



Marblehead Climate Vision

Charting a path to carbon neutrality by 2040



Dedication

The Marblehead Climate Vision is dedicated in memory of Judy Jacobi, who died suddenly in July 2020. Judy served on the Green Marblehead Committee and was a tireless advocate for climate action and environmental sustainability throughout her life.

Acknowledgements

This report was prepared by the Green Marblehead Committee with support from the Metropolitan Area Planning Council. The Green Marblehead Committee would like to thank the following committee members who gave their time, effort, and expertise to this project:

- Rich Baldacci, Marblehead Building Commissioner
- John Buckey, Superintendent, Marblehead Public Schools
- Becky Curran, Marblehead Town Planner
- Michael A. Hull, Chairman, Marblehead Light Commission
- Judith Jacobi, Marblehead Selectman
- Joe Kowalik, General Manager, Marblehead Municipal Light Department
- John Livermore, Co-Founder, Sustainable Marblehead
- Eileen Mathieu, Leader, Clean Energy Working Group, Sustainable Marblehead
- Alison Nieto, Marblehead Finance Director
- Andrew Petty, Marblehead Public Health Director
- Jason Silva, Marblehead Town Administrator

The committee would also like to thank Brooks Winner, Cammy Peterson, Julie Curti, and Lucy Xu from the Metropolitan Area Planning Council for their support and guidance, Jackie Belf Becker and the Board of Selectmen for contributing the introductory letter for Marblehead Climate Vision, and the volunteers of Sustainable Marblehead and staff of the Marblehead Municipal Light Department for all of their contributions.

Lastly, the committee expresses its deep appreciation and gratitude to the residents of Marblehead who participated in this process and provided valuable input to help shape the Marblehead Climate Vision.

Cover photo by Alex Koppelman, MAPC.



Office of the
BOARD OF SELECTMEN
ABBOT HALL
188 Washington Street
MARBLEHEAD, MASSACHUSETTS 01945

Jackie Belf-Becker, Chair
David Depew
M. C. Moses Grader
James E. Nye

Jason Silva
Town Administrator

November 4, 2020

Dear Marblehead residents:

Climate action is a priority for the Town of Marblehead. To address this urgent need, the Board of Selectmen created the Green Marblehead Committee to work with the Metropolitan Area Planning Council (MAPC) to create this sustainability visioning document and plan.

This visioning document and action plan will help guide the Town's efforts to become a greener community and advance its intent to become a more sustainable and resilient community. The Committee's work and this report will help the Town and Board of Selectmen to plan and prioritize sustainability initiatives based on the public feedback and most urgent issues identified, and goals and vision that are set forth as a result of this process. The work of the Green Marblehead Committee was focused on creating energy baseline data for all municipal buildings, learning from other communities' efforts and initiatives, and seeking public input from residents through a survey and visioning session.

Thank you to all of the members of the Green Marblehead Committee for their work and commitment to address the important issue of climate change. Members appointed to the Green Marblehead Committee include Selectman Judy Jacobi; General Manager of the Marblehead Municipal Light Department, Joe Kowalik; Chair of the Marblehead Municipal Light Commission, Michael Hull; Town Administrator, Jason Silva; Town Planner, Rebecca Cutting; Building Commissioner, Richard Baldacci; Finance Director, Alison Nieto; Public Health Director, Andrew Petty, Members of Sustainable Marblehead, Eileen Mathieu and John Livermore. We would like to offer a special thank you to MAPC, in particular Brooks Winner for his steadfast support and work to help bring this document to fruition.

The great news is that in parallel with this work, there were also a lot of green initiatives happening in town.

- The Selectmen in conjunction with the Marblehead Municipal Light Department and Commission with support from the Massachusetts Department of Environmental Protection (DEP) EVIP grant purchased its first electric vehicle.
- The Town and the Marblehead Municipal Light Department and Commission are now working to site public electric vehicle charging stations throughout Town thanks to a DEP grant.

- The Town has received a grant from Massachusetts Coastal Zone Management to work to model sea level rise impacts on Marblehead Harbor, assess existing coastal infrastructure and make recommendations on improvements to our infrastructure. The project also includes significant public outreach and engagement.
- The recently completed Abbot Hall renovation project included a new geothermal heating and cooling system.
- The Town completed a Municipal Vulnerability Preparedness (MVP) plan which identified major strengths and weaknesses related to the potential impacts and hazards of climate change.
- To build off of the work to create this initial report, the Town has partnered with MAPC to apply for another grant with other communities that are host to municipal light department to develop a net-zero plan. We're hoping to hear good news on the application soon.

All of this work has provided a solid foundation for the Green Marblehead Committee to assist the Town in establishing this vision for the town's sustainability efforts and then work to identify priorities and goals consistent with this vision. This visioning document is the first step in developing a roadmap for all future green initiatives.

