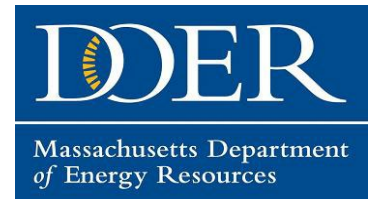




Climate Leader Communities Municipal Decarbonization Commitment and Roadmap



INTRODUCTION

The [2021 Climate Law](#), established statewide limits on greenhouse gas (GHG) emissions, requiring a reduction of GHG emissions thirty three percent (33%) percent below 1990 levels in calendar year 2025 and a fifty percent (50%) percent reduction by calendar year 2030. The Executive Office of Energy and Environmental Affairs issued the [Massachusetts Clean Energy and Climate Plan for 2025 and 2030](#) (CECP) that establishes a framework for meeting these goals, mainly through electrifying non-electric energy uses, decarbonizing the electric grid, and maximizing the efficiency of buildings and transportation.

In accordance with [M.G.L.c. 25A §10 \(b\)](#) Climate Leader Community certification provides a framework for municipalities to pursue these goals in partnership with the Commonwealth of Massachusetts. To become certified, municipalities must:

- 1) Commit to eliminating on-site fossil fuel use by the municipality by 2050
- 2) Develop a roadmap for decarbonizing municipal operations

Municipal Decarbonization Commitment

First, a town or city must demonstrate that it has made a decarbonization commitment. There are several ways in which a municipality can demonstrate this commitment. One way would be a clean energy/climate resolution from Town Meeting or City Council that directs the community to take some sort of action. Communities that have climate action plans completed or underway also have demonstrated this commitment as are municipalities that are signatories to the [2016 Metropolitan Area Planning Council's \(MAPC\) Metro Mayors Coalition Climate Mitigation Commitment](#).

To meet this requirement, Climate Leader applicants shall submit **one of the following**:

- Certified minutes from the meeting in which the clean energy/climate resolution took place, along with the resolution itself; or
- A copy of the executive summary and a weblink from a completed climate action plan, or if the process is still underway, a brief description of what has been accomplished and a weblink to the municipality's climate action website; or
- An affirmation from the municipal Chief Executive Officer that the city or town remains committed to the goals articulated in [the Metro Mayors Coalition Climate Mitigation Commitment](#).

Municipal Decarbonization Roadmap

Second, the town or city must develop a decarbonization roadmap addressing emissions from municipal operations. The roadmap should focus on eliminating the use of onsite fossil fuels by municipal buildings and vehicles, using a "Zero Over Time" approach as described in Section 2. Roadmaps should include elements that address "trigger events," including equipment replacement, roof replacement, change of use, substantial renovation, etc., in conjunction with

evaluating electrification of heat, solar and storage opportunities. Municipalities shall ensure that GHG reductions, energy efficiency, renewable and clean energy, and emissions reduction strategies are incorporated into any decision municipalities make with respect to equipment replacement, capital spending and master planning efforts in support of the community's goals. Municipalities with local public schools shall include school facilities and vehicles in their roadmaps; those that are part of a regional school district shall include those facilities that are included in their most recent Green Communities baseline.

The decarbonization roadmap shall include guiding principles for the following:

For existing buildings:

- I. All comprehensive energy projects and building renovations where electrical, heating, cooking, ventilation, or air conditioning infrastructure are included in the project scope, shall include the following:
 - a. Include as a design option an alternative to fossil fuels for thermal energy that includes low- or zero-carbon fuels or alternative electricity technologies.
 - b. When such options are not practicable, projects shall ensure that steps are taken to develop and incorporate plans to facilitate the future transition to low- or zero-carbon fuels.
 - c. Evaluate building envelope upgrades and implement said upgrades where technically and fiscally feasible.
 - d. Establish and adhere to a low target energy use intensity for overall building or site performance.
 - e. Where appropriate, design and install renewable energy and energy storage, while building the infrastructure necessary to support future renewable energy and storage installations.
 - f. Maximize resilient design to protect critical infrastructure and continued operation when modeled for long-term climate impacts.

For new construction or substantial renovation:

- II. To maximize the potential greenhouse gas emissions reductions, new construction, and substantial renovations, where possible and when cost-effective, shall include the following:
 - a. Strive to achieve zero net energy, where sufficient renewable energy is generated onsite to offset the building's annualized energy consumption.
 - b. Implement energy storage wherever possible, especially when paired with onsite renewables.
 - c. Prioritize sites that provide access to public transportation and alternative modes of transportation.
 - d. Evaluate and implement strategies to reduce embodied carbon contained in building materials.

