



The Commonwealth of Massachusetts

STRAW - PROPOSAL

# Massachusetts

# Priority Climate Action Plan

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## Sharing feedback on the draft Priority Climate Action Plan

The Massachusetts Department of Transportation, in concert with the Office of Climate Innovation and Resilience (Climate Office), is sharing this straw proposal of the Priority Climate Action Plan (PCAP) with the public to inform priorities for the Climate Pollution Reduction Grant (CPRG). We invite members of the public, community organizations and municipalities to share their feedback on the PCAP. In particular, we invite entities to:

1. Review the draft greenhouse gas reduction measures and associated benefits for low-income and disadvantaged communities in the document below.
2. By Thursday, February 15, share specific feedback you have for each measure by sending your comments by email to us at: [climateoffice@mass.gov](mailto:climateoffice@mass.gov). Please note: If you represent an entity eligible for the grant and you plan to apply, it is important to check this document to make sure your proposal will be covered by this PCAP. Please let us know if you would like changes to cover your proposal.

Examples of feedback include:

- a. Requesting a modification to an existing measure to cover an eligible entity's implementation grant application
- b. Suggesting modifications to measures to expand, accelerate, or eliminate barriers to greenhouse gas emissions reduction
- c. Proposing changes to measures to better target benefits to low-income and disadvantaged communities and alleviate potential harms of climate actions

### What happens next?

We will consider changes in response to feedback and submit the final PCAP to the EPA by March 1, 2024. In addition to the public comment period noted above, Climate Office is convening the following conversations for review of this draft:

- Two community meetings for Environmental Justice community members and organizations on February 1<sup>st</sup> & 2<sup>nd</sup>
- A meeting with the Climate-Labor Work Group for Federal Funding on Feb. 7<sup>th</sup>
- A meeting of the Massachusetts Environmental Justice Council on Feb. 8<sup>th</sup>

Additional analysis will also inform the final PCAP, including spatial analysis to target priority climate action measures to deliver benefits to low income and disadvantaged communities, a comprehensive analysis of all federal funding opportunities related to each measure, and quantification of greenhouse gas reductions through 2050 for all measures.

The PCAP will be available on the CLIMATE OFFICE website for use by eligible entities for their implementation grant applications. To apply for the \$4.3 billion CPRG General Competition, eligible state agencies, municipalities, Tribal Nations, or coalitions of eligible entities must apply by April 1, 2024. To apply for the \$300 million CPRG Tribes and Territories Competition, eligible Tribes or coalitions of Tribes must apply by May 1, 2024.



# FAQs about the Priority Climate Action Plan

## What is the Priority Climate Action Plan?

To be eligible for federal implementation grants through the EPA Climate Pollution Reduction Grants program, projects must be based on a measure included in a Priority Climate Action Plan. The EPA requires the Priority Climate Action Plan to describe near-term, high-priority, implementation-ready measures to reduce climate pollution in Massachusetts. This plan will cover the entire state, enabling eligible entities within Massachusetts, including state government, municipalities, and Tribal Nations, to apply.

## What does it mean to be covered by a PCAP? Can I be covered by multiple PCAPs?

Eligible entities can apply for funding through the CPRG program to implement projects included in a PCAP submitted to EPA by March 1, 2024. An applicable PCAP is one that geographically covers an entity and contains greenhouse gas reduction measures that can be implemented by the entity. An entity may be covered by multiple PCAPs in some cases. For example, an applicable state PCAP and an applicable metropolitan PCAP may each include measures that a particular municipality could implement. The municipality could reference measures from either or both PCAPs in its application.

Other PCAPs covering parts of Massachusetts are being developed by:

- Metropolitan Area Planning Council
- Central Massachusetts Regional Planning Council
- Southeast Regional Planning and Economic Coordination Council
- Wampanoag Tribe of Gay Head Aquinnah
- Mashpee Wampanoag Tribe

## How was the PCAP developed?

The Priority Climate Action Plan is a mandatory component for entities awarded a Climate Pollution Reduction Grant Planning Grant. Our approach built upon previous engagement efforts in developing Massachusetts' Clean Energy and Climate Plan to establish climate reduction pathways, milestones and priorities. Our process involved soliciting public input from community organizations and municipalities on a draft list of priority categories. To better understand the specific projects of interest in reducing greenhouse gas emissions, we actively sought project ideas from state agencies, municipalities, and the public and the Regional Planning Agencies coordinating the MSA applications.

## When is the final PCAP due?

Lead organizations for CPRG planning grants must submit their PCAPs to EPA by the deadline of March 1, 2024, in order for lead organizations and other eligible applicants to submit grant applications for the general competition to fund measures contained in those plans.



# Introduction

## Overview

This Priority Climate Action Plan (PCAP), developed as part of a U.S. Environmental Protection Agency (EPA) Climate Pollution Reduction Grant (CPRG) Phase I Planning Grant, is a draft straw proposal document that contains the important sections of the PCAP. These sections cover the development of the PCAP, the priority measures for reducing greenhouse gas (GHG) emissions and achieving other goals of the CPRG program, and a Low Income and Disadvantaged Community (LIDAC) benefits analysis. These sections represent the core of the PCAP, which is why we are seeking public comment on them. Public comments are due by February 15, 2024. The final PCAP will provide additional explanation of quantification of greenhouse gas reductions, citation to the authority to implement each measure, a review of relevant federal funding opportunities for each measure and a technical appendix for each measure.

The Massachusetts PCAP represents a highly focused, near-term list of implementation ready measures to help the state achieve its climate goals. The content of this PCAP supplements – but does not replace—the pathways and recommendations described in the [Massachusetts Clean Energy and Climate Plan](#) for 2025/2030. Instead, this plan is designed as a resource for applicants seeking CPRG Phase II Implementation Grants. It is not designed to serve as a comprehensive list of policy and program recommendations for Massachusetts to reduce its emissions to net zero by 2050.

Table 1: List of Measures

| Sector                    | GHG Reduction Measures  |
|---------------------------|---|
| Transportation            | <b>T1. Adopt Zero or Low Emission Medium- and Heavy-Duty Vehicles</b> |
|                           | <b>T2. Adopt Zero or Low Emission Light-Duty Vehicles</b>             |
|                           | <b>T3. Increase Alternatives to Personal Vehicle Use</b>              |
| Buildings                 | <b>B1. Increase building efficiency</b>                               |
|                           | <b>B2. Decarbonize building heating systems</b>                       |
|                           | <b>B3. Implement building-scale renewables</b>                        |
| Power                     | <b>P1. Develop new renewable energy facilities</b>                    |
|                           | <b>P2. Maximize Utilization of Clean Energy</b>                       |
| Natural and Working Lands | <b>N1. Implement nature-based solutions</b>                           |

## Building on Massachusetts Climate Leadership

The Global Warming Solutions Act and the Act Creating a Next Generation Roadmap for Massachusetts Climate Policy together create statewide binding emissions reduction targets and impose sectoral emission limits. In 2022 the Commonwealth issued the Clean Energy and Climate Plan (CECP) for 2025/2030 and the Decarbonization Roadmap to develop pathways to meet these emissions reduction targets. These studies present a quantitative assessment of



how the Commonwealth can achieve its decarbonization goals. In 2023, the Commonwealth received a Planning Grant under the EPA CPRG to plan and prioritize state climate measures. The CPRG process requires the Commonwealth to develop a Comprehensive Climate Action Plan with additional analysis in the future.

## The PCAP and the CECP

The 2021 *Act Creating a Next Generation Roadmap for Massachusetts Climate Policy*, creates the statutory requirement for the CECP which acts as a “roadmap” for how the Commonwealth will achieve its greenhouse gas emissions reduction goals. The CECP charts a pathway for economy-wide GHG reductions to comply with the statutory requirement of 50% GHG reduction in 2030; 75% in 2040; 85% and net zero in 2050. The CECP was the product of an extensive public engagement process in 2021 and 2022 and resulted in over 97 recommendations for investments, programs, and policies to achieve the mandated decarbonization targets.