Thank you for your interest and support of the Green Marblehead Committee's hard work and look forward to the Town's future work and focus in this regard

Sincerely,

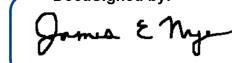
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Jackie Belf-Becker, Chair, Board of Selectmen

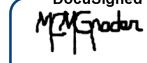
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James E. Nye, Selectmen, Selectmen

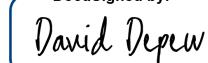
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M. C. Moses Grader, Selectmen

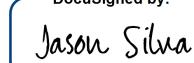
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David Depew, Selectmen

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Jason Silva, Town Administrator

“The earth is what we all have in common”

Wendell Berry

Background

The Town of Marblehead established the Green Marblehead Committee in the fall of 2019 to explore opportunities to reduce greenhouse gas emissions and establish a climate action vision for Marblehead. The committee received technical assistance from the Metropolitan Area Planning Council (MAPC), which helped facilitate community discussions designed to gather input to inform our vision. The Green Marblehead Committee includes members from Marblehead town government, the Marblehead Municipal Light Department (MMLD), the Board of Selectmen, the School Department, and Sustainable Marblehead, a community organization that supports initiatives which reduce carbon emissions and improve quality of life. The committee led the climate visioning process that resulted in this document and which included surveying community members about their climate action priorities and hosting an interactive virtual visioning session in June 2020 during which residents shared their visions for climate action in Marblehead.

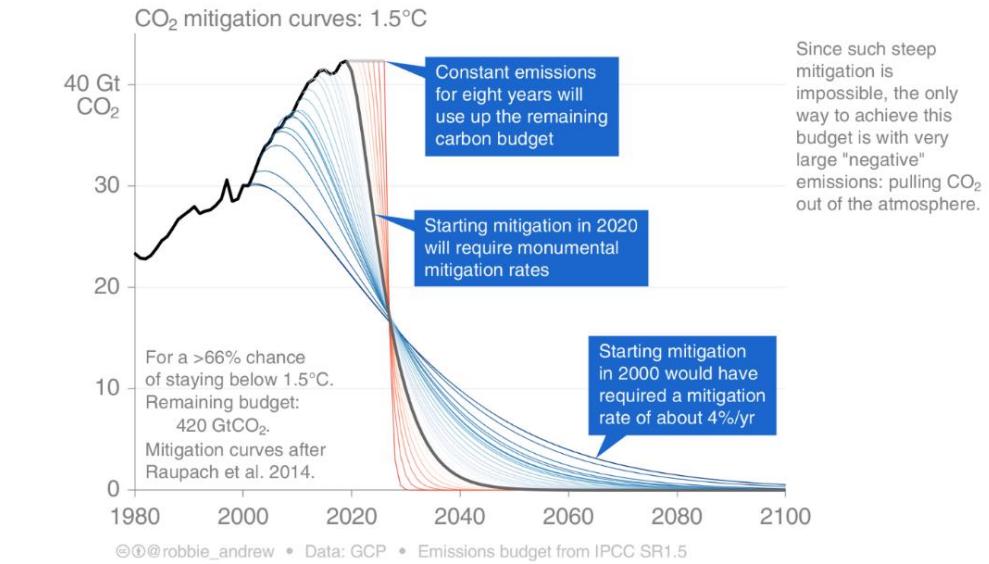
Why we must act now

Climate scientists have made it clear that we need to reduce global greenhouse gas (GHG) emissions to net zero by 2050, or sooner, to avoid catastrophic climate change. We know that the planet has already warmed by about 1° Celsius since we started burning fossil fuels like coal, oil, and gas in the mid-1800s.¹ We also know that if we can keep warming below 1.5° Celsius we can avoid some of the worst impacts of climate change like extreme floods, wildfires, and droughts.² The Intergovernmental Panel on Climate Change’s 2019 special report, *Global Warming of 1.5°C*, says that in order to give ourselves a chance to limit global warming to 1.5° Celsius we will need to reduce GHG pollution 45% by 2030 and to net zero by 2050. This means that we have a limited “carbon budget,” or amount of GHG pollution that we can afford to put into the air without passing 1.5° Celsius of warming. The longer we wait to start reducing our GHG pollution, the faster we use up our carbon budget and the less time we give ourselves to meet our goal. In 2020, the Commonwealth of Massachusetts established net zero as the legal emissions limit by 2050.³ At least 33 of the 101 cities and towns in the Greater Boston region have set goals to reduce their GHG emissions and many communities are now targeting net zero emissions by 2050 or sooner.

¹ [https://earthobservatory.nasa.gov/world-of-change/global-temperatures#:~:text=According%20to%20an%20ongoing%20temperature,2%C2%B0%20Fahrenheit\)%20since%201880.](https://earthobservatory.nasa.gov/world-of-change/global-temperatures#:~:text=According%20to%20an%20ongoing%20temperature,2%C2%B0%20Fahrenheit)%20since%201880.)