For municipal and school fleets:

While Climate Leader communities will have adopted the **Zero-Emission-Vehicle First** policy and the Commonwealth will achieve increases in electric vehicle sales through the implementation of vehicle emissions standards that will require all passenger vehicle sales and most medium- and heavy-duty vehicle sales to be electric by 2035, municipal decarbonization roadmaps must include plans for replacing vehicles powered by gasoline and diesel with zero-emission vehicles upon retirement.

Minimum Emission Reduction Timeline

Targets	2027	2030	2040	2050
Reduce emissions from onsite fossil fuels	-20%	-35%	-60%	-100%
Zero emission vehicles (ZEVs) in light-duty fleet adoption	5%	20%	75%	100%
Zero emission vehicles (ZEVs) in heavy-duty fleet adoption	0%	20%	50%	100%
Energy Use Intensity reduction (<i>deep energy retrofits/retro commissioning</i>)	-20%	-25%	-25%	-30%
Total Emissions Reduction Goals (% of 2022 emissions)	>15%	>35%	>65%	>95%

The Decarbonization Roadmap shall also include the following elements:

- (1) **Establish a greenhouse gas emission baseline** that includes all municipal buildings, school buildings, municipal and school vehicle fleets, street and traffic lighting, drinking water and wastewater treatment plants, pumping stations, and open spaces¹ owned by the municipality. Municipalities shall use fiscal year 2022 for their emissions baseline.
 - Divisions and departments operating as [Enterprise Funds under MGL Chapter 44, Section 53F ½](#) where such services are provided by a third-party contractor or where the sole operating and budget authority resides with a board or commission may be excluded from the municipal decarbonization roadmap. However, these operations are encouraged to become a part of and to adopt the roadmap. The exclusion does not apply to any other existing or future division or department operating as an Enterprise Fund for which the municipality has direct authority over its operation.
 - The greenhouse gas emission baseline should be in tons of Metric Tons of CO₂ Equivalent (MTCO₂e). There are several acceptable tools for calculating the municipal GHG baseline including:
 - a. Department of Energy Resources (DOER)'s MassEnergyInsight (MEI)
 - b. [Energy Star Portfolio Manager](#)
 - c. [ICLEI software](#)
 - d. Other tools proposed by the municipality and deemed acceptable by DOER²

Note municipalities are highly encouraged to use MassEnergyInsight, which will include tools and resources to facilitate building and vehicular emissions tracking.

- (2) **Develop a roadmap to eliminate the use of onsite fossil fuels by municipal operations by 2050.** DOER encourages communities to use the “Zero Over Time” approach highlighted in the Rocky Mountain Institute’s Guide [Best Practices for Achieving Zero Over Time for Building Portfolios](#) that uses triggering events, such as the end of life of HVAC equipment, building renovation, roof replacement, projects in the community’s capital improvement plan, etc. The roadmap should include interventions that reduce the use of fossil fuels onsite by utilizing the information provided above and identify when the interventions will take place. It should also set interim goals for calendar years 2030 and 2040.

For the purposes of Climate Leader Communities certification, the roadmap does not need to include detailed energy engineering and analysis. It should be developed and used as a planning tool to inform municipalities of opportunities

¹ The “Open Space” category includes energy use by parking lots, parks, cemeteries, EV charging infrastructure, and athletic fields.

² Municipalities should contact their RC for guidance on approving other tools.

to switch from onsite fossil fuel use. To prepare for roadmap development, municipalities should conduct an inventory of all its facilities. **At a minimum** this inventory should encompass at least 75% of the municipality's building emissions and include all public school facilities under the municipality's jurisdiction. This shall include:

- Age of building
- Square footage of conditioned space
- Use profile
- Fuel for heating/hot water and cooling (if any)
- Age & condition of HVAC
- Age & condition of building envelope
- Age, condition, and type of kitchen equipment
- Future plans for facility

Users of MassEnergyInsight should ensure facility characteristics are included in their accounts. This will facilitate the software's ability to generate emissions reduction estimates on future efficiency upgrades and electrification.

Municipalities should also gather information regarding capital improvement plans, facility master plans, fleet vehicle replacement plans, and other pertinent materials affecting its municipal and school facilities.

INSTRUCTIONS FOR CREATING A DECARBONIZATION ROADMAP

A comprehensive roadmap consists of several key components which enables a municipality to establish strategic electrification goals and develop a structure to meet those goals over a period of time. The outline below provides the format for the roadmap and addresses its key components.