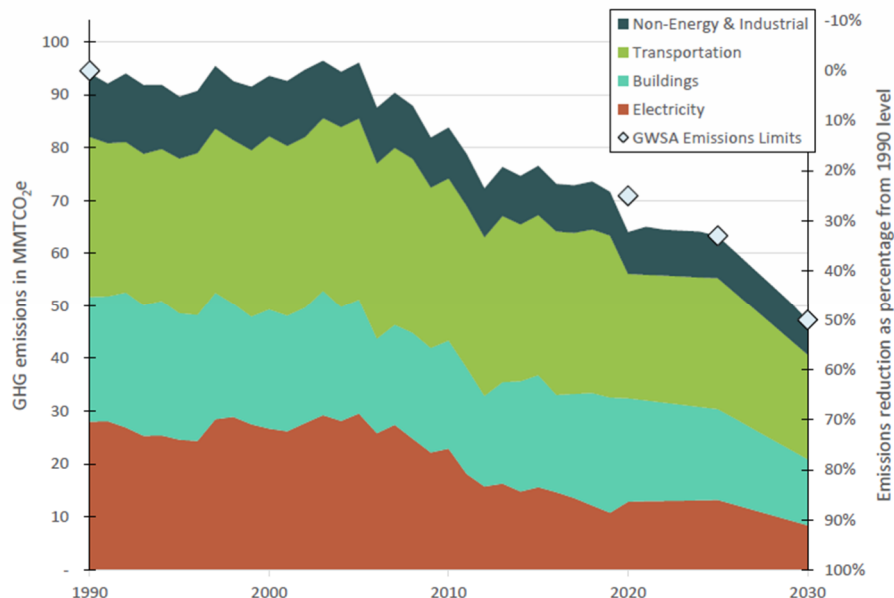


Figure 1: Economy-Wide GHG Emissions by Sector<sup>1</sup>

The CPRG process builds on the CECP. In Phase II of the CPRG, the Comprehensive Climate Action Plan will seek to provide greater specificity around each of the recommendations included in the CECP. In particular, there are four main dimensions the CPRG process seeks to develop: GHG emissions reduction for specific measures rather than the group as a whole; the impact on environmental justice communities; the benefits of implementation and the costs required to achieve the goals.

The CPRG process benefitted from three sources of input: the CECP recommendations, the climate action plans of various regions and municipalities and the input from community

<sup>1</sup> Massachusetts Clean Energy and Climate Plan for 2025 and 2050, pg. xii



organizations and municipal staff. The process began with a focus on the Massachusetts Inventory and the main recommendations from the CECP to focus reductions on the largest emitting sectors of transportation, buildings, and power. Focusing on those measures the CPRG staff also reviewed existing climate action plans and received input from community members. Finally, the CPRG staff refined the CECP measures and other recommendations to prioritize those topics that met US EPA criteria for near-term actionable projects with emissions reductions focused on the 2025-2030 timeframe.

## Low Income and Disadvantaged Communities Benefits Analysis

An analysis of benefits for low-income and disadvantaged communities (LIDACs) has been performed to inform the design of implementation programs and policies. For the first time, the federal government has made it a goal that 40 percent of the overall benefits of certain federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. The CPRG program will advance the goals of the Justice40 Initiative set forth in Executive Order 14008, which aims to deliver 40 percent of the overall benefits of relevant federal investments to disadvantaged communities. As such, in this PCAP, Massachusetts is identifying the low income and disadvantaged communities within the Commonwealth and including a qualitative discussion of expected benefits to LIDACs from each GHG reduction measure.

As this is a federal process, the determination of LIDACs align with federal resources (instead of using the Commonwealth's Environmental Justice determinations). For this PCAP, the determination was made to use census tracts included as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). The CEJST tool uses datasets that are indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. The tool ranks most of the burdens using percentiles by Census tract. Percentiles show how much burden each tract experiences compared to other tracts. To qualify as a disadvantaged community in CEJST, one of the burden indicators must be above the 90th percentile.





Table 2: CEJST Categories and Indicators

| CEJST Category        | Indicators  |
|-----------------------|---|
| Climate Change        | Expected agriculture rate, expected building loss rate, expected population loss rate, projected flood risk, projected wildfire risk AND low income                                 |
| Energy                | Energy cost, PM2.5 in the air AND low income  |
| Health                | Asthma, diabetes, heart disease, low life expectancy AND low income   |
| Housing               | Housing cost, lack of green space, lack of indoor plumbing, lead paint AND low income   |
| Legacy Pollution      | Abandoned mine land, formerly used defense site, proximity to hazardous waste facilities, proximity to risk management plan facilities, proximity to superfund sites AND low income |
| Transportation        | Diesel particulate matter exposure, transportation barriers, traffic proximity and volume AND low income  |
| Water and Wastewater  | Underground storage tanks and releases, wastewater discharge AND low income   |
| Workforce Development | Linguistic isolation, low median income, poverty, unemployment AND high school education  |

Within Massachusetts, CEJST identifies 335 census tracts (of 1,471 total statewide census tracts) as disadvantaged under these standards. These tracts represent 20.3% of Massachusetts' population. The full table of census tracts is in Appendix A.

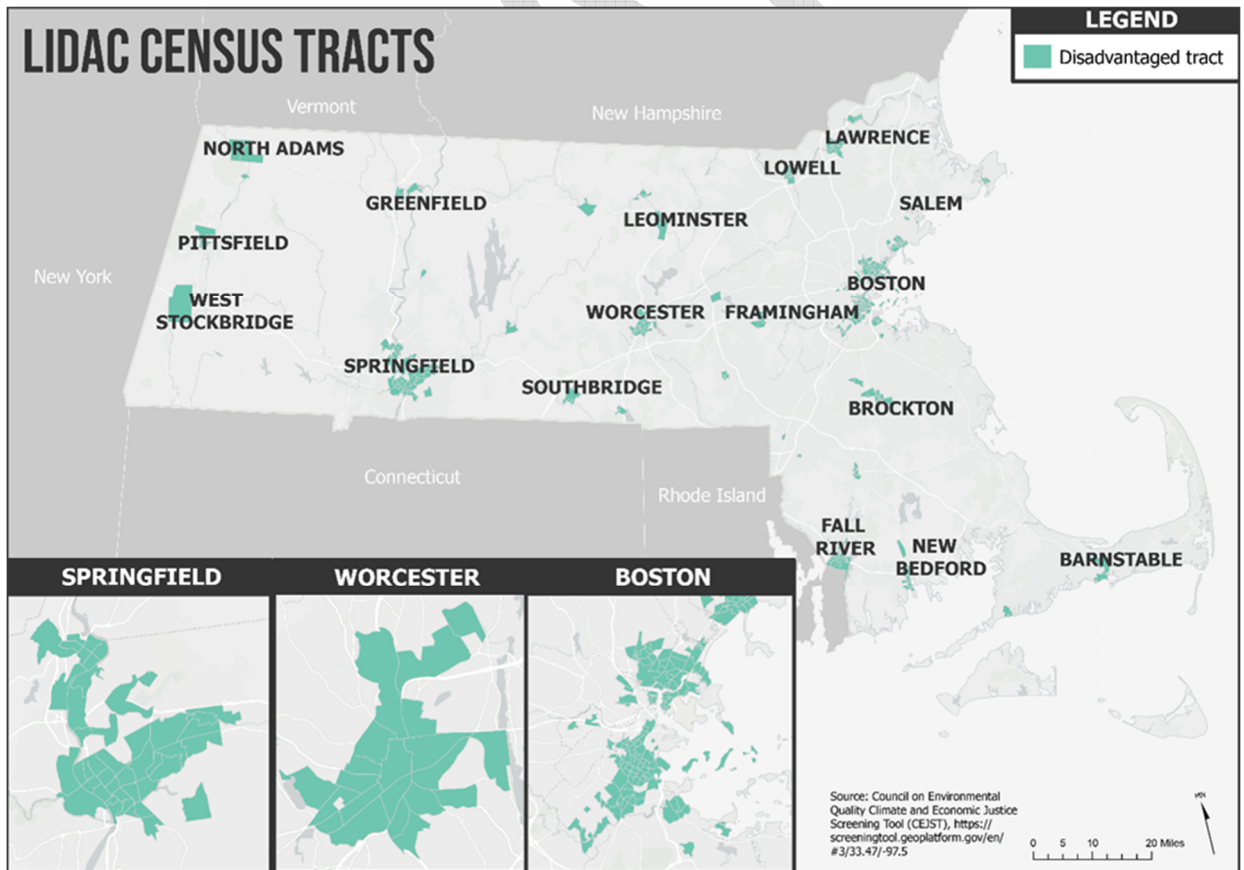


Figure 2: LIDAC Census Tracts



Specific benefits of each PCAP measure to LIDACs are discussed below alongside the measure. Many of the proposed measures do not have a specific geographic impact, as the share of building types (commercial, residential, municipal, schools, etc.) and the use of vehicles and energy types are spread broadly across the Commonwealth. As such, impacts and benefits are likely to be felt equally across all communities, however, the Commonwealth may choose to prioritize funding for some measures towards LIDACs in order to ensure benefits such as job and skill development are accumulated in areas of need. Some measures will have geographic-specific impacts, which are noted in the write-up for each of those measures.