² <https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter/>

³ [https://www.mass.gov/news/baker-polito-administration-issues-letter-establishing-netzero-emissions-target](https://www.mass.gov/news/baker-polito-administration-issues-letter-establishing-net-zero-emissions-target)



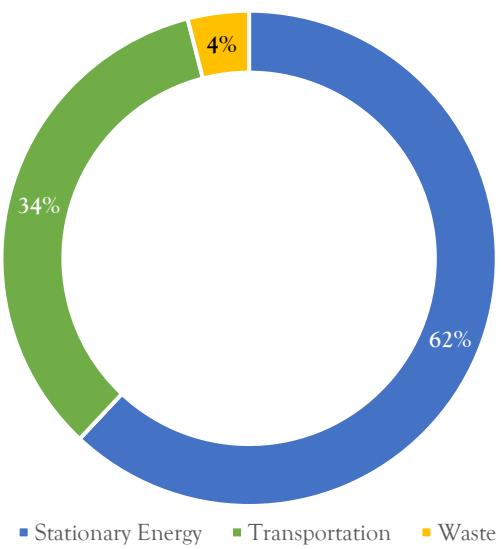
This chart demonstrates the “carbon budget” concept, showing that the longer we wait to act, the less time we give ourselves and the harder it will be to avoid passing 1.5° Celsius of warming.

Sustainable Marblehead Greenhouse Gas Inventory Report

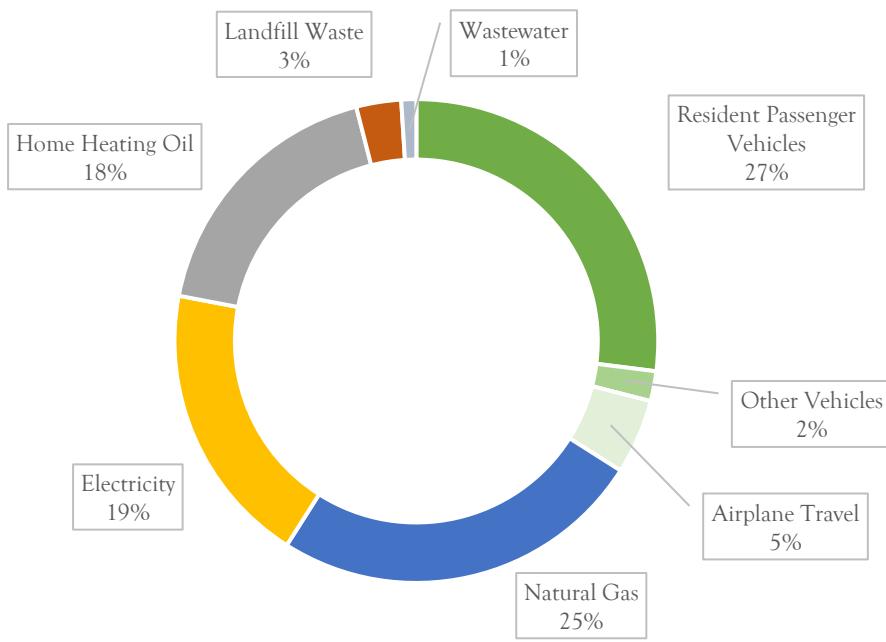
Sustainable Marblehead published a community-wide Greenhouse Gas Inventory Report in January 2018 that outlined the community’s greenhouse gas (GHG) emissions profile.⁴ The inventory was conducted using primarily 2016 data and addressed activities within the town as well as processes that involved surrounding communities, such as wastewater treatment. Figure 1 below shows that stationary energy (heating fuels and electricity used in buildings) represents 62% of GHG emissions followed by transportation at 34%. Figure 2 breaks down these sectors and highlights the largest contributors, including resident passenger vehicles at 27%, natural gas at 25%, electricity at 19%, and heating oil at 18%.

⁴ <https://www.sustainablemarblehead.org/ghg-report>

Figure 1. Community-Wide Emissions by Sector
2016



Community-Wide Emissions by Subsector
2016



Figures 1,2. Marblehead emissions based on 2016 baseline by percentage of total. Adapted from Sustainable Marblehead's Town of Marblehead Greenhouse Gas Inventory Report.

Municipal Energy Baseline Findings

While emissions from municipal operations make up only a small portion of overall community-wide emissions, about two percent, the Town of Marblehead recognizes the important role that municipal government can play in leading by example on the path to net zero emissions. With this in mind, the Town asked MAPC to create an energy baseline and analyze opportunities to reduce energy use and emissions from municipal buildings, vehicles, and other sources. MAPC collected annual energy consumption data from the Town and MMLD and then analyzed these data to identify the major sources of energy consumption. As is the case with many municipalities in the Greater Boston region, schools and other large municipal buildings such as the Abbot Public Library and the Mary Alley Municipal Building account for most of the energy consumed for municipal operations.