DOER has created a **Trigger Event Worksheet** for use as a planning tool to identify opportunities to enhance a facility's energy efficiency and prepare for decarbonization.

DECARONIZATION ROADMAP OUTLINE

I. PURPOSE AND ACKNOWLEDGEMENTS

A. Letters from both general government and school district verifying adoption of the roadmap

- **General Government** – The municipality must provide a letter from its Chief Executive Officer of the city or town stating that it has adopted the decarbonization roadmap. The Chief Executive Officer is defined as the manager in any city having a manager and, in any town, having a city form of government, for example the Mayor in any town or city, and the Board of Selectmen in any town unless some other officer or body is designated to perform the functions of a Chief Executive Officer under the provisions of a local charter or laws having the force of a charter. See sample letter in Appendix A.
- **Public School Districts** - For a municipality to meet this requirement, its public school district must be included in the municipality's baseline. Furthermore, the public school district must provide a letter from the Superintendent of Schools stating that is has adopted the decarbonization roadmap.
- **Districts** – Municipalities that are part of a regional school district are not required to include facilities that are owned and/or operated by the district in their baselines and roadmaps. However, given the opportunities for deep energy retrofits and electrification in school buildings, DOER strongly encourages

communities to include at least a portion (e.g., the elementary school resident children attend) of the district to be part of their Climate Leaders certification application. This will allow for Climate Leader Communities grants to be used for clean energy projects at the schools. See [Appendix B of the Green Communities Criterion 3 Guidance](#) for instructions. The regional school district must also adopt the decarbonization roadmap.

B. List of contributors that participated in the baseline and roadmap process

II. EXECUTIVE SUMMARY

A. Narrative Summary of the Town – A narrative summary of the Town, including population and any special school accreditations, recent or planned clean energy or climate activities

B. Summary of Municipal Emissions – With respect to municipal emissions, use instructions below to create Table 1 from most recent fiscal year (sample below). Reiterating the Table 1 contents in text is not required.

- **Building Additions and New Construction** - Please identify any building additions or new construction planned. **Note: DOER will not require communities to adjust for building stock changes in the Climate Leaders program. Emissions from all buildings are to be included in the emissions baseline.**
- **Total Emissions from Vehicles** – including school department
- **Water and Sewer** – identify emissions for water and wastewater processes and distribution as appropriate

Table 1: Summary of metric tons of CO₂ equivalent emissions (MTCO₂e) (Sample Data – use information from MEI's Emissions Table Report)

	MTCO ₂ e	Ownership
Buildings		
	1890	Muni
	2566	Regional School District (RSD)
Vehicles		
	2500	Muni
	500	RSD
Water and Sewer	250	Muni

- **Summary of Emissions Reductions Estimated by roadmap Implementation**– use sample Table 2 provided below in fill in the “XX’s” with estimated category targets attributed to:
 - Electrifying heating
 - Electrifying municipal and school fleets
 - Enhancing energy efficiency through retro commissioning, deep energy retrofits, and other measures

In accordance with the Climate Act and the CECP, emissions from electric generation will continue to decline, targeted to fifty three percent (53%) lower in calendar year 2025 over 1990 levels and seventy percent (70%) lower in calendar year 2030. Emissions resulting from municipal operations will decrease as buildings’ heating sources transition from fossil fuels and vehicles are powered by a cleaner electric grid.

Table 2: Summary of Municipal Emissions Reductions

Targets	2022	2027	2030	2040	2050
Reduce emissions from onsite fossil fuels via electrification	0%	-XX%	-XX%	-XX%	-100%
Zero emission vehicles (ZEVs) in light-duty fleet adoption (% of fleet)	XX%	XX%	XX%	XX%	100%
Zero emission vehicles (ZEVs) in heavy-duty fleet adoption (% of fleet)	XX%	XX%	XX%	XX%	100%
Energy Use Intensity reduction (<i>deep energy retrofits/retro commissioning</i>)	EUI**	EUI (target 20% reduction)	EUI (target 25% reduction)	EUI (target 25% reduction)	-30%
Total Emissions Reduction Goals (% of 2022 emissions)	0%	>15%	>35%	>65%	>95%

** Enter FY2022 total average weather normalized EUI in first box from MassEnergyInsight report

III. MUNICIPAL EMISSION BASELINE

A. Identification of the Inventory Tool Used (preferably MassEnergyInsight)

B. Municipal Emission for the Baseline Year

- Provide a table reporting emissions use by facility. MassEnergyInsight users can download the “Municipal Emissions” report from MassEnergyInsight. Climate Leader applicants must ensure municipal energy data is up to date in MassEnergyInsight. All buildings, vehicles, and facilities must be included; vehicle emission data can be aggregated.
- Non-MassEnergyInsight users create a table that includes facility energy consumption by fuel plus emissions using the conversion formulas below.

