GWSA Implementation Advisory Committee (IAC) Meeting

December 14th, 2023

Executive Office of Energy & Environmental Affairs

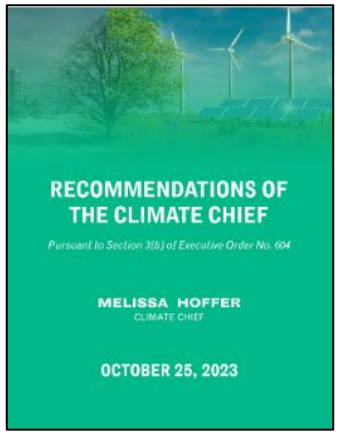
Agenda

1. Updates and Introductions
2. Review of Meeting Minutes
3. Massachusetts Climate Report Card and Dashboard and Next Steps
4. Climate Pollution Reduction Grant (CPRG)
5. IAC Work Group Updates
6. Public Comments

Massachusetts Climate Report Card and Dashboard: Year 1 and Next Steps

December 14, 2023

OCIR Report Recommendation



Recommendation #17: Publish an annual report card on the Commonwealth's progress to achieve mandated greenhouse gas emission reductions.

"…Massachusetts collects data on key climate indicators and has established benchmarks for achieving the greenhouse gas emissions reductions associated with these indicators….

…Beginning in fall 2023, Massachusetts will publish an annual Climate Report Card, developed by EEA, MassDOT, EOHLC, and EOED, in consultation with the Climate Office, to **inform Massachusetts residents of the progress the executive offices are collectively making to achieve CECP mandates.** Convened by Climate Office, these agencies will develop by November 1, 2023, a detailed design for the Report Card including metrics, data sets, format of presentation, and public-facing internet host. The Report Card will be published by December 1, 2023.**"** (emphasis added)

Massachusetts Climate Report Card

- https://www.mass.gov/report/massachusetts-climate-report-card

Sector Assessments

Each section contains the following parts:

One-sentence takeaway: the high-level assessment that distills the status of that sector in meeting climate goals and limits.

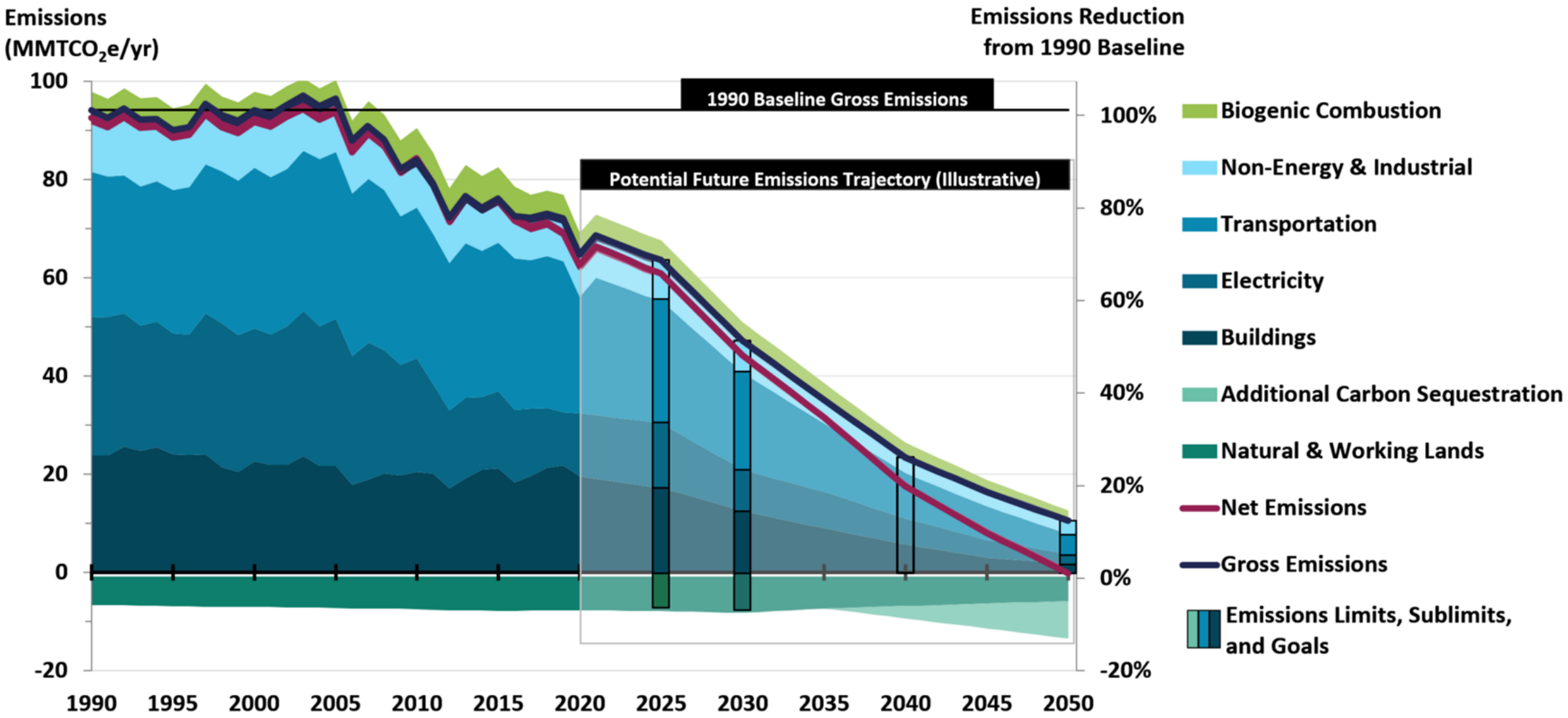
Assessment: a 1-paragraph narrative interpreting the various quantitative and qualitative information we use to assess sector progress.