Table 3: LIDAC Benefits for each GHG Reduction Measure

| GHG Reduction Measures  | LIDAC CEJEST Impact Categories   |
|---|--|
| <b>Transportation</b>   |  |
| <b>T1. Adopt Zero or Low Emission Medium- and Heavy-Duty Vehicles</b> | Health, Transportation<br>Population of burdened community members: TBD                                  |
| <b>T2. Adopt Zero or Low Emission Light-Duty Vehicles</b>             | Health, Transportation<br>Population of burdened community members: TBD                                  |
| <b>T3. Increase Alternatives to Personal Vehicle Use</b>              | Transportation<br>Population of burdened community members: TBD  |
| <b>Buildings</b>  |  |
| <b>B1. Increase building efficiency</b>                               | Energy, Health, Workforce Development<br>Population of burdened community members: TBD                   |
| <b>B2. Decarbonize building heating systems</b>                       | Energy<br>Population of burdened community members: TBD  |
| <b>B3. Implement building-scale renewables</b>                        | Energy, Health, Workforce Development<br>Population of burdened community members: TBD                   |
| <b>Power</b>  |  |
| <b>P1. Develop new renewable energy facilities</b>                    | Energy, Health, Legacy Pollution, Workforce Development<br>Population of burdened community members: TBD |
| <b>P2. Maximize Utilization of Clean Energy</b>                       | Energy, Workforce Development<br>Population of burdened community members: TBD                           |
| <b>Natural and Working Lands</b>                                      |  |
| <b>N1. Implement nature-based solutions</b>                           | Climate Change, Health<br>Population of burdened community members: TBD                                  |

## Intergovernmental coordination

The PCAP development process has benefitted from close coordination among the state agencies, regional planning entities, and municipalities. The state solicited input from local and regional officials from across Massachusetts in a number of forums. CPRG Planning Staff convened biweekly meetings with the Regional Planning Agencies responsible for developing





PCAPs for each of the three Metropolitan Statistical Areas: The Metropolitan Regional Planning Council, the Central Massachusetts Regional Planning Council, and the Southeastern Regional Economic Development District. In addition, the CPRG Planning staff attended meetings convened by each of the Regional Planning Agencies (RPA) with municipal partners. The CPRG Planning staff also convened two general meetings with RPA staff to solicit feedback on PCAP measures as well as a meeting focused on the twenty-six Gateway Cities in Massachusetts with high environmental justice and immigrant populations. In addition, CPRG Planning Staff presented the draft priority measures to a meeting of the Massachusetts Municipal Partnership which included over 250 municipal officials. Based on that outreach, the CPRG Planning Staff held one-on-one meetings with a number of municipal and regional entities including the Cape Cod Commission, the Franklin County Regional Planning Agency, the Berkshire County Regional Planning Agency, the City of Boston, the City of Chelsea, and the City of Lawrence.

## Community engagement

Throughout the PCAP development process the CPRG Planning Team engaged community organizations to solicit concepts and feedback on priority areas for inclusion in the PCAP. CPRG community engagement deliberately sought whenever possible to integrate the CPRG process with existing stakeholder processes to avoid creation of additional burden on organizations already engaged in extensive consultative processes.

The CPRG PCAP development process leveraged the existing forums of the [Global Warming Solutions Act Implementation Advisory Council](#) (GWSA IAC) and the [Environmental Justice Council](#). The GWSA IAC met with the CPRG Project Staff twice over the summer and fall of 2023 to discuss potential project measures. In addition, the GWSA sector work groups related to transportation, buildings and power each met with the CPRG team to provide input and feedback. The CPRG team also briefed the Governor's Environmental Justice Council twice in 2023 to receive high-level feedback on the environmental justice priorities of leading organizations across the Commonwealth.

In early January 2024, Climate Office hosted a two-week public comment period on an initial draft of measures to be included in this plan. Climate Office has opened a second two-week public comment period through early February following the release of this draft.

## Environmental Justice

The CPRG Planning Team worked closely with the Environmental Justice Office of the Secretariat of Energy and Environmental Affairs to convene in a monthly Justice40 and Equitable Investment Working Group. With over 75 organizations invited and consistent participation from about 20 organizations, the Justice40 Group represents an important cross-section of environmental justice organizations from across the Commonwealth and representing community members from many federally defined LIDAC communities. The Group met in monthly virtual meetings beginning in September 2023. By March 1, 2024 the Justice40 Group will have met six times to address topics related to the CPRG PCAP as well as other federal funding opportunities, such as Solar for All. In addition to these groups, the CPRG team held multiple small-group conversations with environmental justice leaders to address



particular topics and to hear their perspective on priority areas for the PCAP and decarbonization priorities overall. These small meetings highlighted important topics, such as the increased energy burden that may arise from electrification of affordable housing or existing mapping tools to track the environmental justice burden on communities across the Commonwealth. The CPRG Staff used a number of interactive tools including “Jamboards” and surveys to solicit feedback on existing topics and new ideas.

## Climate and Labor

The CPRG Planning Team also established a similar monthly engagement process with labor organizations through a Climate-Labor Working Group. These monthly meetings engaged one dozen leaders and representatives drawn from of the Massachusetts and Boston Buildings Trades Council, the AFL-CIO, the International Brotherhood of Electrical Workers, and the Policy Group on Trades Women’s Issues in monthly meetings. Those meetings addressed topics of how decarbonization projects could include worker protections and ensure development of high-quality jobs at the same time as promoting the diversification of the Massachusetts workforce to include women and people of color.

## PCAP Elements

### Greenhouse Gas Inventory

Massachusetts, in alignment with its commitment to combat climate change, conducts a comprehensive GHG inventory annually. The state’s GHG inventory is published under the EPA’s Inventory of U.S. Greenhouse Gas Emissions and Sinks by State, which serves as a crucial tool in assessing and understanding the sources and trends of these emissions, providing policymakers and the public with valuable insights. By regularly monitoring and reporting the state’s carbon footprint, Massachusetts strives to develop effective strategies and policies that contribute to the larger goal of mitigating climate change impacts and fostering a sustainable future.

### Scope and Methodology

Massachusetts Department of Environmental Protection (MassDEP) has developed a statewide inventory of the major sources of GHG emissions resulting from economic activities in the state. The Massachusetts GHG emissions inventory includes anthropogenic emission estimates for primary GHGs for the full geographic coverage of the state across sectors. Emissions are reported in CO<sub>2</sub> equivalent units. The Massachusetts inventory includes tracking of emitted and sequestered gases from the following sectors: residential fuel combustion, commercial fuel combustion, industrial fuel combustion, electric power, transportation, natural gas systems, industrial processes, agriculture, and waste. For the purposes of the PCAP, these sectors were re-categorized as listed above for better alignment with the approved CPRG Quality Assurance Project Plan (QAPP) and for reduction measure calculations. Data sources for the sector-based inventory are provided in Appendix B.



