



Marblehead Net Zero Roadmap

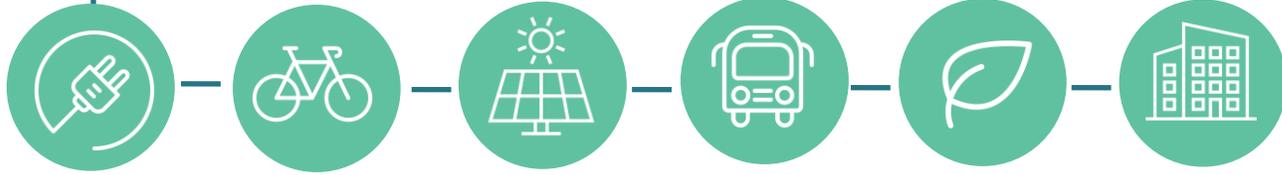
Public Meeting
February 15, 2023



NOTIFICATION OF RECORDING

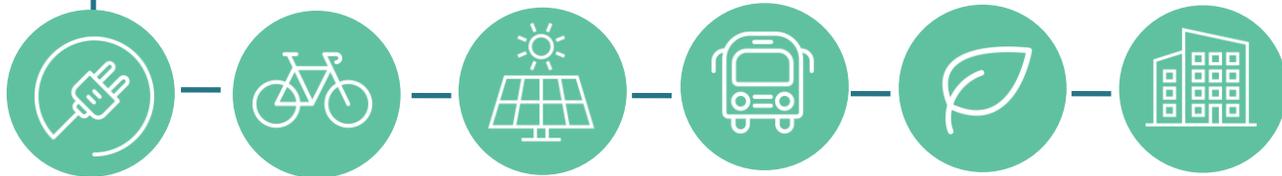
This meeting will be recorded and the Metropolitan Area Planning Council (MAPC) may choose to retain and distribute the video, still images, audio, and/or the chat transcript. By continuing with this virtual meeting, you are consenting to participate in a recorded event. The recordings and chat transcript will be considered a public record. If you do not feel comfortable being recorded, please turn off your camera and/or mute your microphone, or leave the meeting.





Agenda

- 1. Introduction & housekeeping**
- 2. Overview of the planning process**
- 3. Review of the Net Zero Roadmap**
- 4. Questions & Discussion**