Metrics Table: Key indicators used to assess progress, represented as a current value and target, if one exists.

Challenges: bulleted list of key barriers.

How We Are Meeting the Moment: bulleted list of key efforts underway (or soon to be underway) under the Healey-Driscoll Administration.

Overall


Emissions
(MMTCO2e/yr)
Emissions Reduction
from 1990 Baseline
1990 Baseline Gross Emissions
Potential Future Emissions Trajectory (Illustrative)
100
80
60
40
20
0
-20
100%
80%
60%
40%
20%
0%
-20%
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Biogenic Combustion
Non-Energy & Industrial
Transportation
Electricity
Buildings
Additional Carbon Sequestration
Natural & Working Lands
Net Emissions
Gross Emissions
Emissions Limits, Sublimits, and Goals

Transportation Decarbonization (1/2)

The Transportation sector is currently on track for progress to date. Interventions are needed – including a ramp up in electric vehicle adoption and charging infrastructure – to drive the rapid decarbonization required between 2025 and 2030.

Metric	Value	Target
Number of registered electric light-duty and medium-/heavy-duty vehicles	There were 70,689 electric light-duty vehicles on the road in 2022. There were 69 electric medium-/heavy-duty vehicles on the road in 2022.	CECP modeling projected about 60,000 EVs on the road by 2022. The 2025/2030 CECP states a goal of 200,000 total EVs on the road by 2025 and 900,000 by 2030.
Number of installed electric vehicle public charging ports	There were 6,436 installed electric vehicle public charging ports as of November 29, 2023.	The 2025/2030 CECP estimates the need for 15,000 public charging station ports by 2025 and 75,000 by 2030.
VMT for light-duty and medium-/heavy-duty vehicles	Light-duty vehicles travelled 55,229 million miles in 2021. Medium-/heavy-duty vehicles travelled 3,887 million miles in 2021.	CECP modeling projects light-duty VMT to increase to about 57,900 million miles travelled in 2025 and about 59,100 million in 2030 even while per household VMT decreases over the same period. CECP modeling projects medium-/heavy-duty VMT at about 3,400 million miles travelled in 2025 and about 3,500 million in 2030.

Transportation Decarbonization (2/2)

Examples from the report card include:

Challenges

- Cost vs. gas-powered cars, particularly for low-income drivers
- Access to charging infrastructure
- Grid capacity for charging infrastructure
- Procurement
- Reliability and restoration of the T

How We're Meeting the Moment

- Standards such as Advanced Clean Cars II
- Incentives such as MOR-EV rebates
- Charging infrastructure deployment

Buildings Decarbonization (1/2)

The Buildings sector is currently on track for progress to date. Interventions are needed – including scalable solutions to weatherize and electrify homes – to drive the rapid decarbonization required between 2025 and 2030

Metric	Value	Target
Number of residential heat pump installations	29,721 households had installations from 2020 through the first half of 2023 through Mass Save.	The 2025/2030 CECP estimates heat pumps will be installed in at least 100,000 homes between 2020 and 2025 and at least 500,000 homes between 2020 and 2030.
Number of communities that have adopted the base, stretch, and specialized building energy codes (as of 11/29/23)	Base energy code: 8.5% of the population live in these municipalities (50 cities/towns) Stretch energy code: 66.6% of the population live in these municipalities (272 cities/towns) Specialized energy code: 24.8% of the population live in these municipalities (29 cities/towns)	There is no current target for this metric, but increased numbers indicate progress toward highly efficient building envelopes which reduces impacts to our electric system.
Number of residential energy audits and weatherization projects	There were 89,970 residential energy audits and 40,446 weatherization projects in 2022. 9,179 weatherization projects were for low-income participants.	There is no current target for this metric, but increased numbers indicate reduced total energy use in buildings and may allow for smaller and less expensive heating electrification measures.

Buildings Decarbonization (2/2)

Examples from the report card include:

Challenges

- Need to retrofit old/heterogeneous housing stock, posing challenges for one-size-fits-all solutions
- Need solutions for renters
- Consumer education/awareness
- Need to pair electrification with energy efficiency and demand control

How We're Meeting the Moment

- Updated energy codes (revised stretch code and new specialized energy code)
- Incentive programs, including awarding first $27M of a $50M fund to retrofit low-and-moderate income housing
- Clean Heat Standard

Power Decarbonization (1/2)

The Power sector is on track for 2025. Supply chain, inflationary and commercial obstacles in particular in the offshore wind industry are delaying deployment of renewable energy, and significant interventions are needed to remain on track by 2030.

