2022 City of Gloucester
Climate Action and Resilience Plan




MAPC
METROPOLITAN AREA PLANNING COUNCIL

MVP
Municipal Vulnerability Preparedness

CITY OF GLOUCESTER INCORPORATED 1873

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Message from Mayor Greg Verga

Dear Fellow Community Members,

In the fall of 2021, the City of Gloucester embarked on an ambitious effort to develop a comprehensive Climate Action and Resilience Plan – or CARP for short.

Climate change is here. Sea levels are inches higher than just a few years ago and the threat to our City's vital infrastructure from flooding and extreme weather escalates each year. Through the creation of this Plan, the City of Gloucester is solidifying our commitment to taking climate action.

Having weathered, and continuing to weather, the impacts of COVID-19, we know how vital it is to build a resilient future. As a City we are also more connected, more creative, and have more momentum than ever to get it done. Through planning for the CARP, the Gloucester community shined in our ability to think 'outside the box,' and to extend our vision ahead for the next 10 years, 20 years, and 30 years.

Hundreds of residents weighed in via public surveys, community meetings, individual interviews, and workshops on the changes they hope to see. In particular, the young people of Gloucester spoke out, almost a quarter of survey responses came from people under 18 years old. This fact drives home the importance of taking climate action now to protect our shared future. What we start today impacts our children, our shoreline, our neighborhoods, and our safety long after I leave office as mayor – I, for one, want to do everything I can to ensure that our City thrives for many years to come.

Sincerely,

Greg Verga,
Mayor of Gloucester

Message from the Clean Energy Commission

Dear Gloucester Residents,

As a Commission, it has been our vision that the City of Gloucester can adapt to and mitigate the impacts of climate change to transition into the coming clean energy future. We hope that by setting a path forward we can do this in a way that benefits all our residents – by creating jobs, saving residents money, and protecting our vital resources and infrastructure. This Plan builds on the ongoing efforts of the Clean Energy Commission and the City to transition to cleaner energy sources, develop access to renewables, and make cleaner, greener choices accessible to all residents.

We took our role seriously - to usher the City's Climate Action and Resilience Plan (CARP) into fruition by highlighting the voices and needs of Gloucester residents. The public's commitment to participating in this planning process, in turn, has been outstanding. Countless conversations are the foundation for the CARP's goals, actions, and strategies. Conversations among Gloucester's essential and vibrant service community, a robust network of climate activists, engaged young people, and most importantly, you, the residents of Gloucester who turned up to participate in community meetings, surveys, workshops, and more.

The Plan that follows represents a shared vision for our City's resilient, clean energy future, and explores the details of implementation needed to get there. It is our hope that the City's climate goals, outlined in this Plan, act as a vehicle to unify past planning efforts and inform future planning - ensuring that a commitment to mitigating the impact of climate change underlies the City's work across all departments and initiatives. We are proud to share the results of our work, and we look forward to our continued commitment to implement this Plan. Climate action will require the entire community to be engaged. We encourage everyone to continue to advocate, participate, and make changes!

Sincerely,
City of Gloucester Clean Energy Commission

The City would like to thank the many residents and stakeholders who kindly took the time to participate in the variety of surveys, focus groups, individual interviews, and workshops that were part of this Plans development. Special thanks to Gloucester High School students, the Annisquam Village Church Creation Care Team, and SeniorCare Inc. for participating in the City's Meeting-In-A-Box pilot program. This Plan could not have come to fruition without the vision, engagement, and enthusiasm of dedicated Gloucester residents like you.

Acknowledgements

This project was led by Gloucester's Clean Energy Commission (CEC) in partnership with the City's Community Development Department staff and support from the Metropolitan Area Planning Council (MAPC). The project was generously funded by the Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Action Grant program.

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You, the members of this community, are Gloucester's brain trust. Gloucester is chock full of creative, brilliant, hardworking, and innovative people. The Innovate Gloucester platform is a place to highlight how Gloucester residents are leading the way, and to draw on this talent to move Gloucester forward. By following Innovate Gloucester you'll stay tuned to the innovation happening in Gloucester – from highlighting small businesses, to tips on home efficiency. You'll also learn how you can get involved – be the brain trust – in Gloucester's planning and development efforts. Follow us at:

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Climate Efforts in Gloucester

Climate action is nothing new in the City of Gloucester. To date, the City has piloted and implemented a wide range of policies and programs aimed at reducing greenhouse gas (GHG) emissions and preparing for the future impacts of climate change.