CO2 Emissions per Unit (metric tons, MTe)	2022	2025 (projected)	2030 (projected)	2040 (projected)	2050 (projected)
Electricity (kWh)	0.0002345	0.0002195	0.0001184	0.0000485	0.0000150
Natural Gas (therms)	0.00531	0.00531	0.00531	0.00531	0.00531
Oil Savings (gallons)	0.01015	0.01015	0.01015	0.01015	0.01015
Gasoline (gallons)	0.00886	0.00886	0.00886	0.00886	0.00886
Diesel (gallons)	0.01015	0.01015	0.01015	0.01015	0.01015
Propane (gallons)	0.00576	0.00576	0.00576	0.00576	0.00576

Source: MA EEA

IV. DECARBONIZATION ROADMAP NARRATIVE

A. Summary –

1. Overview of Goals for implementation to 2027 and 2030,

2. *Overview of Goals for calendar years 2040 and 2050*
3. *Identify Areas of highest emissions and greatest opportunities for impact*

B. Achieving Elimination of Onsite Fossil Fuel Use by 2050 – Plans using the “Zero Over Time”³ approach should identify triggering events for high-impact buildings and include appropriate clean energy actions (energy efficiency enhancement, electrification, on site renewables and storage) to deploy and projected emissions reduction resulting from the intervention. It is not necessary to perform this exercise for ALL facilities at this time, but it is expected that facilities contributing at least seventy-five percent (75%) of the municipality’s aggregate emissions from buildings would be included.

In municipalities with a substantial proportion of emissions resulting from vehicles, it is expected that the roadmap would highlight transitioning vehicles to zero-emission models.

MassEnergyInsight users will be able to use the platform to generate estimated emission reductions from building interventions.

Municipalities may also use other tools that estimate emission reductions from efficiency measures and building electrification.

Municipalities should also consider behind the meter solar and battery storage as appropriate during building triggering events.

C. Program Management Plan for Implementation, Monitoring and Oversight – Identify the personnel responsible both for oversight of the roadmap implementation and for implementation of clean energy actions in specific departments or buildings, if applicable.

D. Update Roadmap every 3 years – Recognizing the rapid development of clean energy technologies and the ever-changing needs of municipalities, communities seeking to remain certified as a Climate Leader Communities shall update their roadmaps after three years.

³ In addition to RMI’s [Guide](#), municipalities may find the New Building’s Institute’s (NBI) [Decarbonization Roadmap Guide for School Building Decision Makers](#) useful. The NBI website also has a wealth of [tools and resources](#), including a link to its [Getting to Zero Resource Hub](#)

APPENDIX A – Sample Letters from Both General Government and School District Verifying Adoption of the roadmap

General Government – The general government must provide a letter from the Chief Executive Officer of the city or town stating that it has adopted the municipal decarbonization roadmap. The Chief Executive Officer is defined as the manager in any city having a manager and, in any town, having a city form of government, the Mayor in any other city, and the Board of Selectmen in any other town unless some other officer or body is designated to perform the functions of a Chief Executive Officer under the provisions of a local charter or laws having the force of a charter.

On Town/City Letterhead

September 15, 20xx

To Whom It May Concern:

Please be advised that on September 12, 20xx, the Select board of the Town met at a duly noticed and regularly scheduled meeting and voted to adopt⁴ the decarbonization roadmap of the Green Communities Division’s Climate Leaders Application for Certification. The Select board was given copies of the plan for review prior to the meeting.

The Select board voted unanimously to adopt the plan and the minutes of that meeting include the vote.

Sincerely,

[signature]

Select board Members and/or Chair, Mayor, or Town Manager

On School District Letterhead

September 15, 20xx

To Whom It May Concern:

Please be advised that the town/city/regional school district adopts the decarbonization roadmap as part of the city/town’s Green Communities Division’s Application for Climate Leaders Certification.

Sincerely,

[signature]

School Superintendent

⁴ The verbs “approve,” “committed,” or “adopt” are acceptable to indicate town/city and school board adoption of the roadmap. The verbs “endorse”, or “support” are NOT sufficient indications of town/city and school board adoption.