Total Municipal Energy Usage by Fuel in 2019

	MMBTU	
Electricity	197,306	76%
Natural Gas	51,573	20%
Gasoline	6,581	3%
Diesel	3,243	1%
Oil	106	~0%
Total	258,808	

Top 10 Energy Use in Municipal Buildings in 2019

	MMBTU	
Marblehead High School	63,480	26%
Veterans Middle School	57,431	23%
Village School	28,765	12%
Glover School	21,261	9%
Town Library	11,446	5%
Malcolm L. Bell School*	9,444	4%
Mary Alley Municipal Building	7,386	3%
Highway Dept. Building	5,997	2%
L.H. Coffin School	4,946	2%
Abbot Hall	4,436	2%

*Malcolm L. Bell School was demolished in 2020

Figure 3. Town of Marblehead Energy Usage for Municipal Operations by Fuel - 2019 (MMBTU)

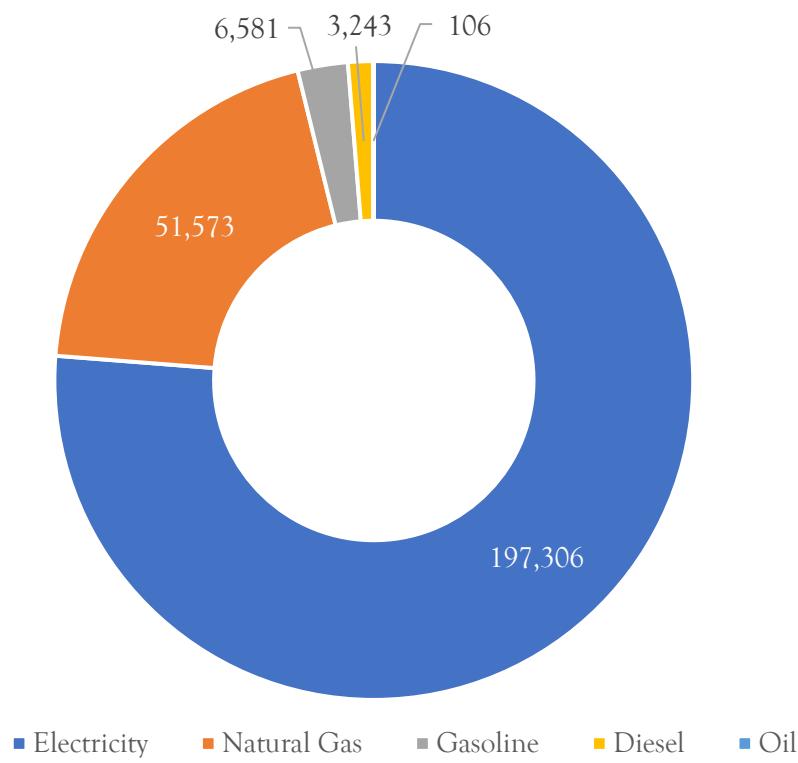


Figure 3. Energy use for municipal operations. Electricity data collected for Calendar Year 2019 (Jan.-Dec. 2019). Natural gas, gasoline, diesel, and oil data collected for Fiscal Year 2019 (July 2018-June 2019).

Current Climate Initiatives

In 2018, Town Meeting voters approved Article 45, affirming, “That the Town supports a goal of using 100% carbon-free energy in Marblehead, including in electricity production, building energy use and transportation and moving with fiscal responsibility and all deliberate speed to achieve this goal.”⁵ In addition to its GHG inventory released in 2018, Sustainable Marblehead published a Climate Action Plan Framework in early 2020 which proposed setting a community-wide target of net zero carbon emissions by 2040.⁶ In 2020, the Town installed its first public electric vehicle charging stations and purchased its first electric vehicle for municipal use.

⁵ Minutes of the Town of Marblehead Annual Town Meeting, Monday, May 7, 2018, p. 19.

https://www.marblehead.org/sites/g/files/vyhlif4661/f/uploads/2018_town_meeting_minutes.pdf

⁶ <https://www.sustainablemarblehead.org/climate-action-plan>

MMLD offers several incentives to help Marblehead residents save energy and reduce GHG emissions through its Home Energy Loss Prevention Services (HELPs) program. The HELPS program includes free home energy audits and rebates for insulation, efficient heating and cooling systems, and ENERGY STAR appliances. MMLD also offers rebates for electric vehicles (EVs) and EV charging stations.

MMLD has also been working to evaluate opportunities to generate renewable energy locally, working with the National Renewable Energy Laboratory's Renewable Energy Integration & Optimization (REopt) team to identify potential sites for solar photovoltaic (PV) development. As a result, MMLD has joined the [National Community Solar Partnership](#)⁷ [Municipal Utility Collaborative](#)⁸, a group of municipal utilities that "seeks to demonstrate replicable models for solar energy deployment that offer low or no-fee subscriptions and result in energy bill savings for low-income residents." MMLD, as an active member of the Municipal Electric Association of Massachusetts (MEAM), supports state legislation that will require all 41 Massachusetts municipal light departments to meet specific timetables for reducing the greenhouse gas emissions in their power portfolios. The proposed statute sets the minimum percentage of non-carbon emitting energy sold by each municipal lighting plant to (1) fifty percent by 2030; (2) seventy-five percent by 2040; and (3) net zero by 2050. These standards are now included in the Senate bill SB-2500 and House bill HB-4933.