Metric	Value	Target
Percent of state electricity consumption met with clean power	48.2% of the state's electricity consumption was met with in-state and out-of-state clean sources in 2021. This is documented via the retirement of clean energy attributes in Massachusetts, direct contracts with municipal light plants, and an estimate of Massachusetts' share of imported energy from neighboring regions.	Massachusetts has multiple standards that require a certain percentage of electricity served to customers come from clean resources in the regional market. In 2021, the combined standards required that more than 49% of all electric load in Eversource's, National Grid's and Unitil's service territories be sourced from qualified clean and renewable energy resources. The standards do not apply to the electricity served by municipal light plants (MLPs) or wholesale purchases of electricity (e.g., most of the electricity consumed by the MBTA) that account for over 14% of total electricity consumption statewide. The MLPs comply with a Greenhouse Gas Emissions Standard (GGES), but this standard is not as stringent and only applies in the years 2030, 2040, and 2050. Because the electric load served by MLPs was on average slightly less clean than that in investor-owned utility territories, a value of 48.2% for statewide clean electricity in 2021 indicates the standards were largely or entirely achieved in investor-owned utility service territories.
In-state renewable electric capacity	There were 113 MW of in-state wind capacity in 2022. There were 3,325 MW AC of in-state solar capacity in 2022.	The 2025/2030 CECP modeling estimates 180 MW of wind capacity (all onshore) in 2025 and 3,650 MW of wind capacity (onshore and offshore combined) in 2030. The 2025/2030 CECP modeling estimates 4,470 MW alternating current (AC) of solar capacity by 2025 and 8,360 MW AC of solar capacity by 2030. This metric measures clean energy capacity in Massachusetts, but Massachusetts is part of a regional electric grid operated by ISO-NE that is supplied by power generation facilities located throughout New England and in neighboring regions. Accordingly, the amount of clean energy generated within the state, while a useful indicator of progress towards meeting power sector emissions limits, is less important than the amount of clean energy generated in or delivered to ISO-NE that Massachusetts can claim was consumed in state, regardless of where it was generated.

Power Decarbonization (2/2)

Examples from the report card include:

Challenges

- High inflation, rising interest rates, and ongoing supply-chain delays are increasing project costs
- Insufficient grid capacity and transmission constraints
- Restrictions on project siting and lengthy permitting battles
- Uncertainties around cost allocation
- Utilities are incentivized to build new infrastructure as opposed to optimizing use

How We're Meeting the Moment

- Issuance of New England's largest offshore wind solicitation
- Establishment of the Commission on Clean Energy Infrastructure Siting and Permitting
- Creation of Office of Federal and Regional Energy Affairs
- Release of technical potential of solar study and review of solar incentives
- Examination and improvement of demand response programs

Natural & Working Lands (1/2)

The Natural and Working Lands sector is currently on track for 2025. Interventions are needed – including the ability to balance competing land-use needs and secure funding for conservation – to slow, stop, and reverse the loss of natural and working lands.

Metric	Value	Target
Natural and working lands conserved, expressed as area and percent of MA	27% of the state (1.395 million acres) was permanently protected in 2022.	The CECPs set goals to increase permanent conservation to at least 28% by 2025, at least 30% by 2030, and at least 40% by 2050.
Natural and working land area and forest land area	NWL accounted for 88% of the state (or 4.576 million acres) in 2021. Forest area, the largest component of NWL and a primary indicator of the state's carbon storage and sequestration capacity, accounted for 56% (or 2.899 million acres).	There is currently no target for this metric, but minimizing the loss of NWL is a goal of the CECPs and Resilient Land Initiative, and a goal for reducing forest loss will be an outcome of the Forests as Climate Solutions Initiative.

Natural & Working Lands (2/2)

Examples from the report card include:

Challenges

- Loss of NWL acres
- Invasive insect pests
- Release of stored carbon in forests and wetlands
- Consistent long-term funding for land acquisition

How We're Meeting the Moment

- Forest as Climate Solutions Initiative
- Executive Order to develop biodiversity goals for 2030, 2040, and 2050
- Greening the Gateways Cities
- Wetlands Protection Act regulation

Climate Adaptation and Resilience (1/2)

Massachusetts has made significant progress to advance state and local resilience to climate change, but more funding, policy, and regional coordination will be required as climate change worsens.