Housekeeping

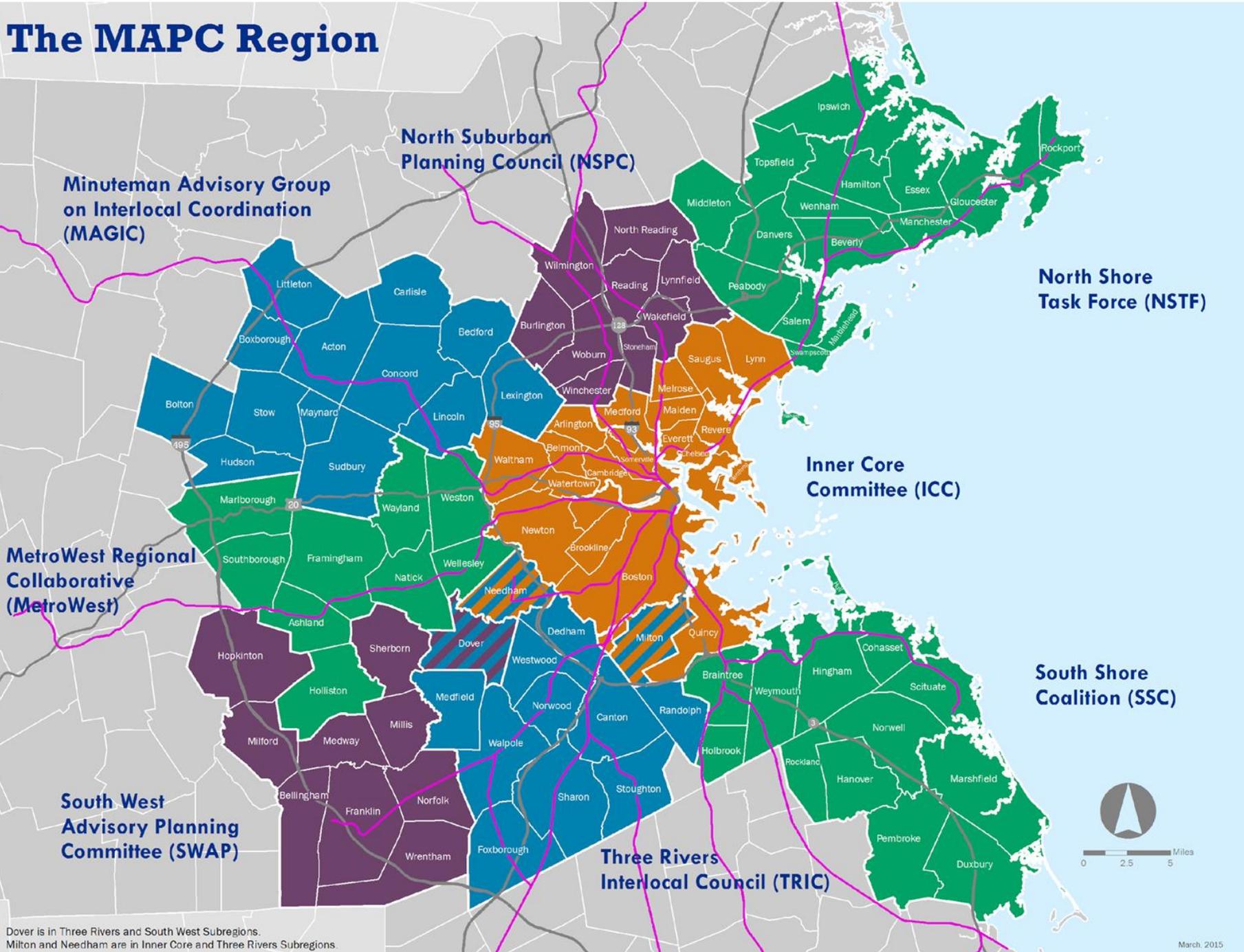
- We will mute participants until it's time for questions and discussion out of respect for each other and the presenter.
- If you are able, please share your name and video with us so we can see who is participating.
 - Rename yourself by clicking "Participants" and then hovering over your name, click "more" and then "Rename"
 - Please raise your hand, real or virtual, if you would like to speak during the discussion section
- Please keep questions & comments to 2 minutes or less

ICE BREAKER

In the chat, please tell us:
What is your favorite thing
to do in Marblehead?



The MAPC Region



101 municipalities

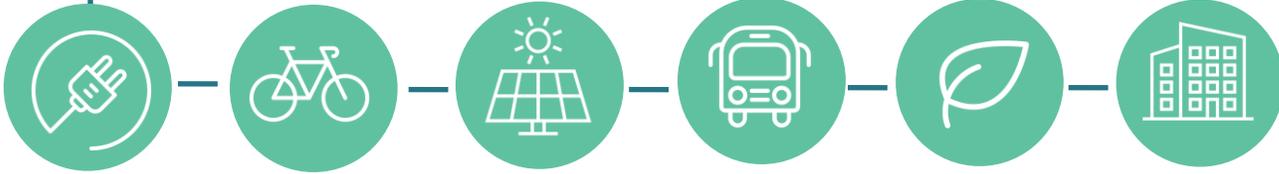
1,440 square miles

Nearly 3.2 million residents

1.8 million jobs (2010 Census)

Dover is in Three Rivers and South West Subregions.
Milton and Needham are in Inner Core and Three Rivers Subregions.

Project background



- Grant funding from the MA Executive Office of Energy and Environmental Affairs
- Cohort of four MLP communities – Marblehead, Peabody, Ipswich, Belmont
- Products: GHG inventory, net zero planning process, and net zero roadmap
- MAPC leading community engagement and roadmap development



Town of Marblehead Context: Getting to Net Zero

What does Net Zero mean?