The City has also undertaken several planning efforts including a 2015 Coastal Climate Change Vulnerability Assessment and Adaption Plan, 2018 Municipal Vulnerability Preparedness (MVP) Plan, and 2019 Watershed and Water Supply Vulnerability and Management Strategy. The Climate Action and Resilience Plan (CARP) builds on past mitigation and adaptation efforts and advances Gloucester towards becoming a more prepared, resilient and sustainable City.

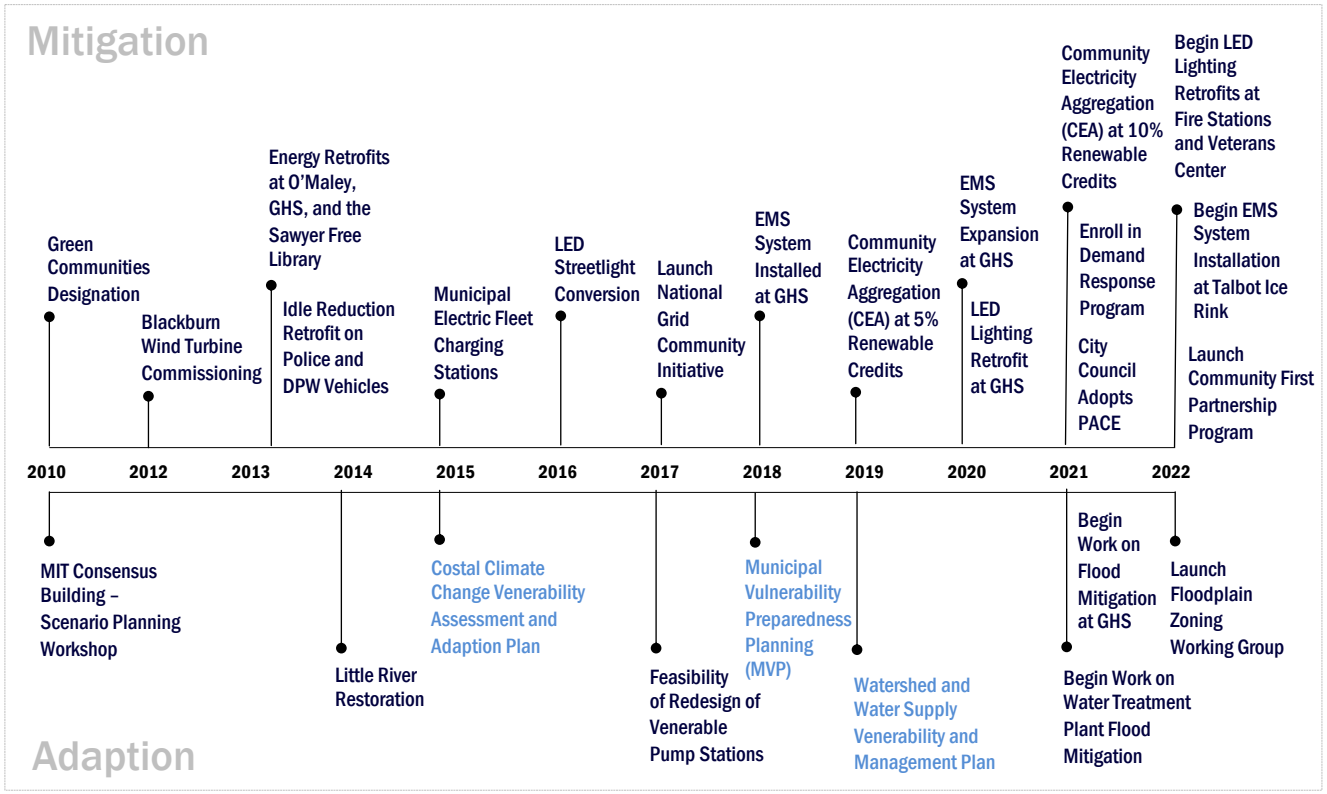


Figure 1: Timeline of climate planning efforts and accomplishments in Gloucester to date

Map 1: Community Context

GLOUCESTER

Population
29,729

Area
18 SQ MILES

Median Household Income
$72,574

Median Age
50.9

Sources: 2019 ACS and 2020 Census

Some of the highlights include:

