives and rebate programs for residents and businesses in the Commonwealth
- The 2022-2024 Energy Efficiency Plan has a GHG reduction goal of 845,000 metric tons of CO<sub>2</sub>e emissions
- The Plan includes ambitious heat pump installation goals for residential and commercial customers





## Decarbonizing the Energy Supply

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- Offshore wind and solar are the lowest cost low-carbon energy resources and will comprise the bulk of the Commonwealth's generation in 2050.
- Complementary resources and technologies, including imported hydropower and additional high-voltage transmission will be required to operate a cost-effective, ultra-low emissions electricity grid, and balance variable renewable resources.
- The Solar Massachusetts Renewable Target (SMART) Program is a tariff-based incentive program that offers solar system owners a fixed incentive for 10-20 years, depending on the size of the system.
- Massachusetts has conducted three procurements and selected 3200 MW of offshore wind to date, with a legislative mandate to procure another 2400 MW.
- Massachusetts has procured the New England Clean Energy Connect transmission line to deliver 1200 MW of hydropower from Quebec to the New England grid.



## Carbon Sequestration

- Massachusetts forests are projected to have the capacity to sequester about 5 MMTCO<sub>2</sub>e per year through 2050. This is equivalent to about 7% of the Commonwealth's current emissions and roughly half of allowable residual emissions in 2050.
- **Primary strategy:** Ensure the health and viability of the Commonwealth's existing 3.3 million acres of forested land (including both public and private land)
- **Short term priority:** Encourage dense development and best management practices for commercial timber harvesting
- Continued areas of research and further investigation:
  - Gaining a more complete accounting of land use impacts on human and natural systems to understand long-term systemic effects and the balance of ecosystem benefits, and
  - Exploring the treatment of atmospheric carbon removals outside of MA borders







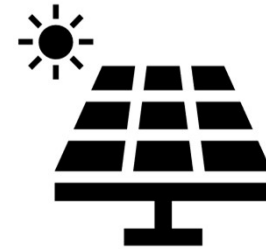
## Decarbonization Requires Regional Coordination

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**Expand access to offshore wind lease areas in the Gulf of Maine**



**Reforming regional markets to integrate clean energy generation**



**Transmission planning and cost allocation**