From this...



...to this!



Why Net Zero?

- **It's important that we act now**
 - We need to reduce global GHG emissions to net zero by 2050, or sooner, to avoid catastrophic climate change.
 - If we can keep warming below 1.5° Celsius, we can avoid the worst impacts of climate change like extreme floods, wildfires, and droughts.
- An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy (Enacted Spring 2021)
 - GHG reduction targets set to be no less than 50% by 2030 and 75% by 2040.
 - Our net zero roadmap highlights the strategies that we can deploy locally to accelerate this transition over the next several years.

Marblehead's Progress to Date

(2018)

Town Meeting voters approved Article 45 (town supports goal of Marblehead striving to reach 100% carbon-free energy)

(2020) "Sustainable Marblehead published a Climate Action Plan Framework in early 2020 which proposed setting a community-wide target of net zero carbon emissions by 2040"

(2020) Marblehead Climate Vision published and adopted by Select Board

(2018) Sustainable Marblehead GHG inventory released

(2020) First EV purchased by the town for municipal use, first public electric vehicle charging stations purchased

(2021) Green Marblehead Committee hosted Net Zero Workshop

Key Strategies in the vision

- Significantly increase the energy efficiency of buildings
- Electrify heating, transportation, and other end uses
- Transition to 100% carbon-free electricity in the MMLD portfolio
- Adopt other strategies, including encouraging walking and biking as alternatives to car travel, carbon sequestration from planting more trees, and waste reduction