Table 4: Statewide inventory by sector and gas

| Sectors  | Gases  |
|--|--|
| <ul style="list-style-type: none"> <li>• Transportation</li> <li>• Electric power</li> <li>• Industry</li> <li>• Commercial and residential buildings</li> <li>• Waste and materials management</li> <li>• Wastewater</li> <li>• Agriculture</li> <li>• Natural and working lands</li> </ul> | <ul style="list-style-type: none"> <li>• Carbon dioxide (CO<sub>2</sub>)</li> <li>• Methane (CH<sub>4</sub>)</li> <li>• Nitrous oxide (N<sub>2</sub>O)</li> <li>• Fluorinated gases (F-gases) including hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>)</li> </ul> |

## GHG Emissions by Sector and Gas

To conduct long-term analyses and track priority reduction measures, 2019 GHG emissions have been used for the PCAP. Total reported emissions for 2019 are 71.67 MMTCO<sub>2</sub>e. 2019 data is the most complete and reliable data for assessing the trajectory of emissions, especially when considering the abnormal conditions of 2020-2021.

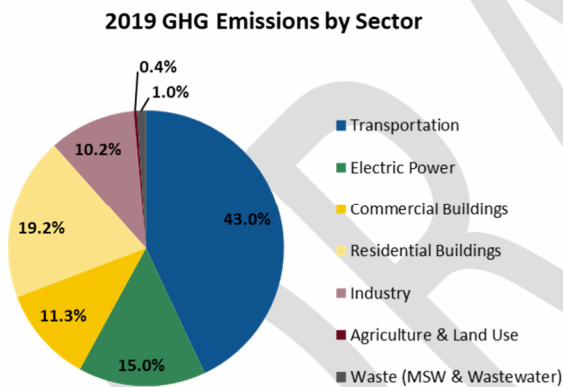


Figure 4. 2019 GHG Emissions by Sector

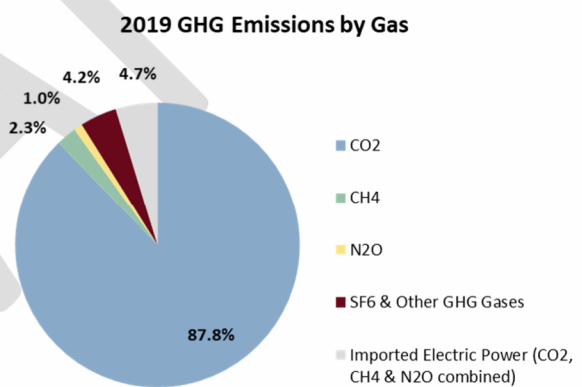


Figure 3. 2019 GHG Emissions by Gas

The inventory data provides insights into the major contributors to Massachusetts's overall carbon footprint. Sectors are categorized to demonstrate their respective contributions to the total GHG emissions, offering a comprehensive overview of the state's environmental impact. The three largest contributors to the state's inventory include the following:

- **Transportation** sources are the largest contributor representing 43% of the state's GHG emissions. Emissions from this sector primarily come from the combustion of gasoline, diesel, and aviation fuel. In 2019, 62% of sector emissions were from gasoline and 26% were from diesel.
- **Buildings** on-site fuel combustion across the residential, commercial, and industrial buildings represent 30% of the state's GHG emissions. As an accounting convention adopted by the Commonwealth in 2009, the GHG emissions from buildings cover the emissions from



the combustion of fossil fuels on-site for space and water heating. GHG emissions associated with electricity usage are reported in the electric power sector.

- **Electric Power** represents 15% of the state's GHG emissions. These GHG emissions include in-state generation of electricity and imported electricity from other states. The use of electricity to heat and cool buildings and vehicle charging in Massachusetts is included within this sector.

## Priority GHG Reduction Measures

Massachusetts GHG inventory data demonstrates transportation, buildings, and power sectors as the largest emissions contributors across the state. Priority measures are focused on making significant reductions to those categories that are achievable, ambitious, and provide community benefits.

The measures listed are not exhaustive to reach goals and targets in alignment with the Clean Energy and Climate Plan but are specifically identified in alignment for potential CPRG implementation grants. The following priority measures, in no particular order, meet the following EPA PCAP requirements:

- Programs, policies, or projects are implementation ready in the near-term timeline of five-years from grant award.
- Significant GHG emissions reductions will be achieved from implementation as compared to the 2019 GHG inventory baseline.
- Low-income and disadvantaged communities will benefit from implementation.



Table 5: Priority Reduction Measures

| Priority Reduction Measure                                     | Implementation Concepts (non-exhaustive)                     | 2019 GHG Baseline          | Future GHG Reduction by 2030 |
|--|--|----------------------------|------------------------------|
| Transportation   |  |                            |                              |
| T1. Adopt Zero or Low Emission Medium- and Heavy-Duty Vehicles | Medium-duty transit vans, delivery vans/trucks, school buses | 30.81 MMTCO <sub>2</sub> e | 0.62 MMTCO <sub>2</sub> e    |
|  | Heavy-duty transit buses                                     |                            |                              |
| T2. Adopt Zero or Low Emission Light-Duty Vehicles             | Low/Zero emission passenger vehicles                         |                            | 1.29 MMTCO <sub>2</sub> e    |
| T3. Increase Alternatives to Personal Vehicle Use              | Increase short-distance transportation alternatives          |                            | 0.37 MMTCO <sub>2</sub> e    |
|  | Expand and electrify rail service                            |                            |                              |
| Buildings  |  |                            |                              |
| B1. Increase building efficiency                               | Renovate/Retrofit existing commercial buildings              | 21.77 MMTCO <sub>2</sub> e | 0.97 MMTCO <sub>2</sub> e    |
|  | Renovate/Retrofit existing housing stock                     |                            |                              |
|  | Renovate/Retrofit existing schools                           |                            |                              |
| B2. Decarbonize building heating systems                       | Increase heat pump adoption                                  |                            | 2.64 MMTCO <sub>2</sub> e    |
|  | Expand geothermal adoption                                   |                            |                              |
| B3. Implement building-scale renewables                        | Install on-site renewable energy                             |                            | 1.05 MMTCO <sub>2</sub> e    |
| Power  |  |                            |                              |
| P1. Develop new renewable energy facilities                    | Accelerate offshore wind development                         | 10.72 MMTCO <sub>2</sub> e | 8.24 MMTCO <sub>2</sub> e    |
|  | Increase solar PV development                                |                            |                              |
| P2. Maximize Utilization of Clean Energy                       | Develop municipal microgrids                                 |                            | 0.28 MMTCO <sub>2</sub> e    |
|  | Electric grid investments                                    |                            |                              |
| Natural and Working Lands                                      |  |                            |                              |
| N1. Implement nature-based solutions                           | Increase restorative planting                                | 0.27 MMTCO <sub>2</sub> e  | 0.019 MMTCO <sub>2</sub> e   |



## Transportation

### *T1. Adopt Zero or Low Emission Medium- and Heavy-Duty Vehicles*

Adopting zero or low emission medium- and heavy-duty vehicles will reduce tailpipe emissions on roadways, throughout neighborhoods and at loading areas by transitioning gasoline and diesel vehicles to electric and lower-carbon alternatives. The transition will result in locally cleaner air, reduced noise and improved health outcomes. Statewide, transportation represents the largest source of GHG emissions. Implementation concepts will focus on vehicle procurement, updating fueling/charging infrastructure and supporting educational/operational changes.

Implementation concepts include:

- **Medium-duty vehicles:** Increase adoption of electric and/or low-emission transit van, delivery van/truck, and school bus vehicles through vehicle incentives, charging infrastructure support, and technical assistance.
- **Heavy-duty vehicles:** Increase adoption of electric and/or low-emission transit bus vehicles through vehicle incentives, charging infrastructure support, and technical assistance.