In addition to its GHG inventory released in 2018, Sustainable Marblehead has also been leading several climate change initiatives. In early 2020, Sustainable Marblehead published its Climate Action Plan Framework in early 2020 which, "lays out the tools we need to become a carbon-free town - a town that can meet its needs now without compromising the ability of future generations



Marblehead Municipal Light Department is pleased to offer free home energy audits and a variety of rebates on eligible ENERGY STAR® products through HELPs. As the leading residential energy conservation service for Massachusetts municipal utility customers, HELPs provides energy education, home energy audits, and rebates on qualified residential energy saving measures.

Free Home Energy Audits
 1(888) 333-7525 to schedule

What is a Home Energy Audit?

- Gives you a thorough picture of where you may be wasting energy and how to save money.
- Includes inspection of HVAC equipment and insulation levels.
- Diagnostic testing identifies problem areas.

How Does it Work?

HELPs partners with the Center for Eco Technology to provide home energy audits. An auditor will walk through your home, review your bills, and possibly conduct an infrared scan*.





Before the auditor visits your home, make a list of any existing problems such as condensation and drafty rooms, and have copies or a summary of the home's yearly energy bills.

*Weather dependent

Rebates

ENERGY STAR Appliance Rebate	Rebate
Air Purifier	\$40
Clothes Washer (Most Efficient)	\$50
Clothes Dryer (Most Efficient)	\$50
Dehumidifier	\$30
Heat Pump Dryer (Electric)	\$500
Heat Pump Water Heater	\$500
Pool Pump (Two Speed)	\$175
Pool Pump (Variable Speed)	\$250
Refrigerator (Most Efficient)	\$50

WIFI Smart Thermostat	Rebate
WIFI Smart Thermostat	50% up to \$125

Cool Homes Rebate	SEER	EER	HSPF	Rebate
Central AC	≥16	≥13	N/A	\$250
Air Source Heat Pump	≥16	≥12	≥8.5	\$250
Air Source Heat Pump	≥18	N/A	≥9.6	\$500
*Ductless Mini Split Heat Pump (Single Zone)	≥18	N/A	≥9.0	\$300
*Ductless Mini Split Heat Pump (Multi Zone)	≥18	N/A	≥9.0	\$500

*Maximum of 2 units. SEER=Seasonal Energy Efficiency Ratio, EER=Energy Efficiency Ratio, HSPF=Heating Seasonal Performance Factor

Home Efficiency Incentive*	Rebate
Blower Door Test & Air Sealing	50%, up to \$500
ENERGY STAR Heating System (90% AFUE or greater)	50%, up to \$500
Insulation	50%, up to \$500
Duct Heating	50%, up to \$500

*Home Energy Audit required prior to installing rebate measures.

Visit www.munihelps.org to apply for rebates, or call 888-333-7525 to schedule an audit!

This factsheet summarizes the incentives available to Marblehead residents through the HELPs program and can be found on MMLD's website at <https://www.marbleheadelectric.com/rebates-incentives.html>

⁷ <https://www.energy.gov/eere/solar/national-community-solar-partnership>

⁸

<https://www.energy.gov/sites/prod/files/2020/06/f76/NCSP%2080%93Municipal%20Utility%20Collaborative%20Fact%20Sheet.pdf>

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to meet their own needs.” Sustainable Marblehead has advocated for setting a community-wide GHG emissions target of net zero carbon emissions by 2040.

Community Input

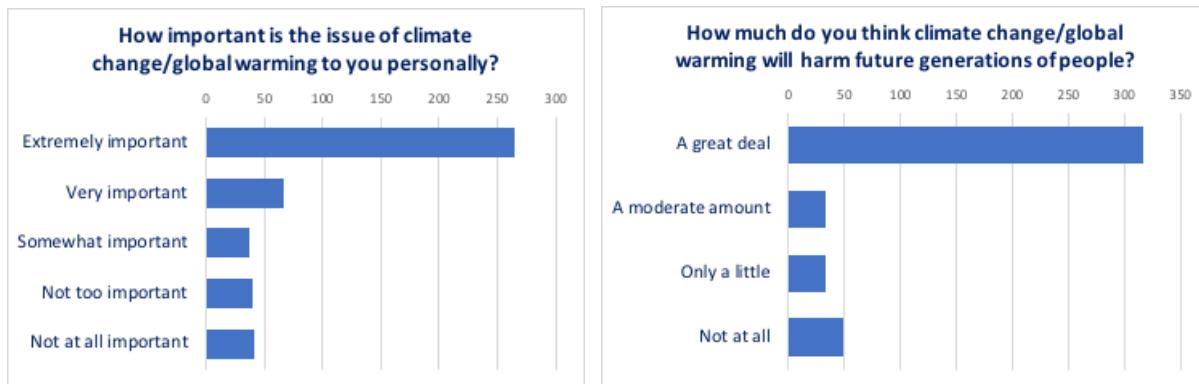
The Green Marblehead Committee conducted a community survey and hosted a virtual climate visioning session to gather input from residents about their vision for climate action in town. More than 450 people responded to the survey and more than 40 people attended the visioning session.