Metric	Value	Target
Amount of federal and state resilience funding	State resilience-related funding:* • >$90 million in FY24 Federal resilience-related funding: • $26.5 million in FEMA funding • >$198 million through ARPA, BIL/IIJA, and other federal funding sources	These targets will be developed as part of the comprehensive ResilientMass metrics project in the coming year.
Number of state agencies with climate vulnerability assessments of assets and operations	88 of 92 agencies (96%) identified through the 2023 ResilientMass Plan update process have developed climate vulnerability assessments.	100% of relevant state agencies should have climate vulnerability assessments of assets and operations by 2026.
Number of communities with updated MVP 2.0 or Hazard Mitigation Plans (HMPs)	MVP 2.0: 34 communities are updating their MVP plans Hazard Mitigation Plans: 211 communities with FEMA approved plans	Incorporate lessons learned from pilot into MVP 2.0 and have 100% of communities and Regional Planning Agencies participating in MVP 2.0 and/or having updated Hazard Mitigation Plans by 2030.
Percent of 2023 ResilientMass Plan actions in progress	69% of 2023 ResilientMass Plan actions are either in progress or in development (preparing for implementation)	100% of 2023 ResilientMass Plan actions should be in progress by 2026

Climate Adaptation and Resilience (2/2)

Examples from the report card include:

Challenges

- Extreme weather exacerbated by climate change already causing catastrophic losses
- Climate change impacts and losses are projected to intensify
- Significant additional funds will be needed to advance state, local, and regional resilience projects

How We're Meeting the Moment

- ResilientMass Plan
- Municipal Vulnerability Preparedness (MVP) Program
- Climate Community Roundtable
- Updating stormwater and wetland regulations
- ResilientCoasts
- Pursuing financing and federal funding opportunities

Environmental Justice (1/2)

Massachusetts state agencies have made significant progress increasing their staffing capacity for environmental justice. This expanded capacity will enable the principles of environmental justice and equity to be implemented in a meaningful, coordinated way across all agencies.

Metric	Value	Target
Number of Federal grants pursued and awarded relevant to environmental justice populations.	Tracking is under development.	There are no current targets for this metric at this time.
Number of existing and/or proposed programs that include clean energy workforce development	Tracking is under development.	There are no current targets for this metric at this time.
% of annual spend for diverse suppliers.	Tracking is under development.	Targets for diverse supplier spend include meeting EEA's current procurement goal of at least 8% in 2024, increasing to a goal of at least 15% in 2025 and advancing to a goal of at least 25% in 2026.
Number of public engagement and training for external community organizations and partners, and the number of internal trainings for EEA agencies.	Tracking is under development.	There are no current targets for this metric at this time.
Creation, preservation and access to open spaces and healthy affordable foods in environmental justice communities.	Tracking is under development.	There are no current targets for this metric at this time.
Energy burden and equitable siting of new energy infrastructure.	Tracking is under development.	There are no current targets for this metric at this time.

Environmental Justice (2/2)

Examples from the report card include:

Challenges

- Ensuring meaningful and equitable engagement
- Need to redesign processes
- Advancing environmental justice and equity in coordination among all EEA agencies and other secretariats
- Addressing the geographical divide

How We're Meeting the Moment

- The new EJ&E Office is building a team with experience, expertise, and a vision to drive the next steps of the EEA Environmental Justice Strategy.
- Ensure all Federal grant opportunities have meaningful input from the Justice40 Working Group
- Advance EEA's diverse supplier program
- Develop an internal EJ&E Environmental Justice Action Plan
- Implement an equitable and just clean energy workforce development pipeline.

Clean Energy & Climate Metrics Webpage

- https://www.mass.gov/climatedashboard.
- Visualizations are public resources that provide key information and performance indicators relevant to Massachusetts' GHG emissions and the Clean Energy and Climate Plans.
- The information is broken into two categories:
  - GHG emissions spanning the entire Massachusetts' economy as captured by the state's GHG inventory; and
  - Sector-specific metrics that reflect progress within transportation, buildings, electricity, natural and working lands, and industrial/non-energy.
- Webpage first published at the end of 2022 to coincide with the release of the 2050 CECP.
- Updated last week to coincide with the release of the Climate Report Card. The data points presented on the webpage are a superset of the data in the Climate Report Card.

Clean Energy & Climate Metrics Webpage

Environment > Climate Action > Mitigating Greenhouse Gas Emissions

OFFERED BY Executive Office of Energy and Environmental Affairs

Massachusetts Clean Energy and Climate Metrics

The graphic and dashboards below are public resources that provide key information and performance indicators relevant to Massachusetts' greenhouse gas (GHG) emissions and the Massachusetts Clean Energy and Climate Plans (CECP).