**GHG Reduction Estimate for this Measure:** 0.62 MMTCO<sub>2e</sub>, 2.0% of Transportation sector emissions and 0.9% of total emissions\*

This reduction measure is calculated by 1) establishing a medium and heavy-duty vehicle fuel emissions baseline 2) convert emissions baseline to applicable gallons of gasoline and diesel by vehicle type 3) apply vehicle fuel economy values to each vehicle type to calculate vehicle miles travelled (VMT) 4) Use assumed electrical vehicle efficiency values for each electric vehicle type to calculate electricity use for VMT 5) Calculate avoided emissions based on difference between baseline and electric emissions.

Calculations currently assume the following activity by 2030:

- 10% of medium- and heavy-duty vehicles convert to all-electric vehicles

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

#### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies
- Tribal Nations

#### **Impact to Low Income and Disadvantaged Communities:**

Highways and arterials often pass through low income and disadvantaged communities; thus, the benefits of this program will be particularly acute for those communities that are most heavily impacted by the existing freight distribution system, including communities near highways, warehouses, ports such as Conley Terminal, and Logan Airport. These communities will enjoy cleaner air, improved health outcomes, and reduced noise. Benefits of this measure include public health outcomes for abutters, such as fewer asthma attacks, hospital visits, preventable deaths, and health care cost savings, as well as reduced noise, as electric trucks produce half the noise pollution of diesel vehicles.





Beyond the direct impacts, the goal is that this program will inspire fleet operators to expand investments in vehicle electrification. Communication will continue with fleet operators to assess their experience with the first round of procurement and encourage full fleet electrification. Targeted outreach to fleets focused in LIDACs can spur investment in these communities and the development of skills and high-paying jobs. Success with these early adopters will help electric vehicles achieve wider penetration, supporting the compulsory regulations of the Advanced Clean Truck rule and the transition of the whole vehicle fleet to zero-emission vehicles.

## *T2. Adopt Zero or Low Emission Light-Duty Vehicles*

Adopting zero or low emission light-duty vehicles will reduce tailpipe emissions on roadways and throughout neighborhoods by transitioning gasoline vehicles to electric vehicles. The transition will result in locally cleaner air, reduced noise and improved health outcomes. Statewide, transportation represents the largest source of GHG emissions. Implementation concepts will focus on vehicle procurement, updating fueling/charging infrastructure and supporting educational/operational changes.

Implementation concepts include:

- **Passenger vehicles:** Accelerate the adoption of zero tailpipe emission vehicles through rebates, vehicle procurement, and charging infrastructure development.

**GHG Reduction Estimate for this Measure:** 1.29 MMTCO<sub>2</sub>e, 4.2% of Transportation sector emissions and 1.8% of total emissions\*

This reduction measure is calculated by 1) establishing a passenger gasoline vehicle emissions baseline 2) convert emissions baseline to gallons of gasoline 3) apply vehicle fuel economy values to each vehicle type to calculate vehicle miles travelled (VMT) 4) use assumed electrical vehicle efficiency values for passenger electric vehicles to calculate electricity use for VMT 5) calculate avoided emissions based on difference between baseline and electric emissions.

Calculations currently assume the following activity by 2030:

- 15% of gasoline-powered single-occupant vehicles convert to all-electric

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies
- Tribal Nations

### **Impact to Low Income and Disadvantaged Communities:**

Highways and arterials often pass through low income and disadvantaged communities; thus, the benefits of this program will be particularly acute for those communities that are most heavily impacted by the existing passenger roadway system, including communities near highways, major employment destinations, and Logan Airport. These benefits are particularly advantageous to positively impact CEJST Health and Transportation burdened communities.



These communities will enjoy cleaner air, improved health outcomes, and reduced noise. Benefits of this measure include public health outcomes for abutters, such as fewer asthma attacks, hospital visits, preventable deaths, and health care cost savings, as well as reduced noise.

### *T3. Increase Alternatives to Personal Vehicle Use*

Increasing access to multimodal transportation options will create a mode-shift that will provide opportunities for single occupancy vehicle (SOV) occupants to more frequently use other, greener, modes of transportation. This will limit the increase of cars on the road and put more people into more fuel-efficient modes of transit. Mode shift is one of the most effective means to reduce transportation emissions.

Implementation concepts include:

- **Increase short-distance transportation alternatives:** Increase access to passenger van service, e-bikes, and investments in safe road/trail infrastructure for modes of travel alternatives to passenger vehicles.
- **Expand and electrify rail service:** Increase service for rapid transit, commuter rail, regional rail and accelerate the implementation of West-East Rail by investing in rail and station upgrades, electrification, schedule/trip expansion, with focus on station and rail resiliency for service continuity.

**GHG Reduction Estimate for this Measure:** 0.37 MMTCO<sub>2</sub>e, 1.2% of Transportation sector emissions and <1% of total emissions\*

This reduction measure is calculated by 1) establishing a single-occupant vehicle emissions baseline from VMT 2) calculate avoided emissions from mode-shift to zero emission options.

Calculations currently assume the following activity by 2030:

- 3% reduction in passenger vehicle emissions due to mode shift adoption

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

#### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies
- Tribal Nations

#### **Impact to Low Income and Disadvantaged Communities:**

Increasing transportation reliability and reducing travel time will benefit LIDACs by providing increased travel options for users who rely on alternatives to reach jobs. Expanding the multimodal network can occur in areas with access to commuter rail stops which increases economic opportunities, essential services, and educational opportunities via increased transit access. These benefits are particularly advantageous to positively impact CEJST Transportation burdened communities.



## Buildings

### *B1. Increase Building Efficiency*

Appliance and building envelope efficiency are typically cost-effective tools to reduce GHG emissions in buildings and lower utility bills. Building retrofits to improve the enclosure and envelope with better insulation reduce energy use intensity. These weatherization projects in colder climates such as Massachusetts traditionally realize significant energy and carbon emission savings while helping to reduce peak electricity demands. Additional efficiency measures such as LED lighting replacement, low flow / ultra-low flow hot water fixture replacement and high efficiency appliance replacement are minimally invasive projects that can provide significant savings at scale. Together, these actions can help limit the GHG emissions from buildings.

Implementation concepts include the following:

- **Renovate/retrofit existing commercial buildings:** Assist municipal governments to implement commercial building energy reduction programs.
- **Renovate/retrofit existing housing stock:** Assist residential building owners/operators with energy efficiency analysis and implementation of recommended measures.
- **Renovate/retrofit existing schools:** Assist schools and state colleges and universities, through multiple actions for energy efficiency. Include a focus on curriculum and community engagement to maximize community learning and awareness of decarbonization efforts.

**GHG Reduction Estimate for this Measure:** 0.97 MMTCO<sub>2e</sub>, 4.5% of Building sector emissions and 1.4% of total emissions\*

This reduction measure is calculated by 1) establishing a building emissions baseline based on sf of residential and commercial buildings 2) calculate energy efficiency savings based on NREL Slope data for natural gas and electricity 3) convert energy savings to emissions reduction 4) calculate avoided emissions from applicable building type baseline.

Calculations currently assume the following activity by 2030:

- 50% of municipal buildings and 20% of all other commercial buildings implement retrofits
- 30% of single-family homes & residential buildings implement retrofits
- 50% of school buildings implement retrofits

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

#### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies
- Tribal Nations

**Impact to Low Income and Disadvantaged Communities:** Benefits of this measure will be felt across the Commonwealth through lower energy costs and cost stabilization. Energy audits and efficiency improvements will require additional green workforce laborers with transferable and



in-demand skills, which may be focused in LIDAC communities. These benefits are particularly advantageous to positively impact CEJST Energy and Workforce Development burdened communities.

## *B2. Decarbonize Building Heating Systems*

Decarbonizing building systems for space and water heating requires replacement of traditional combustion equipment with options that exclude end-use combustion of fossil fuels, such as electrification. Current systems emit a large quantity of greenhouse gases, especially in larger commercial buildings. While electrification of new development can be addressed through building codes, existing buildings with older equipment often require performance standards or targeted incentives achieve replacement of equipment either at the equipment's end of life or sooner. Together, these actions can help reduce the GHG emissions from buildings.