Summary of Climate Visioning Survey Results

The 2020 Marblehead Climate Visioning Survey was conducted from April 24 to June 30, 2020 and collected 455 responses. The survey asked five questions regarding the community’s perspectives on climate change, how residents prioritize sustainability actions, and additional suggestions about how to reduce GHG emissions. The survey also included five demographic questions.

Perspectives on Climate Change

More than 80% of survey respondents said that climate change and global warming were important to them personally, with many characterizing these issues as “extremely” or “very” important. Approximately 70% of respondents felt that climate change and global warming would harm them personally. That percentage increased to 81% when asked if future generations would be harmed.



Figures 4,5. Respondents’ perspectives on climate change based on the number of responses

Preference for Sustainability Actions

Survey respondents were asked to rank 22 sustainability actions as a *high priority*, *somewhat of a priority*, or *not a priority*. The responses were then assigned scores of 1 point (not a priority), 2 points (somewhat of a priority), or 3 points (high priority) and then ranked based on the aggregate scores (the total points for each action). Figures 6, 7, 8, and 9 below highlight the top ranked sustainability actions from the survey responses. The highest ranked building efficiency actions were: 1) requiring new construction to be highly efficient, and 2) making existing buildings more energy efficient. The top ranked clean energy action was coordinating with local utilities to repair large gas leaks. The top ranked mobility action was improving infrastructure to support biking and

walking as alternatives to automobile travel. Respondents also showed great interest in planting street trees and restoring trees in local parks, in cemeteries, and on private land.



Figure 6,7,8,9. Top-ranked sustainability actions from the survey responses

Additional Suggestions

The survey invited respondents to suggest other ideas to reduce GHG emissions. The top six suggestions based on the number of mentions were:

- Electrifying leaf blowers, lawn mowers and other gasoline-powered lawn care equipment
- Reducing traffic and idling and replacing diesel school buses with electric buses
- Providing shuttle services to popular locations such as downtown, beaches, etc.
- Developing an easy and straightforward system for waste sorting
- Promoting education programs on sustainability measures such as home energy-efficiency upgrades, proper ways to recycle, and other existing services
- Supporting public schools in developing sustainability programs (e.g. composting, electric school buses, rooftop solar)

It is noteworthy that the majority of responses suggested specific sustainability measures that aligned well with the actions proposed by the Green Marblehead Committee. For example, many respondents recognized the need to electrify heating or use smart thermostats to improve efficiency.



The word cloud above highlights the common words and themes from the survey responses.

Parties Responsible for Implementation

Survey respondents felt that the Board of Selectmen and residents themselves should be responsible for implementing the majority of GHG reduction actions. Respondents also mentioned the Marblehead Municipal Light Department and Planning Board as other responsible parties.

Demographics of the Respondents

The survey respondents were primarily older homeowners. The average age of the respondents was 58 years old, ten years older than the average age of all Marblehead residents (48 years old). Only 10% of respondents identified themselves as renters compared to the 20% of Marblehead residents who rent their homes. The average respondent had lived in Marblehead for 31 years.

Climate Visioning Session

The Green Marblehead Committee and MAPC hosted a Climate Visioning Session on June 18, 2020. During the session, the Green Marblehead Committee provided context about the importance and urgency of addressing climate change at the local level and then asked participants to share their thoughts and visions for climate action in Marblehead. Participants were each asked to write a “postcard from the future,” a short letter from their future self in 2050 to their present self in 2020 responding to the following prompt:

“The year is 2050 and we have stopped climate change. You are writing a postcard from your future self to your current self in 2020. What does Marblehead look like? What changes took place to make Marblehead a sustainable community?”

Selected postcard responses:

"Hey there! You wouldn't believe it...we did it! The birds seem to chirp in hi-def, or maybe it's that the skies are free of constant airplanes overhead. Streets are narrower. Sidewalks and bike lanes are wider. The roads are filled with bikers, walkers, scooters, and runners –they seem to have taken over the town! :). Really cool, space-like vehicles are the only thing to be found, with spiffy charging stations at every turn. You'll love the multi-bin systems all over town – in the parks, at the beaches, on the sidewalks – compost, recyclables, trash, and wait, NO bin for plastic? What? Plastic is a thing of the past!!!"

"Back in 2020, we were crazy to think that we could stop climate change, but I am relieved that we took drastic steps to eliminate the use of fossil fuels. If we hadn't, I cannot imagine what Marblehead and the world would look like today and how bad things would be. We are experiencing more dangerous storms. The Causeway is closed 6 or more days a month from the higher tides and the extreme storms. Some people have had to move away from the ocean in several locations, but we are lucky that much of Marblehead is on higher ground. The good news is that all Marblehead's electricity comes from renewables (not biomass) mainly offshore wind. People all drive EVs finally and have heat pumps. Many of us grow our own food and that is good. Things would have been very different if we had not woken up in 2020."