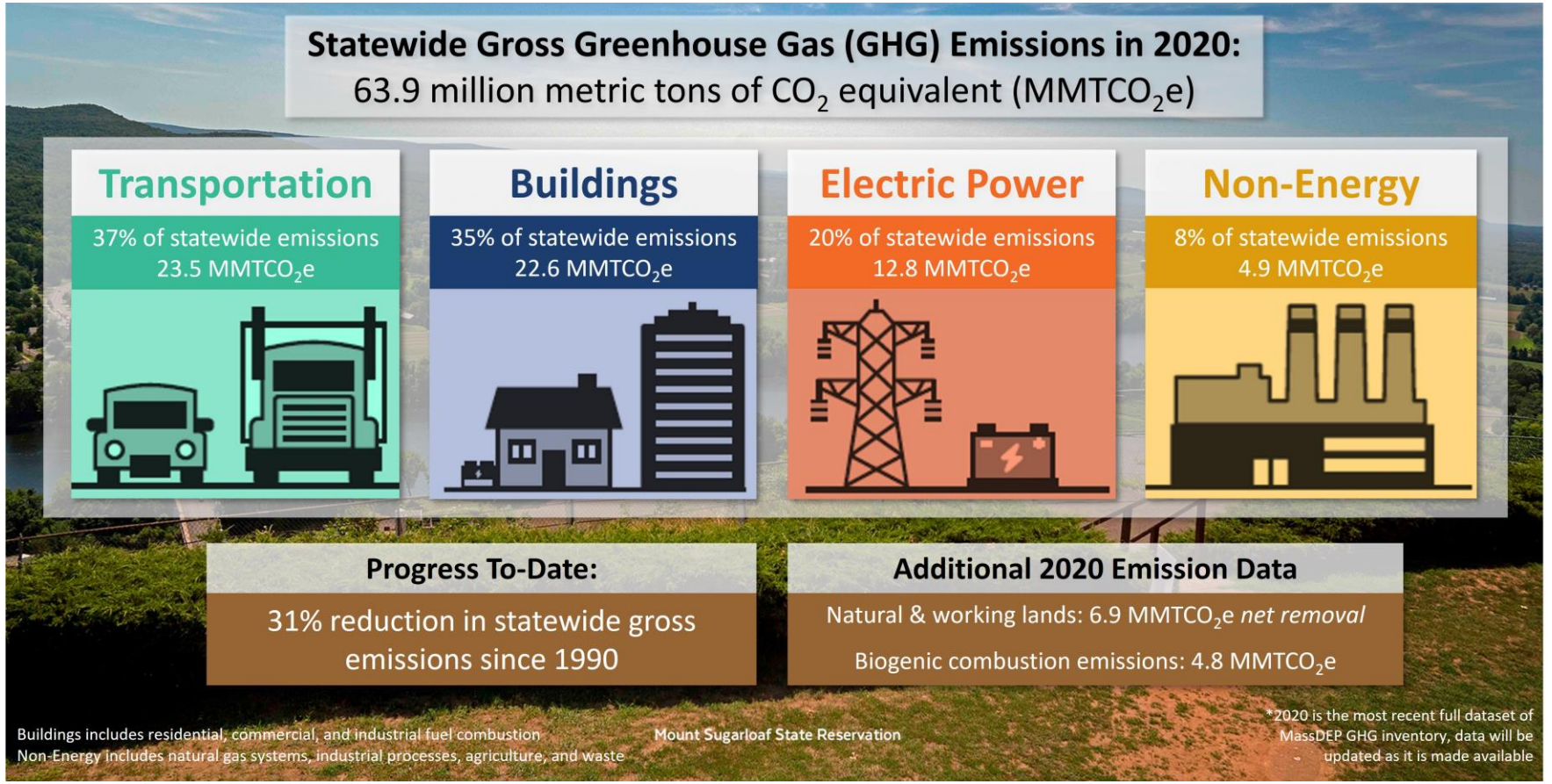
TABLE OF CONTENTS

- GHG Emissions Snapshot
- Tracking GHG Emissions
- Tracking CECP Implementation
- Data Sources
- Contact