Implementation concepts include the following:

- **Increase heat pump adoption:** Promote the transition to efficient heat pumps through supporting the supply chain for available and affordable heat pumps, investing in workforce development for installation, increasing customer awareness and residential demand and implementation projects.
- **Expand geothermal adoption:** Expand implementation of vertical or horizontal ground source heat exchange for the implementation at residential and commercial building scale.

**GHG Reduction Estimate for this Measure:** 2.64 MMTCO<sub>2e</sub>, 12.1% of Building sector emissions and 4% of total emissions\*

This reduction measure is calculated by 1) establishing a building emissions baseline based on square-footage of residential and commercial buildings 2) calculate energy efficiency savings from high performance heat pump solutions 3) calculate energy savings to emissions reduction 4) calculate avoided emissions from applicable building type baseline for displacing natural gas, propane and fuel oil heating.

- Calculations currently assume the following activity by 2030:
- 10% of housing units electrify with high performance space and water heating
- 13% of commercial buildings electrify with high performance space and water heating
- 5% of housing units electrify with geothermal heat pumps
- 3% of commercial buildings electrify with geothermal heat pumps

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies
- Tribal Nations

### **Impact to Low Income and Disadvantaged Communities:**

Heat pumps save thousands of dollars every year when installed in a home with delivered fuels, which are prevalent across New England including LIDAC communities. To support this, HVAC



contractors serving LIDACs would be included in the program to ensure that these energy utility cost benefits flow to these communities. These benefits are particularly advantageous to positively impact CEJST Energy burdened communities.

### *B3. Implement Building-Scale Renewables*

The integration of building-scale renewables on properties with ample natural resources contributes to clean energy connected to the electric grid. On-site renewable energy generation utilizes untapped space for the creation of clean energy, reducing the burden on traditional sources of electricity without large-scale development. Through identification, zoning, community coordination, funding, and infrastructure development, this measure can reduce GHG emissions from buildings. Implementation concepts include the following:

- **Install on-site renewable energy:** Identify suitable properties for and install rooftop PV, wind, and ground/structure mount solar on commercial, residential, and industrial buildings.

**GHG Reduction Estimate for this Measure:** 1.05 MMTCO<sub>2</sub>e, 4.8% of Building sector emissions and 1.5% of total emissions\*.

This reduction measure is calculated by 1) establishing an electricity emissions baseline based on sf of residential and commercial buildings 2) calculate energy generation from NREL PVWatts tool 3) convert energy generation to emissions savings 4) calculate avoided emissions from applicable building type baseline for displacing fossil fuel electricity generation.

Calculations currently assume the following activity by 2030:

- 15% of single-family homes install 4 kW of solar, and 5% install 4kW wind turbine
- 10% of commercial buildings install 50 kW of solar, and 1% install a 12kW wind turbine

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

#### **Implementing Agencies:**

- Municipal governments and affiliated organizations
- State agencies and quasi-agencies including DOER, DPU, and MassCEC
- Tribal Nations

#### **Impact to Low Income and Disadvantaged Communities:**

These benefits are particularly advantageous to positively impact CEJST Energy, Health, and Workforce Development burdened communities. Expanding onsite renewables will result in decreased energy costs and local job opportunities within LIDAC communities. Furthermore, the addition of building scale renewables will add resilient power for critical loads and resilience hubs while reducing air pollution from the on-site combustion of fossil fuels.

## **Power**

### *P1. Develop New Renewable Energy Facilities*

The development of new renewable energy facilities in Massachusetts is vital for achieving clean energy goals, reducing carbon emissions, and ensuring a sustainable and resilient energy future for the state. Relying on a diverse set of renewable energy sources, such as wind, solar,





and geothermal helps Massachusetts create a resilient and sustainable energy portfolio and speed the transition away from carbon-intensive uses. Diversification also enhances energy security and reduces vulnerability to supply disruptions.

Implementation concepts include:

- **Accelerate offshore wind development:** Invest in port infrastructure to support offshore wind development and overcome supply chain bottlenecks. Focus on opening new offshore wind areas, such as the Gulf of Maine.
- **Increase solar PV development:** Assist utility and community scale solar deployment, through technical assistance and incentives.

**GHG Reduction Estimate for this Measure:** 8.24 MMTCO<sub>2e</sub>, 76.9% of Power sector emissions and 11.5% of total emissions\*

This reduction measure is calculated by 1) establishing an electric power emissions baseline 2) calculate clean energy generation from NREL PVWatts tool 3) convert energy generation to emissions savings 4) calculate avoided emissions from power sector baseline for displacing fossil fuel electricity generation.

Calculations currently assume the following activity by 2030:

- 12 TWh of solar, 13 TWh of offshore wind, and 1 TWh of onshore wind

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

#### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies
- Tribal Nations

**Impact to Low Income and Disadvantaged Communities:** Investing in new renewable energy facilities stimulates economic growth by attracting investments and creating jobs across the supply chain. This includes manufacturing, installation, maintenance, and associated services related to renewable energy projects. The state could include job creation and economic development benefits for LIDAC communities. Investing in renewable energy projects also often brings community and environmental benefits. This includes improved air and water quality, reduced noise pollution, and support for local ecosystems. Community engagement in renewable energy initiatives can also lead to positive social outcomes.

## *P2. Maximize Utilization of Clean Energy*

In addition to additional clean energy production, efficient use of all energy will result in fewer emissions, and reduced power required on the grid. Investing in electric utility infrastructure (including transmission, storage, and distribution) can ensure that clean energy is utilized effectively in peaks and reduce the need for existing fossil fuel generation facilities to remain online to service peak demand. Supporting the development of interconnected renewable generation and storage through microgrids can also strengthen community resilience and energy reliability.





Implementation concepts include the following:

- **The Municipal Microgrid Initiative** will build upon previous energy resilience pilot programs and provide municipal leaders with the technical and financial assistance they need to evaluate and implement right-sized energy resilience assets for critical public facilities with a focus on supporting the most critical loads in such facilities. The objective for municipal microgrid projects will be to provide resilient power, with a target of 72 hours of backup per Massachusetts Emergency Management Agency's (MEMA) guidance.
- **Electric grid investments** will target inefficient operations of the grid to reduce distribution and transmission losses as compared to the 2019 5.13% losses reported via Energy Information Administration (EIA).

**GHG Reduction Estimate for this Measure:** 0.28 MMTCO<sub>2</sub>e, 2.6% of Power sector emissions and <1% of total emissions\*.

This reduction measure is calculated by 1) establishing an electric power emissions baseline 2) calculate emissions savings from reduction of transmission and distribution losses 3) calculate emissions savings from battery deployment during peak grid emissions periods 4) calculate avoided emissions from power sector baseline for both reduced grid losses and battery storage deployment.

Calculations currently assume the following activity by 2030:

- 800kW of microgrid supported battery power deployed at dirtiest grid periods
- Updated electrical infrastructure reduces EIA's estimate of grid losses from 2019 by 50%

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

#### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies including the DOER, DPU, and MassCEC
- Tribal Nations

#### **Impact to Low Income and Disadvantaged Communities:**

Upgraded electric infrastructure will provide residents of LIDAC communities with reliable, resilient, clean energy that is in the user's power to control. Furthermore, the Commonwealth will ensure that siting and permitting decisions consider the impact of energy projects on communities with EJ population, the voices of those who have been traditionally underrepresented in policy and decisions will be incorporated, and well-paying jobs and economic development benefits will flow to those who have traditionally not benefited from those investments.

## **Natural and Working Lands**

### *N1. Implement Nature-based Solutions*

Preserving, protecting, and restoring natural and working lands with native planting projects results in the sequestration of carbon emissions, helping to meet Massachusetts' reduction goals. Carbon sequestration in the form of healthy forests, wetlands, and other forms of natural landscapes benefits the state in not only emissions, but in creating livable environments



for species. While more than half of the state's land is under tree cover (57% of Massachusetts land is forest), it is important for the Commonwealth to eliminate nature loss, slow the growth of urbanized areas (25% of land) and to preserve and regenerate additional natural areas within urban spaces to contribute to climate action.

Implementation concepts include the following:

- **Increase restorative planting:** Utilize nature-based solutions in natural areas designated for forestry restoration and preservation. Increase tree, shrub, and grass planting projects in urban and suburban areas.