"Marblehead is as beautiful as it was when I first saw it in 1984. Its historical homes and buildings are beautiful, and the harbor is its signature French blue dotted with boats. As I visit the garden center, all the plants are for sale in compostable pots, as I get a coffee, it is in a compostable cup, but most people have brought their own cups. Everything is compostable. As I pass the Old State House, I see a plaque that commemorates when Marblehead became carbon zero. All power in the town (and country-wide) is produced from wind, solar and geo-thermal. All cars are electric. The town has backup battery power to last for a month. The world's temperature has actually fallen slightly. Worldwide plastic production has fallen to 2% of 2020 levels and is only used for absolutely necessary items. The world no longer relies on plastic. The oceans have been cleaned. People are healthier because the air is cleaner and they no longer are consuming plastic."

"Houses are well insulated and use less energy. Many houses have solar panels and energy-efficient mini-splits to heat and air condition quietly. Electric buses run every ten minutes between Marblehead and Boston, eliminating the need for multiple cars per family. The cars residents do own are electric. Bike paths and wide sidewalks facilitate biking and walking around town. Cars are diverted from the center of town. Our electric supply is completely de-carbonized, as the Municipal Light Department buys renewable energy. Thousands of trees have been planted, shading our main streets, parks and shopping districts and cooling the town in summer. Packaging in grocery stores has been revamped to eliminate plastic and unnecessary packaging in general. The swap shed at the transfer station is open every day, to facilitate the exchange of goods between residents."



The word cloud above highlights the common words and themes from the postcard responses.

In small group discussions, participants offered their perspectives on the strategies that the Town of Marblehead should use to reduce its GHG emissions and build its carbon-free future.

Participants were asked to share their top three most important strategies and then consider approaches to reducing emissions from buildings, mobility/transportation, and the energy supply (electricity and heating fuels). They also discussed the equity implications of these strategies and how to ensure that the transition to a clean energy future benefits those most impacted by climate change.

Climate Vision

Through the survey and climate visioning session, we heard Marblehead residents express their support for bold climate action in Marblehead. Based on input from the community and best practices gathered from other communities throughout Massachusetts and beyond, the Green Marblehead Committee has identified a list of core strategies that the Town of Marblehead and its residents should adopt to reduce GHG emissions and start its path to a carbon free future.

These key strategies include:

- 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

To implement these strategies, the Green Marblehead Committee has identified a list of near-term actions that the Town and community members can take to reduce emissions.

Significantly Increase Building Energy Efficiency

- **Make existing buildings more energy efficient** – In partnership with MMLD, Sustainable Marblehead, and others, the Town should find ways to support residents and businesses in making energy efficiency upgrades including weatherization and energy retrofits which get furnaces off gas and oil, and switch people to air-source heat pumps. The Town and MMLD should consider leading coordinated outreach initiatives (see MAPC's [Residential Energy Efficiency Outreach resources for more details](#)⁹) to expand access to the incentives and explore creative financing such as 0% loans from MMLD to significantly increase the incentives available from MMLD's HELPS program and other programs. In Bangor, Maine, the city reinvested surplus tax revenues after its heating bills were much less than anticipated, adding an additional incentive for residents on top of the statewide rebate program for clean heating and cooling systems and weatherization. This campaign, [Energy Smart Bangor](#),¹⁰ resulted in a significant uptick in the number of homes participating in energy efficiency upgrades.
- **Lead by example in municipal buildings** – The Town should evaluate existing municipal buildings and identify opportunities to increase energy efficiency through deep energy retrofits and will build all new municipal buildings to meet high energy efficiency and/or net zero standards (e.g. Passive House, LEED Platinum).
- **Require new construction and additions and renovations to be super-efficient** – The Town should support the development of a Net Zero Stretch Code by the Board of Building Regulations and Standards (BPRS) and adopt any future updates to the Stretch Building Energy Code. This will ensure that new buildings are constructed to minimize energy use (and GHG emissions) and maximize renewable energy production.

Electrify Heating, Transportation, Cooking, and Other End Uses

- **Promote and incentivize electrification of space heating, water heating, and cooking for building owners** – Incentives may include financing, grants, and property tax credits. By first educating residents and business owners about existing financing and other incentives (Mass Save, alternative energy credits, etc.), communities can leverage local funds or nonfinancial incentives to encourage electrification of buildings.
- **Expand access to electric vehicles** – Continue to provide rebates for EVs through MMLD, educate residents about the benefits of EVs, and continue to expand public charging infrastructure throughout Marblehead.

⁹ <https://www.mapc.org/resource-library/energy-efficiency-outreach/>

¹⁰ <https://www.bangormaine.gov/energysmartbangor>

- **Electrify cooking** – Provide informational resources to residents about the benefits of cooking with advanced electric cooking systems (e.g., induction cooktops) and the health benefits of cooking without fossil fuels.