Introduction to the Planning Process

GHG Inventory and Baseline Data Collection

Community Engagement

Net Zero Roadmap Development

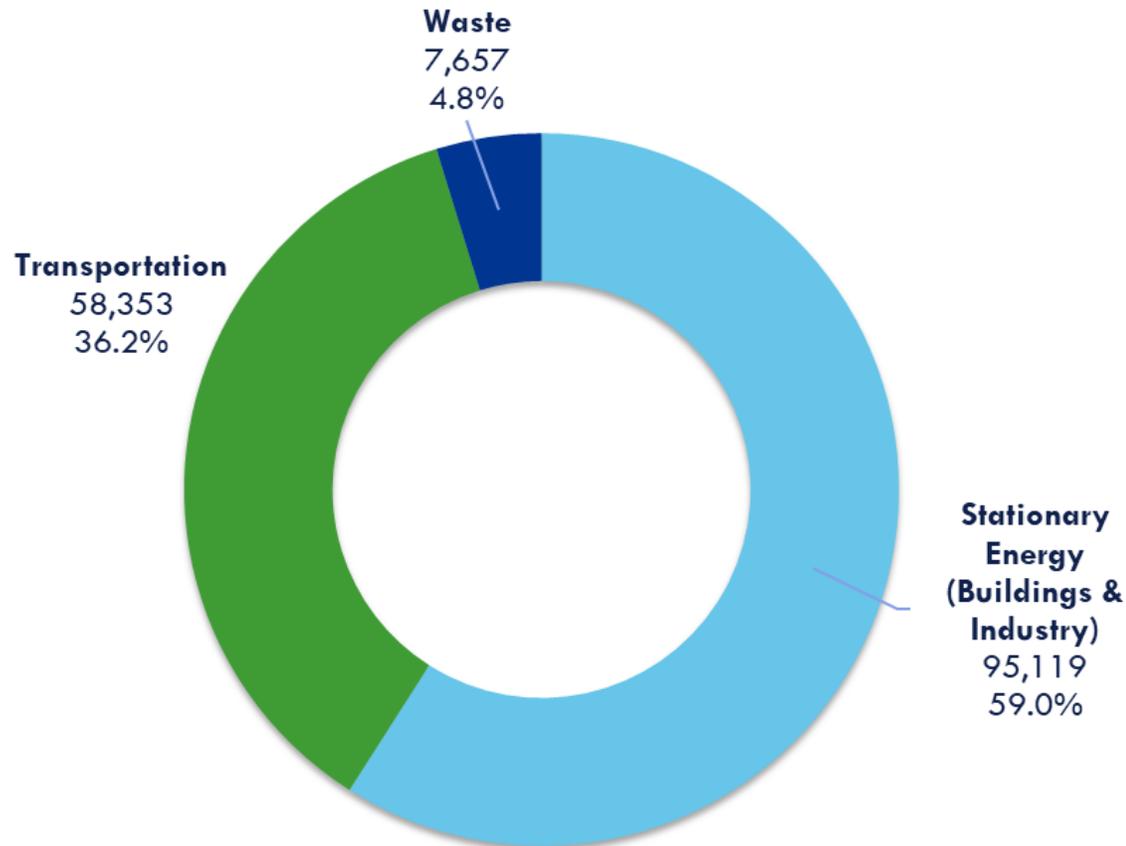


Marblehead's Greenhouse Gas Emissions Baseline: Where we're starting

Marblehead's 2017 Greenhouse Gas Emissions

Total emissions in Marblehead in 2017 = 161,130 MT CO₂e

Community-wide Emissions (MT CO₂e) by Sector



Stationary Energy:

- Residential, commercial, industrial & manufacturing buildings
- Equipment – boilers, generators, equipment for construction and landscaping activities

Transportation:

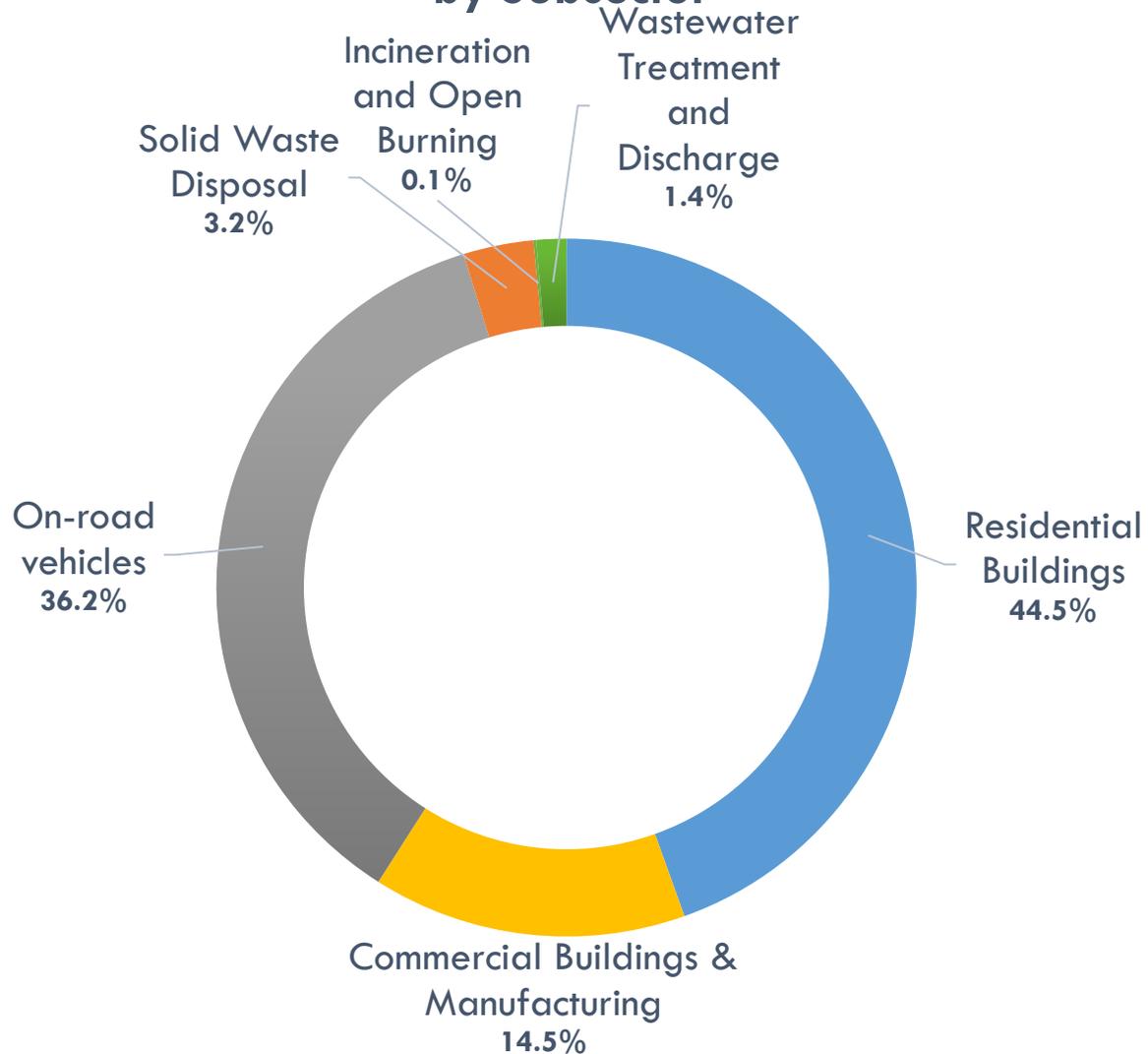
- On-road vehicles – passenger and commercial trips taken within community boundary
- Trips of public light and heavy railways within community boundary