- The City established the Clean Energy Commission (CEC) in 2009 to promote clean energy options in Gloucester including energy efficiency, conservation, and the development of clean and renewable energy sources.
- Gloucester was one of the first communities in the state to achieve Green Communities Designation in 2010. The City adopted progressive guidelines and standards, including adopting a Fuel Efficient Vehicle Policy and the state Stretch Energy Code. To date, the City has invested over 1 million dollars into energy efficiency updates at municipal facilities, including lighting upgrades at several facilities HVAC system upgrades, and a Citywide LED streetlight retrofit.
- In 2011, the City permitted a two-turbine — 4MW renewable energy project proposed by Equity Industrial Partners LLC. Through a Power Purchase Agreement, the City offsets approximately 85% of its municipal electricity demand with energy produced from these local sources.[1]
- In 2015, the City conducted a Coastal Climate Change Vulnerability Assessment and Adaptation Plan. This led to the implementation of several projects geared towards protecting Gloucester's critical coastal infrastructure, including the Gloucester High School flood barrier, and Wastewater Treatment flood protection project.

The City's Fuel Efficient Energy Policy led to the purchase of an electric fleet of 6 municipal and 2 police vehicles.

- The City recently launched the Gloucester Energy Challenge, a campaign to connect Gloucester homeowners, renters and small businesses with no-cost energy assessments, rebates on efficiency upgrades, and other benefits.

These are just a few of the climate mitigation and adaptation efforts which Gloucester has been working on. Throughout this Plan, you can find various other examples.

[1] The City of Gloucester reported in it's 2021 Green Communities Update that the electricity generated in 2021 by the two wind turbines that fall under a City partnership with Equity Industrial Partners, LLC was 8,317,278 kwh, about 85% of the City's total electricity consumption of 9,710,253 kwh in 2021.

Greenhouse Gas (GHG) Emissions

As a baseline for planning, the City leveraged the most complete 2017 data series to conduct a broad scale Greenhouse Gas (GHG) Emissions Inventory.[2] The GHG Inventory provides a summary of the City's emission sources—shining a light on how residents, businesses, and municipal operations each contribute to the community's GHG emissions footprint.

The purpose of this Inventory is to provide a snapshot of the City's emission sources across stationary energy (i.e. the built environment), transportation, and waste, as can be seen in figure 2.

Wind Turbine in Gloucester

Approximately 56 Wind Turbines would be needed to offset the GHG emissions of the entire City of Gloucester[3]

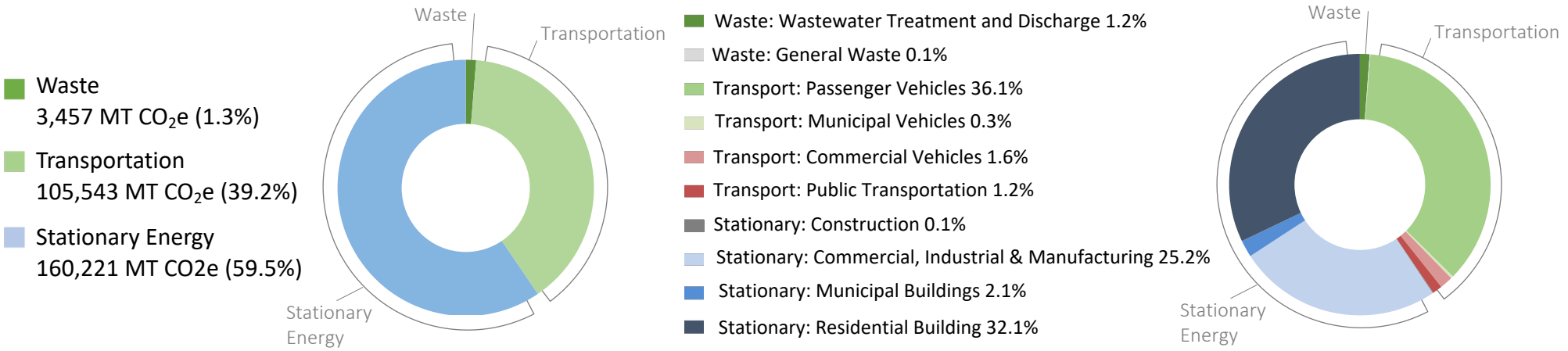


Figure 2: Overview of Community-wide Emissions by Sectors (left), and Breakdown of GHG Emissions by Subsectors (right))

[2] The City's 2017 Inventory was developed using MAPC's Community Greenhouse Gas (GHG) Emissions Inventory Tool. At the time of the development of this inventory, the most complete year of available statewide data was 2017.