**GHG Reduction Estimate for this Measure:** 0.019 MMTCO<sub>2</sub>e, 7.0% of Natural and Working Land emissions and <1% of total emissions\*

This reduction measure is calculated by 1) establishing a land use emissions baseline 2) calculate carbon sequestration from planting 3) calculate the avoided emissions from carbon sequestration from baseline.

Calculations currently assume the following activity by 2030:

- 1,000,000 deciduous large trees, 10,000,000 shrubs, and 115 acres of grass are planted

\*Calculations are in draft form and subject to change in final PCAP subject to input and review

#### **Implementing Agencies:**

- Municipalities
- State agencies and quasi-agencies
- Tribal Nations

#### **Impact to Low Income and Disadvantaged Communities:**

Increased tree coverage in LIDAC communities will improve overall health and wellbeing by decreasing the urban heat island effect and emergency heat days, reducing flood risk, and improving air quality. Furthermore, increased forest health throughout the state will result in improved water quality, food production, and ecosystem health that can be used for recreational purposes.

## **Workforce**

The clean energy transition depends upon Massachusetts continuing to develop a diverse, inclusive workforce and to support high-quality jobs. For Massachusetts to meet its decarbonization goals, rapid workforce expansion will need to occur across all segments of the clean energy economy. However, 88% of Massachusetts Clean Energy employers are already struggling to source talent due to existing labor shortages and skills gaps.<sup>2</sup> To better understand these challenges and opportunities, Massachusetts conducted an analysis to quantify clean energy jobs at the regional, sector, and occupational levels, including climate-critical occupations associated with the CPRG priority measures.

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<sup>2</sup> Powering the Future: A Massachusetts Clean Energy Workforce Needs Assessment, <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>



[Powering the Future: A Massachusetts Clean Energy Workforce Needs Assessment](#) found that by 2030, the Massachusetts clean energy workforce will need to grow by more than 36%, requiring 38,000 more workers to be trained and ready to deploy some or all their time on climate-critical work.<sup>5</sup> Additionally, Massachusetts recognizes the tremendous economic impact of the Biden-Harris administration's historic federal investments in clean energy and climate, which, according to information shared by the White House in August of 2023, have created more than 170,000 jobs and are projected to create more than 1.5 million additional jobs over the next decade.<sup>3</sup>

The priority measures detailed in this plan directly support the state's decarbonization goals surrounding Clean and High-Performance Buildings, Clean Power and Net Zero Grid, Clean Transportation. Across these major clean energy sectors, the occupations that are projected to see the highest demand and are at the greatest risk of facing supply bottlenecks between now and 2030 include HVAC technicians, electricians, line workers, construction laborers, and energy auditors. To address these projected workforce supply gaps and support the expansion of a robust and diverse clean energy workforce, the Commonwealth is pursuing four major workforce development strategies, which have been detailed in *The Massachusetts Clean Energy and Climate Plan for 2050* and the *Recommendations of the Climate Chief* report.<sup>45</sup> These four strategies will not only directly support implementing the priority measures included in the PCAP but also contribute to the expansion of high-quality jobs and increased access for traditionally underserved populations.

First, the Commonwealth is committed to providing ongoing climate-critical occupational training, including support for minority and women-owned small business enterprises (MWBs), through the annual Equity Workforce Development Programming administered by the Massachusetts Clean Energy Center (MassCEC). In FY23 alone, MassCEC awarded over \$18 million in Equity Workforce grants, which provided funding to train workers in low-income and disadvantaged communities for high-quality careers and expanded the state's capacity to address training gaps in priority occupations. For example, the Equity Workforce Program provided Greenfield Community College with the funds to develop and launch an HVAC training program with focused instruction for heat pump installation and maintenance. The Healey-Driscoll administration recently announced additional funding to support expanded HVAC technician and heat pump training throughout the state's community college system.<sup>6</sup>

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<sup>3</sup> <https://www.whitehouse.gov/briefing-room/statements-releases/2023/08/16/fact-sheet-one-year-in-president-bidens-inflation-reduction-act-is-driving-historic-climate-action-and-investing-in-america-to-create-good-paying-jobs-and-reduce-costs/#:~:text=Investments%20in%20clean%20energy%20and,to%20estimates%20by%20outside%20groups.>

<sup>4</sup> <https://www.mass.gov/info-details/massachusetts-clean-energy-and-climate-plan-for-2050>

<sup>5</sup> <https://www.mass.gov/files/documents/2023/10/24/CLIMATE%20REPORT.pdf>

<sup>6</sup> <https://www.wbur.org/news/2024/01/17/2024-massachusetts-state-of-the-commonwealth-address-maura-healey> (swap reference for mass.gov)



Second, Massachusetts is leveraging cross-agency coordination through the Workforce Skills Cabinet<sup>7</sup> to establish clean energy as a statewide priority industry sector, with increased integration across education and workforce programming. For example, the Executive Office of Education (EOE), in partnership with EEA and MassCEC, launched a new Clean Energy Innovation Pathway program to increase early awareness of clean energy occupations. Efforts to define and launch a statewide Climate Service Corps will provide expanded opportunities for youth and young adults from environmental justice communities to access clean energy and climate pathways. Additionally, ongoing coordination with the Executive Office of Labor and Workforce Development (EOLWD) is advancing opportunities to blend and braid state-funded workforce initiatives like the Career Technical Initiative, which expands adult access to vocational school training programs, with MassCEC's clean energy workforce development funding, which can provide augmented recruitment, wrap-around support services, and paid work-based learning offerings.

Third, Massachusetts is working to increase coordination with labor unions to assist in climate-critical training and retraining, especially for those transitioning from other sectors and/or fossil fuel-based roles. MassCEC awarded the International Brotherhood of Electrical Workers 103 and the National Electrical Contractors Association a planning grant to expand their efforts to help a more diverse range of electricians and electrical contractors access opportunities in the clean energy industry. The Office of Climate Innovation and Resilience hosts a regular coordination call with leaders from Climate-Critical Unions to ensure that federal funding opportunities are also optimized to support job quality. This increased coordination helped inform the strategies in this plan, and, among other outcomes, it also led to Massachusetts developing a plan to prioritize job quality through high-road worker-centered workforce training models, which was highlighted in the state's recent submission to the Solar For All funding opportunity.

Finally, Massachusetts recognizes that to meet our state's climate goals and successfully implement the priority measures in this plan, the above strategies need to be expanded and honed through the development and implementation of a comprehensive, cross-agency plan for clean energy and climate resilience workforce development. As the state wraps up the development of a new four-year workforce development plan to be submitted to the U.S. Department of Labor through the requirements of the Workforce Innovation Opportunity Act (WIOA), MassCEC and the Workforce Skills Cabinet are launching a more targeted effort to develop a comprehensive workforce development plan for clean energy and climate resilience. Through this process, the state will identify additional recommendations and programmatic needs and look to optimize state investment alongside federal funding like the DOE Training for Residential Energy Contractors programs. To ensure these efforts lead to expanded job quality and increased access, Massachusetts will utilize current stakeholder engagement mechanisms like Climate Office's Climate Critical Labor coordination meeting, EEA's Justice 40 and Equitable Investment Working Group, and MassCEC's Equity Workforce Working Group to increase input and collaboration. Finally, to track progress and address challenges, Massachusetts will develop

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<sup>7</sup> <https://www.mass.gov/orgs/workforce-skills-cabinet>



a more comprehensive approach to measuring clean energy workforce development outcomes across programs.