Waste:

- Municipal solid waste disposed in/by landfills, incineration, composting, and anaerobic digestion
- Process and fugitive emissions from treating wastewater

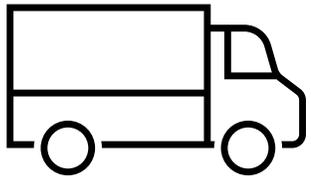
Marblehead's 2017 Greenhouse Gas Emissions

Percent of Total Community-wide Emissions
by Subsector



- Municipal facilities and activities are about **2%** of total emissions.
- **Passenger vehicles** and **residential buildings** account for majority of City's emissions.
- **Approximately 75% of total stationary energy's emissions came from residential buildings.** Majority of residential buildings' emissions came from natural gas, followed by fuel oil, and electricity.

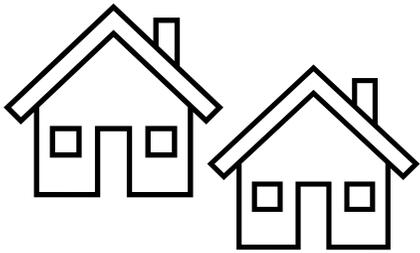
Marblehead's total emissions in 2017 are equivalent to greenhouse gas emissions from:



15,828,094 consumed
gallons of diesel



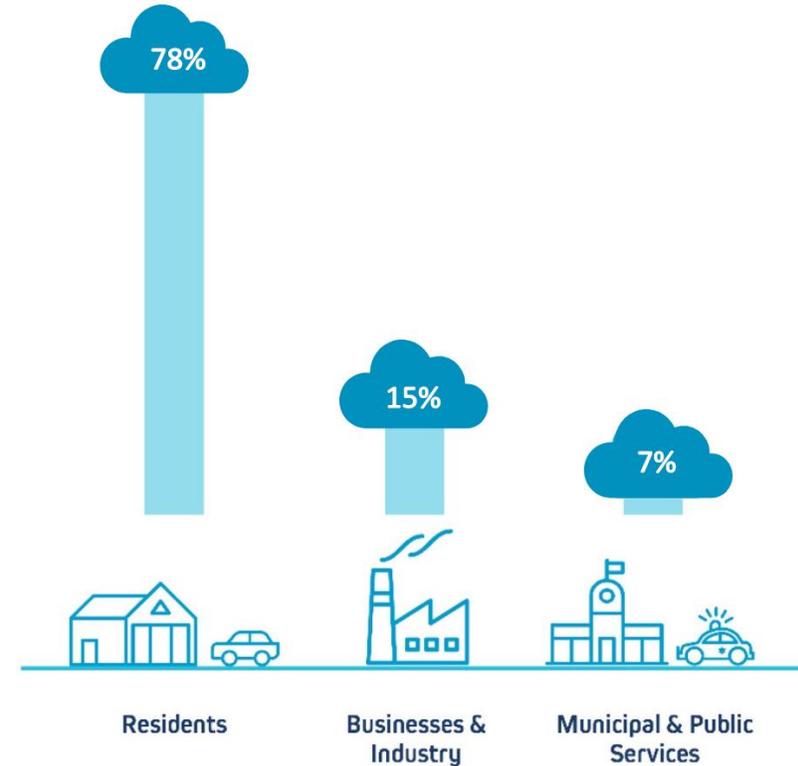
6,579,700 propane cylinders
used for home barbeques