Feedback

https://www.mass.gov/climatedashboard

Clean Energy & Climate Metrics Webpage



Clean Energy & Climate Metrics Webpage

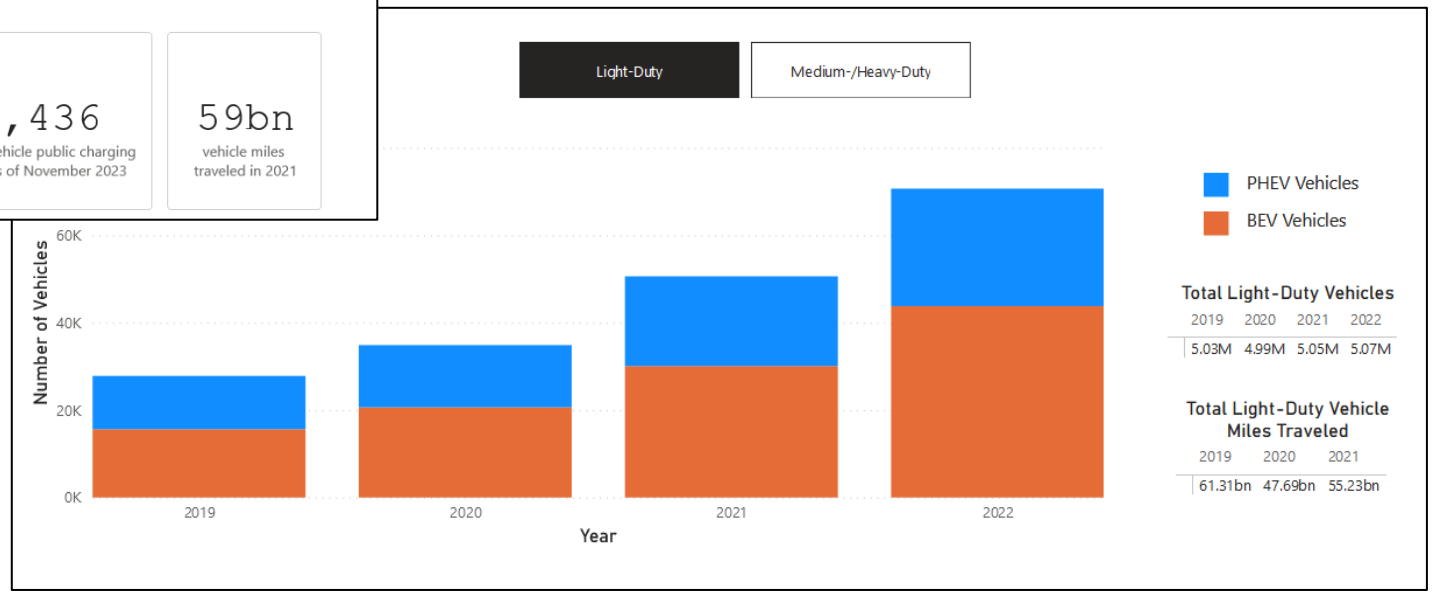
Transportation

Transportation is the largest single source of GHG emissions in Massachusetts, responsible for 37 percent of statewide emissions in 2020. Pollution from transportation comes primarily from the combustion of gasoline, diesel, and aviation fuel in cars, buses, trucks, ships, and airplanes. Massachusetts' strategy to reduce pollution from transportation is built around two broad goals. First, the Commonwealth will rapidly transition the vehicles on our roads to electric vehicles (EVs) through a combination of vehicle emission standards, vehicle and charging incentives, and consumer education and outreach. Second, we will reduce the amount that people need to drive in Massachusetts by providing them with more alternatives to personal vehicles to get around. We will do this by improving public transportation, building more housing near public transportation, and providing better bike and pedestrian infrastructure.

The boxes below highlight some recent transportation data for Massachusetts. **Scroll down** within this section for additional details.

Transportation sector at-a-glance

44K	27K	6,436	59bn
light-duty battery electric vehicles as of 2022	light-duty plug-in hybrid electric vehicles as of 2022	electric vehicle public charging ports as of November 2023	vehicle miles traveled in 2021



We will continue to update and refine the webpage as we move into next year, including adding new data where available and publishing additional visualizations.

Feedback on Report Card and Dashboard and Looking Towards 2024

- **How can EEA work with the IAC to increase the pace of GHG emissions reductions and meet the moment?**
  - Are there particular challenges or actions that you are interested in engaging on?
  - Are the Work Groups open to providing feedback as particular opportunities arise?
  - Are there additional perspectives and experiences that should be represented?
  - Would the IAC and Work Groups agree to evaluate priorities in collaboration with EEA and propose a 2024 work plan for review at the next meeting?

- **Feedback Specific to Metrics and Data Dashboard**
  - What new content would be valuable to present, whether at the economy-wide level or for individual sectors?
  - How can we continue to refine and build our metrics and webpage to better track and inform progress?
  - Is there additional analysis that could help to evaluate progress within and across sectors?

Climate Pollution Reduction Grant
Development of Priority Measures

December 14, 2023

BUILDINGS

1. **Deep Energy Retrofits in Municipal Buildings:** A state initiative to expand funding for energy retrofits in municipal buildings with a focus on weatherization and deployment of renewable energy.
2. **Zonal Decarbonization ("cities of the future"):** A state initiative to develop the model for regional decarbonization through multiple interventions in 2-3 neighborhoods to retire fossil fuel infrastructure, modernize electrical infrastructure, and transition buildings to all-electric operation.
3. **School Decarbonization:** A state initiative to develop the model for statewide school decarbonization through multiple interventions targeting buildings, fleets, land, and curriculum, with a geographic focus on schools in Gateway Cities.
4. **Multi-State Coalition – Air Source Heat Pump Distribution:** A multi-state proposal to significantly increase the adoption of efficient air source heat pumps through supporting the supply chain, vendor and workforce development, and increasing consumer awareness and demand.
5. **Multi-State Coalition – Housing Pre-Weatherization:** A multi-state program to provide services for pre-weatherization improvements to single and multi-family homes that require building improvements in order to qualify for state energy efficiency programs. The program would focus on tenant and low-income homeowners, be in addition to pre-weatherization services available through Mass Save, and would include workforce development.
6. **District Heating:** A state initiative to provide incentives to support ground source heat pump deployment, including utilization of waste heat from steam systems and a training center for district geothermal.

TRANSPORTATION

- **Medium- and Heavy-Duty Vehicle Electrification:** Develop a fund to supplement and increase vehicle incentives through MOR-EV.

- **Municipal Fleet Electrification:** Accelerate municipal and state vehicle electrification through strategies such as vehicle rebates, procurements, and charging infrastructure.