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## Appendix A – LIDAC Census Tracts

| Municipality | County            | Census Tracts  |
|--------------|-------------------|--|
| Adams        | Berkshire County  | 9221   |
| Amherst      | Hampshire County  | 8204   |
| Attleboro    | Bristol County    | 6314   |
| Barnstable   | Barnstable County | 125.02, 153  |
| Boston       | Suffolk County    | 2.02, 8.02, 104.5, 402, 408.1, 501.01, 502, 503, 504, 505, 506, 507, 509.01, 510, 511.01, 607, 610, 611.01, 701.01, 702, 704.02, 705, 709, 711.01, 712.01, 801, 803, 804.01, 805, 806.01, 808.01, 810.01, 812, 813, 815, 817, 819, 820, 821, 901, 902, 903, 904, 906, 907, 909.01, 910.01, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921.01, 924, 1001, 1002, 1003, 1004, 1005, 1010.01, 1010.02, 1011.01, 1011.02, 1102.01, 1104.01, 1304.06, 1401.02, 1401.06, 1403, 2060, 9801.01, 9803, 9811 |
| Brockton     | Plymouth County   | 5103, 5104, 5105.02, 5105.03, 5108, 5109, 5110, 5112, 5114, 5115   |
| Cambridge    | Middlesex County  | 3522, 3527   |
| Chelsea      | Suffolk County    | 1601.01, 1602, 1603, 1604, 1605.01, 1605.02, 1606.01, 1606.02  |
| Chicopee     | Hampden County    | 8106.01, 8108, 8109.01, 8111.01, 8111.02   |
| Dudley       | Worcester County  | 7542, 7543   |





|                    |                   |  |
|--------------------|-------------------|--|
| <b>Everett</b>     | Middlesex County  | 3421.01, 3421.02, 3422.01, 3423, 3424, 3425, 3426  |
| <b>Fall River</b>  | Bristol County    | 6401, 6402, 6403, 6404, 6405, 6406, 6407, 6408, 6409.01, 6410, 6411.01, 6412, 6413, 6414, 6415, 6416, 6419, 6420, 6422 |
| <b>Falmouth</b>    | Barnstable County | 148  |
| <b>Fitchburg</b>   | Worcester County  | 7105, 7107, 7108, 7110   |
| <b>Framingham</b>  | Middlesex County  | 3831.01, 3831.02, 3832, 3834, 3835.01  |
| <b>Gardner</b>     | Worcester County  | 7071, 7072   |
| <b>Gloucester</b>  | Essex County      | 2214, 2215, 2216   |
| <b>Greenfield</b>  | Franklin County   | 413, 414   |
| <b>Haverhill</b>   | Essex County      | 2601, 2602, 2608, 2609   |
| <b>Holyoke</b>     | Hampden County    | 8114, 8115, 8116, 8117, 8118, 8120.01, 8120.02, 8121.03  |
| <b>Lawrence</b>    | Essex County      | 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517                   |
| <b>Lenox</b>       | Berkshire County  | 9241   |
| <b>Leominster</b>  | Worcester County  | 7092.02, 7094, 7096  |
| <b>Lowell</b>      | Middlesex County  | 3101, 3104, 3105, 3107, 3111, 3112, 3113, 3117, 3118, 3119, 3120, 3121, 3122, 3124, 3883                               |
| <b>Ludlow</b>      | Hampden County    | 8104.03  |
| <b>Lynn</b>        | Essex County      | 818, 2052, 2055, 2056, 2058, 2061, 2062, 2063, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072                          |
| <b>Malden</b>      | Middlesex County  | 3412, 3413, 3414, 3415, 3418   |
| <b>Marlborough</b> | Middlesex County  | 3213   |
| <b>Methuen</b>     | Essex County      | 2524   |



|                           |                  |   |
|---------------------------|------------------|---|
| <b>Milford</b>            | Worcester County | 7443, 7444  |
| <b>Montague</b>           | Worcester County | 7320.01   |
| <b>New Bedford</b>        | Bristol County   | 6501.02, 6504, 6505, 6506, 6507, 6508, 6509, 6511, 6512, 6513, 6514, 6516, 6517, 6518, 6519, 6520, 6523, 6524, 6525, 6526, 6527   |
| <b>North Adams</b>        | Berkshire County | 9214, 9215, 9353  |
| <b>North Attleborough</b> | Bristol County   | 6301.01   |
| <b>Pittsfield</b>         | Berkshire County | 9001, 9002, 9004, 9006  |
| <b>Quincy</b>             | Norfolk County   | 4172, 4175.01, 4175.02, 4176.01, 4178.02, 4180.04   |
| <b>Revere</b>             | Suffolk County   | 1701, 1702, 1704, 1706.01, 1707.01, 1707.02, 1708   |
| <b>Salem</b>              | Essex County     | 2043, 2108  |
| <b>Somerville</b>         | Middlesex County | 3501.04, 3514.03, 3515  |
| <b>Southbridge</b>        | Worcester County | 7571, 7572, 7573  |
| <b>Springfield</b>        | Hampden County   | 8001.01, 8001.02, 8002.01, 8002.02, 8004, 8005, 8006, 8007, 8008, 8009, 8011.01, 8011.02, 8012, 8013, 8014.01, 8014.02, 8015.01, 8015.02, 8015.03, 8016.05, 8017, 8018, 8019.01, 8019.02, 8020, 8022, 8023, 8026.01 |
| <b>Stoughton</b>          | Norfolk County   | 4561.02, 4563.01  |
| <b>Taunton</b>            | Bristol County   | 6136, 6138, 6140  |
| <b>Ware</b>               | Hampshire County | 8201.02   |
| <b>West Springfield</b>   | Hampden County   | 8122.01, 8123   |
| <b>Worcester</b>          | Worcester County | 407.01, 7304.01, 7305, 7311.01, 7312.03, 7312.04, 7313, 7314, 7315, 7316, 7317, 7318, 7319, 7322.01, 7322.03, 7323.02, 7324, 7325, 7326, 7327, 7330   |



## Appendix B – GHG Emission Inventory Details

|   |   |
|---|---|
| Massachusetts Annual Greenhouse Gas Emissions Inventory: 1990–2020, with Partial 2021 & 2022 Data   | <a href="https://www.mass.gov/doc/appendix-c-massachusetts-annual-greenhouse-gas-emissions-inventory-1990-2020-with-partial-2021-2022-data/download">https://www.mass.gov/doc/appendix-c-massachusetts-annual-greenhouse-gas-emissions-inventory-1990-2020-with-partial-2021-2022-data/download</a>   |
| Statewide Greenhouse Gas Emissions Level: 1990 Baseline Update May 2021   | <a href="https://www.mass.gov/doc/statewide-greenhouse-gas-emissions-level-proposed-1990-baseline-update-including-appendices-a-b-may-2021/download">https://www.mass.gov/doc/statewide-greenhouse-gas-emissions-level-proposed-1990-baseline-update-including-appendices-a-b-may-2021/download</a>   |
| Addendum to the Statewide Greenhouse Gas Emissions Level: 1990 Baseline Update February 2022  | <a href="https://www.mass.gov/doc/addendum-to-statewide-ghg-level-proposed-1990-baseline-update-february-2022/download">https://www.mass.gov/doc/addendum-to-statewide-ghg-level-proposed-1990-baseline-update-february-2022/download</a>   |
| 2nd Addendum to the Statewide Greenhouse Gas Emissions Level: 1990 Baseline Update June 2022  | <a href="https://www.mass.gov/doc/2nd-addendum-to-statewide-ghg-level-proposed-1990-baseline-update-june-2022/download">https://www.mass.gov/doc/2nd-addendum-to-statewide-ghg-level-proposed-1990-baseline-update-june-2022/download</a>   |
| Response to Comments on the Statewide Greenhouse Gas Emissions Level: 1990 Baseline Update, and Addendum and 2nd Addendum to the Update December 2022 | <a href="https://www.mass.gov/doc/response-to-comments-on-the-statewide-greenhouse-gas-emissions-level-1990-baseline-update-and-addendum-and-2nd-addendum-to-the-update-december-2022/download">https://www.mass.gov/doc/response-to-comments-on-the-statewide-greenhouse-gas-emissions-level-1990-baseline-update-and-addendum-and-2nd-addendum-to-the-update-december-2022/download</a> |
| Electric sector emissions that occur outside the borders of Massachusetts. Spreadsheet for calculating ‘import’ emissions.                            | at <a href="https://www.mass.gov/lists/massdep-emissions-inventories">https://www.mass.gov/lists/massdep-emissions-inventories</a>  |