31,352 homes'
electricity use for one
year

7.8

METRIC
TONS
OF CO₂e
per resident



Community Engagement: What community members are saying



What are the most important things that Marblehead should do to reduce its greenhouse gas emissions?





Marblehead's Net Zero Roadmap

Six Core Transitions



Make our homes and buildings super-efficient.



Electrify heating and cooking equipment.



Electrify cars, trucks, buses, trains, and other ways we get around.



Make walking, biking, and public transit the best way to get around.



Produce more renewable energy locally.

Green the grid with renewable energy sources.

Equity Assessment: Getting to Net Zero Equitably

Who has been historically impacted?



Who will be most impacted by the types of changes to our climate we expect to see?



How will the benefits of this strategy be distributed?



Implementing the roadmap

Priority Strategies:

Hire a Sustainability Coordinator
Develop a community carbon dashboard
Provide annual progress updates to the Select Board
Periodically update Marblehead's greenhouse gas inventory



Our Homes and Businesses (Buildings)

Priority Strategies:

Create and preserve efficient affordable housing, implement strategies outlined in the Marblehead Housing Production Plan
Partner on clean energy outreach programs that facilitate building electrification and efficiency retrofits
Incentivize energy efficiency and electrification
Advocate for and adopt the specialized stretch energy code
Require energy efficiency licensing for rental units
Update zoning laws to account for more housing types, retrofitting for multi-unit dwellings, in-law apartments
Allow changes to historic buildings that reduce GHG emissions
Provide financing options for Marblehead residents to adopt electric and renewable technologies, and invest in energy efficiency



Getting Around Marblehead (Mobility/Transportation)

Priority Strategies:

Promote and incentivize electric vehicles for all Marblehead residents

Explore and implement an EV car sharing program

Adopt a zero-emission municipal fleet policy

Procure electric school and shuttle buses

Enable and incentivize transit-oriented development (TOD)

Advocate for community and regional transit needs

Expand public EV charging stations

Advocate for/implement utility rate design changes

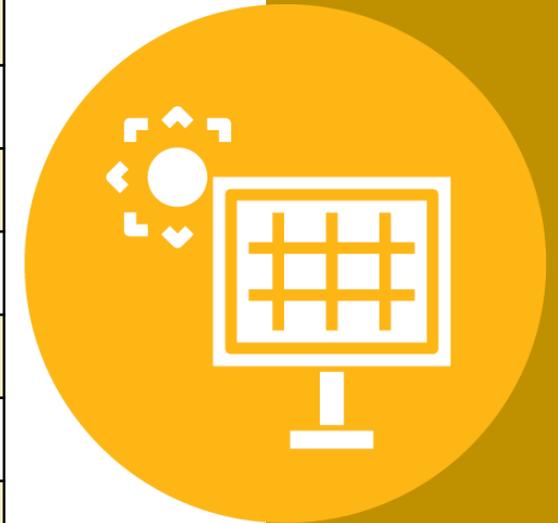
Enforce existing idling law with particular focus on schools