- **Multi-State Coalition – Fast Charging Network for Medium and Heavy Freight Vehicles:** A multi-state coalition to deploy electric charging infrastructure for commercial medium- and heavy-duty zero-emission vehicles at sites along major highway freight corridors in the Northeast. The coalition would select priority sites and incentivize private development of publicly accessible charging infrastructure.

Power

- **Solar Installation on Non-residential Rooftops:** A state initiative to increase solar deployment on large non-residential roof space, particularly in urban centers.

- **Municipal Microgrids:** A state initiative to develop interconnected renewable generation and storage in municipalities. Learn from the microgrid pilot project in Chelsea, Massachusetts to replicate this approach in other municipalities to strengthen community resilience and energy reliability.

- **Multi-State Coalition – Offshore Wind Enablement:** A multi-state proposal to invest in port infrastructure to support offshore wind development and overcome supply chain bottlenecks. This program has a potential focus on opening new offshore wind areas, such as the Gulf of Maine.

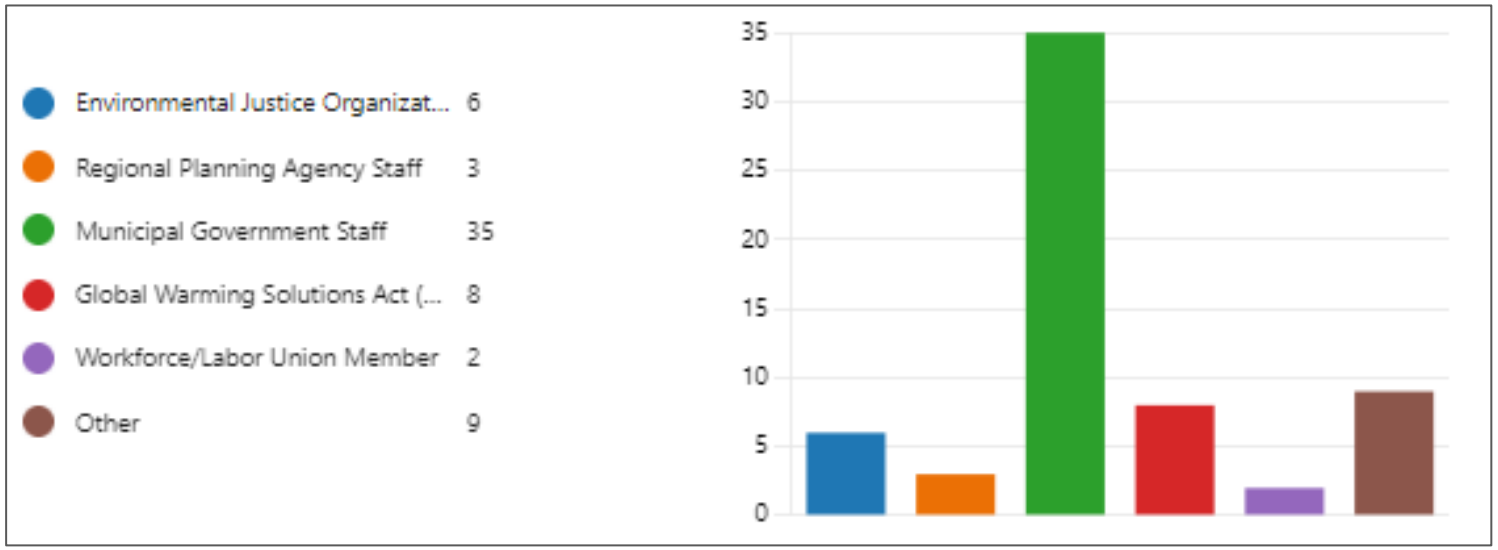
Additional Concepts We've Heard

- **EAST-WEST RAIL**
- **E-BIKE INCENTIVES**
- **MUNICIPAL AGGREGATION OF POWER SUPPLY**
- **PUBLIC ACCESIBLE ELECTRIC VEHICLE CHARGING INFRASTRUCTURE**

Survey Results

Responses:

- 61 total responses (as of 12/13)
- 35 from municipal government staff
- "Other" is primarily advocacy organizations and individuals



Overall Rankings

Measure & Average Score on a scale 0 – 5:

- **Deep Energy Retrofits in Municipal Buildings ---------- 3.98 | 3.72**
- **Zonal Decarbonization (“cities of the future”) ---------- 3.78 | 3.76**
- **School Decarbonization ---------- 4.16 | 4.20**
- **Air Source Heat Pump Distribution ---------- 4.12 | 3.88**
- **Housing Pre-Weatherization ---------- 4.03 | 4.00**
- **District Heating ---------- 3.98 | 4.04**
- **Medium- and Heavy-Duty Vehicle Electrification ---------- 3.53 | 3.40**
- **Municipal Fleet Electrification ---------- 4.02 | 3.76**
- **Fast Charging Network for Medium and Heavy Duty Freight ---- 3.41 | 3.54**
- **Solar Installation on Non-residential Rooftops ---------- 4.08 | 4.04**
- **Municipal Microgrids ----------4.05 | 4.12**
- **Offshore Wind Enablement ---------- 3.88 | 3.96**