Transition to 100% Carbon-Free Energy

- **Transition MMLD portfolio to 100% carbon-free electricity** – MMLD should develop a carbon-free electricity transition plan with measurable targets similar to the Massachusetts Renewable Portfolio Standard. This plan should identify opportunities for local renewable energy development and associated job creation as well as opportunities for residents to invest in building renewable energy through community shared solar and other ownership models.
- **Advocate to accelerate natural gas leak repair** – As of 2019, there were [147 unrepairs gas leaks](#) in National Grid's distribution pipe system in Marblehead. The methane released by gas leaks is a potent greenhouse gas, and these leaks also pose a health and safety hazard to Marblehead residents.¹¹ Gas leaks also kill trees, like those shown in the photo below. The Town and Sustainable Marblehead will work with the Multi-Town Gas Leaks Initiative – a coalition of municipalities and local activists – to continue to encourage National Grid to accelerate the pace of leak repair work while the community transitions from natural gas to electrified heating and cooking. Survey respondents ranked this as their highest priority action.



The 147 unrepairs gas leaks in Marblehead as of 2019. Map produced by HEET and available at www.squeaky漏.org.



These trees on Shorewood Rd. were likely killed by an unrepairs gas leak.

¹¹ <https://heetma.org/gas-leaks/gas-leak-maps/>

Other Suggested Strategies

There were numerous other actions identified through the community input gathering process that the Town and the Marblehead community should consider implementing to reduce GHG emissions and improve sustainability community-wide, including:

- Planting additional street trees strategically (i.e. avoiding active gas leaks) and restoring trees in local parks and cemeteries and on private land
- Improving walking and biking infrastructure
- Electrifying leaf blowers, lawn mowers, and other gas-powered lawn care equipment
- Reducing traffic and idling and replacing diesel school buses with electric buses
- Providing shuttle services to popular locations such as downtown and beaches to reduce vehicle miles travelled and emissions from vehicles
- Developing an easy and straightforward system for waste sorting so that more waste is composted and recycled
- Promoting education programs on sustainability measures such as energy-efficient upgrades, proper ways to recycle, and other already existing climate-smart services
- Supporting public schools in developing sustainability programs (e.g. composting, electric school buses, rooftop solar)

Next Steps

While the creation of the Marblehead Climate Vision is an important step in the community's process to address climate change at the local level, it is only one step. The Town of Marblehead is committed to playing a leadership role in mitigating climate change and adapting to its effects in the years to come. The next steps in this process will include:

- **Setting a GHG emissions target of net zero emissions by 2040** – Establishing an emissions target is an important step in any community's transition to net zero emissions. "Net zero" means that the community will reduce emissions as much as possible locally and offset any remaining pollution by supporting carbon sequestration or removal. The Green Marblehead Committee and town residents participating in the climate visioning process discussed the pros and cons of various targets, ultimately deciding that net zero emissions by 2040 aligned with the scientific consensus about the speed with which we must reduce emissions to avoid the worst impacts of climate change while also giving the community a full 20 years to carry out its transition.¹²
- **Developing a net zero action plan** – While the Marblehead Climate Vision lays out a number of strategies and actions that the community can implement to reduce emissions, the Green Marblehead Committee recommends developing a detailed net zero action plan similar to those developed by numerous municipalities throughout the Greater Boston

¹² The Intergovernmental Panel on Climate Change's 2019 special report, [*Global Warming of 1.5°C*](#), says that in order to give ourselves a chance at limiting global warming to 1.5° Celsius and avoid the most catastrophic effects of climate change we will need to reduce GHG pollution 45% by 2030 and to net zero by 2050.

region and around the US. Examples include the [Boston Climate Action Plan](#),¹³ the [Somerville Climate Forward Plan](#)¹⁴, and the [Net Zero Montpelier](#) initiative.¹⁵ MAPC's [Municipal Net Zero Playbook](#)¹⁶ was designed to support communities in developing their own net zero climate action plans and will be a valuable resource as Marblehead develops its own net zero plan. Sustainable Marblehead has also laid out its recommendations for climate action strategies in its [Climate Action Plan Framework](#).¹⁷

- **Hiring sustainability staff and/or incorporating climate action efforts into job descriptions of existing staff** - The Town will work to identify funding sources for a full- or part-time sustainability coordinator position similar to those of numerous municipalities throughout the region and will work to hire staff to help implement climate action initiatives and/or explore ways to build climate change mitigation and adaptation responsibilities into the job descriptions of existing Town staff.
- **Continuing the Green Marblehead Committee** – The Town should continue to convene the Green Marblehead Committee to provide guidance and oversight as the Town pursues the strategies outlined in the Marblehead Climate Vision.

¹³ https://www.boston.gov/sites/default/files/imce-uploads/2019-10/city_of_boston_2019_climate_action_plan_update_2.pdf

¹⁴ <https://www.somervillelma.gov/departments/programs/somerville-climate-forward>

¹⁵ <https://www.netzeromontpelier.org/>

¹⁶ <https://www.mapc.org/net-zero/playbook/>

¹⁷ <https://www.sustainablemarblehead.org/climate-action-plan>