Where Our Energy Comes From (Energy)

Priority Strategies:

Establish a Community Solar program
Maximize the installation of utility-scale solar and battery storage
Transition MMLD electricity supply to 100% clean energy
Coordinate with utilities to address major gas leaks
Implement public housing solar program
Encourage residential batteries by allowing interconnectivity permits
Explore Time of Use (TOU) electricity rates to encourage MMLD customers to use electricity during off-peak times
Implement and Advocate for Demand Management
Explore a No-cost Solar Financing Model
Analyze and upgrade distribution infrastructure



Our Natural Systems (Nature-based Solutions)

Priority Strategies:

Reuse water and develop water conservation tactics

Significantly increase participation in composting programs

Phase out single-use plastic



Other Actions

Priority Strategies:

Advocate for funding options for incentive programs (federal and state grants)

Pass town-wide ban on gas- and diesel-powered landscaping equipment

Provide residents with straightforward carbon emission measuring tool and informational resources about how to reduce emissions

Educate contractors and residents about clean energy and electrification



How You Can Be a Net Zero Hero

Marblehead Resident

- Share your voice, get involved, and act on choices in your control (e.g., complete an energy audit, insulate your home, go solar, switch to clean heating, make your next car electric) and participate in the local and state programs available to support you.

Marblehead Small Business

- Share your commitments with customers and staff. For those in a climate-adjacent field – such as electricians, HVAC specialists, plumbers – participate in the green economy and support “green growth” locally.

Larger Employer or Local Institution

- Provide programs that assist employees in decarbonizing their homes and commute, and work with other large businesses to share experiences and support community-wide GHG emissions reductions.

Elected and Appointed Officials

- Consider how the decisions your Board, Committee, or legislative body will impact Marblehead’s net zero goal. Advocate and vote to support policy or regulations that advance actions identified in the Net Zero Plan.

Municipal and School Staff

- Lead by example with new public facility construction and renovation projects and when possible, purchase zero emission fleet vehicles. Continue to make municipal buildings and schools as energy efficient as possible and add solar to new roofs as they are replaced.

Many thanks to the Green Marblehead Committee!

- John Albright, Marblehead Building Commissioner
- John Buckey, Superintendent, Marblehead Public Schools
- Becky Cutting, Marblehead Town Planner
- Michael A. Hull, Chairman, Marblehead Light Commission
- Thatcher W. Kezer III, Marblehead Town Administrator
- Joe Kowalik, General Manager, Marblehead Municipal Light Department
- John Livermore, Co-Founder, Sustainable Marblehead
- Eileen Mathieu, Leader, Clean Energy Working Group, Sustainable Marblehead
- Andrew Petty, Marblehead Public Health Director
- Alexa Singer, Member, Marblehead Select Board
- Lisa Wolf, Vice Chair, Marblehead Light Commission