Key:

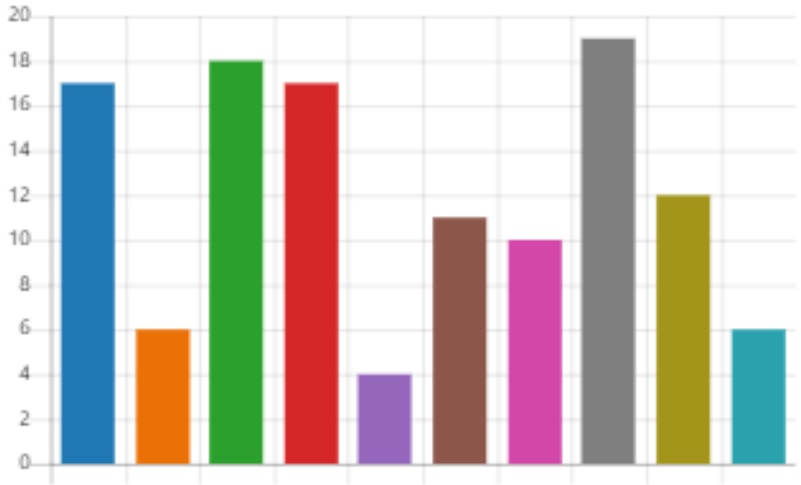
- Number on the left is the total average across all survey responses
- Number on the left excludes municipal government staff responses (only organizations)

Trends:

- **School decarbonization** was the highest rated concept for all survey responses.
- With municipal staff included, the second highest rated was **air-source heat pump distribution**
- With municipal staff responses excluded, the second highest rated is **municipal microgrids**

Q. 40: As stated in the opening page, the top goals for the CPRG are to reduce greenhouse gas emissions and to deliver benefits to low-income and disadvantaged communities. Which additional goals should the state consider?

Public health	17
Rural development	6
Maximizing reach and accessi...	18
Empowering independent dec...	17
Preserving nature	4
Creating and preserving qualit...	11
Attracting businesses to the st...	10
Enhancing resilience to climat...	19
Equity and redistributive justice	12
Other	6



Trends – Highest rated goals:

1. Enhancing resilience to climate change
2. Maximizing reach and accessibility of programs
3. Tie for #3:
   a. Public Health
   b. Empowering Independent decision-making among local communities and environmental justice populations

Prioritization Matrix:

Weighted Criteria from Grant Rubric:

KEY: CRITERIA WEIGHTS			
Evaluation Criteria	Points	Weight	
Transformative Impact		15	0.20
Near-term GHG Reduction		20	0.27
Long-term GHG Reduction		10	0.13
LIDAC Benefits		25	0.33
Job Quality		5	0.07
	total	75	1.00

Additional factors include:

- Cost Effectiveness
- Implementation Readiness
- Stakeholder Input and Prioritization
- Quality & Thoroughness of Concept

Equity and Environmental Justice Priorities:

Survey Results

- Improve Public Health Outcome – 4.38
- Reduce energy burden for low-income residents – 4.32
- Increase access to transportation options – 4.27
- Improve housing quality, comfort, and safety – 4.22
- Increase local jobs and improve job quality – 4.13
- Develop strong relationships with environmental justice community groups – 3.73
- Reduce transportation costs – 3.67

Trends – Benefis that consistently rank at the top include:

- Public Health
- Housing quality and access
- Transportation access and options
- Energy burden

Jamboard from Justice 40 Advisory Group:

Current and Future Outreach

- **[DRAFT] Timeline:**
  - **Jan. 2, 2024:** Straw proposal live online
  - **Jan. 2 – 15:** Public comment period
  - **Jan. 22:** Complete draft PCAP
  - **Jan. 22 – Feb. 09:** Second comment period
  - **EPA Deadline - Feb. 1:** Submit Notice of Intent for CPRG Grant (optional)
  - **Feb. 15:** Second Draft PCAP + Short, final comment period.
  - **March 1:** Submit PCAP

Monthly CPRG Engagements:
- Climate-Labor Federal Funds Work Group
- Justice40 Federal Funds Work Group
- MA Municipal Partnership on Federal Funds and Infrastructure
- Bi-weekly: CPRG MSAs (CMRPC, SERPEDD, and MAPC)

December:
- Berkshire Planning Commission
- Gateway Cities
- GWSA IAC
- RPA staff 2x
- CMRPC in-person town halls (2)
- MAPC J40 Advisory Group

January:
- State In-person town halls (with J40 Work Group Organizations)
- Gateway City v2
- SERPEDD Municipal Advisory Group
- SERPEDD J40 Advisory Group
- CMRPC In-person town-halls (2)
- Pioneer Valley and Cape Cod Planning Commissions

**CMRPC = Central Mass Regional Planning Commission*
**SRPEDD = Southeastern Region Planning and Economic Development District*
**MAPC = Metropolitan Area Planning Council*

Thank you!

For follow-up, please contact:

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IAC Work Group Updates

Public Comments