Appendix A – Summary Table

Marblehead Net Zero Roadmap Appendix A – Action Summary Table

	STRATEGY NAME	LEAD	PARTNERS	
Implementation	Hire a Sustainability Coordinator	Select Board, Town Administrator, MMLD	MAPC, NEEP	
	Develop a community carbon dashboard	Sustainability staff		
	Provide annual progress updates to the Select Board	GMC, Town staff		
	Periodically update Marblehead's greenhouse gas inventory	Town staff		
Our Homes & Businesses	Create and preserve efficient affordable housing, implement strategies outlined in the Marblehead Housing Production Plan	HPP Implementation Committee	GMC, Town staff, MHA, MAPC	
	Partner on clean energy outreach programs that facilitate building electrification and efficiency retrofits	Sustainability staff, GMC	MMLD, Sustainable Marblehead, clean energy vendors	
	Incentivize energy efficiency and electrification	MMLD	Town staff, GMC, SM, MMWEC	
	Advocate for and adopt the specialized stretch energy code	Select Board, Planning Board	Town staff (Planning, Building Inspection), Planning Board, GMC, MAPC	
	Require energy efficiency licensing for rental units	Select board, Town staff (Building Inspection)		
	Update zoning laws to account for more housing types, retrofitting for multi-unit dwellings, in-law apartments	Town planner	HPP Implementation Committee, Planning Board	
	Allow changes to historic buildings that reduce GHG emissions	Town planner	Historical Commission, GMC, Planning Board	
	Provide financing options for Marblehead residents to adopt electric and renewable technologies, and invest in energy efficiency	MMLD, Town	MassDevelopment, MMWEC	
	Additional actions <ul style="list-style-type: none"> Lead by example on municipal building performance - e.g., retrofit existing municipal buildings and adopt a net zero standard for new municipally owned and funded buildings Create climate overlay zones to reduce GHG emissions from an array of building types Require all new construction and roof replacements to implement an eco-roof (green roof, solar PV, white roof, etc.) Offer reduced permitting fees for net zero emissions buildings and net zero enabling technologies Train reviewers and staff on net zero building standards and design principles Use more sustainable, low-embodied carbon materials for buildings and other projects (e.g., sidewalks, roads) Explore whether Affordable Housing Trust Money can be used to help low-income households retrofit their homes to be carbon free Require electric vehicle (EV) chargers be installed for all new and substantially renovated multi-unit residential buildings and office buildings with parking spaces Zoning changes: <ul style="list-style-type: none"> Allow by-right the installation and operation of net zero enabling technologies Exempt net zero enabling technologies from height and setback requirements Include net zero enabling technology and related terms in zoning definitions Incentivize clean heating and cooling technology by including provisions for special permits 			

Appendix B – GHG Inventory Methodology

Marblehead Net Zero Roadmap Appendix B - Marblehead's Greenhouse Gas Inventory Methodology

The Town of Marblehead used the Metropolitan Area Planning Council's (MAPC) Community Greenhouse Gas Inventory Tool ("the Tool"). This technical documentation summarizes the inventory methodology used for the Tool and the supporting data sources for Marblehead's GHG Inventory. The inventory methodologies are described in detail by sector and subsector.

METHODOLOGY BASICS

The Tool is designed to enable communities in Massachusetts to complete a community-wide inventory that follows the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories ("Global Protocol") which was developed by the World Resources Institute, C40 Cities, and ICLEI Local Governments for Sustainability and is required by The Global Covenant of Mayors for Climate and Energy (Global Covenant).¹

EMISSION SECTORS AND SOURCES

The Tool accounts for emissions from the following sources, as required by the Global Protocol's BASIC level of reporting:

- Stationary energy use from residents, businesses and off-road equipment
- On-road private and public transportation and rail transportation
- Solid waste and wastewater disposal and treatment

As part of this process, DNV GL and MAPC assessed the possibility of including emissions from product use, industrial processes, and land-use. Due to the limited data availability for these activities, they were not included. Table 1 summarizes the sectors, sub-sectors, emissions sources and energy types included in the Tool.

SECTORS, SUB-SECTORS, EMISSIONS SOURCES AND ENERGY TYPES INCLUDED IN THE TOOL

Sector	Sub-sector	Emissions sources	Energy types
Stationary Energy	Residential Buildings	Energy use in residential buildings as well as losses from distribution systems	

¹ The Global Covenant of Mayors for Climate and Energy is the new designation for the Compact of Mayors. The Compact of Mayors was launched by UN Secretary, C40 Cities Climate Leadership Group (C40), ICLEI – Local Governments for Sustainability (ICLEI) and the United Cities and Local Governments (UCLG) – with support from UN-Habitat, the UN's lead agency on urban issues.

Questions? Comments?



What is missing from the roadmap?

What needs to be clarified?

Is there anything in the roadmap that don't you agree with?

Share your feedback on the roadmap

Visit mapc.ma/marblehead-roadmap to view the full draft of the roadmap and fill out our feedback survey