[3] As an illustrative tool, it was calculated that it would take 56 wind turbines to offset the entirety of Gloucester's Green House Gas Emissions in the City's 2017 profile using the EPA's Greenhouse Gas Equivalencies Calculator Tool.

Key takeaways from the City's emissions inventory include:

- Almost 60% of the City's total GHG emissions came from the stationary energy sector. The remaining 39% derived from transportation. Only slightly more than 1% came from waste.
- Within the stationary energy sector: residential buildings account for the majority of emissions. Most residential building emissions came from fuel oil, followed by natural gas, and electricity.
- Within the transportation sector: passenger vehicle trips account for the majority of emissions. Public transportation accounts for just over 1% of GHG emissions in this sector.
- A little less than 5% of the City's total GHG emissions came from municipal and public service operations, including public transit, municipal facilities, and waste, as can be seen in Figure 3.

It should be noted that while the 2017 GHG inventory covers most of the largest sources of emissions in Gloucester, there are a few gaps in what is included in the analysis. Areas that are not addressed are the carbon capture and storage benefits of the City's natural assets (e.g., trees, wetlands, and soils), the renewable energy offsets, including from the two wind turbines. The emissions inventory also did not consider emissions from the impact of aviation and marine transport.

Who's responsible for emissions in Gloucester?

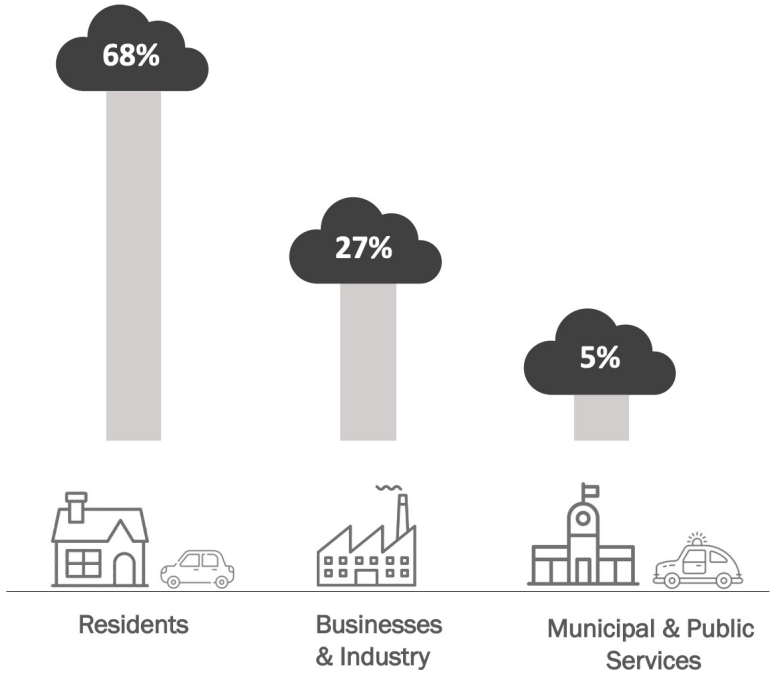


Figure 3: Emissions by Community Segment

It's an all-hands-on-deck situation! Meaning all of us—municipal staff, residents, and businesses—must collectively take action and make better choices to reduce the City's carbon footprint. The majority of Gloucester's GHG emissions came from residents' homes and vehicles, nearly a third came from businesses and industry, and the remaining portion, just 5%, came from municipal operations.

Climate Vulnerability and Resilience

Like many coastal communities across the Commonwealth, the City of Gloucester is experiencing climate change conditions such as sea level rise, coastal flooding, increased frequency and severity of extreme weather events, as well as increased temperatures and fire threats.

The City has taken significant steps towards understanding this heightened vulnerability, including an initial 2015 Coastal Climate Change and Vulnerability Assessment and Adaption Plan, 2018 Municipal Vulnerability Preparedness (MVP) planning, and a 2019 Watershed and Water Supply Vulnerability and Management Strategy. The City will continue participating in regional conversations on the latest climate change data, trends, and implications, such as the rapid warming of the Gulf of Maine, to better prepare and plan for the future.

Gloucester's **Water Supply Vulnerability and Management Strategy** built on the City's past planning efforts to identify potential climate change-related risks to the water supply and watersheds. The study found that further climate trends are not likely to reduce the currently high levels of water supply reliability, but operational changes may be needed to ensure that the water is in the right place at the right time. These operational changes should also consider that future wildfires, compounded by intense precipitation events and warmer temperatures, may increase erosion into the City's reservoirs.

Community Workshop
2018 MVP planning

During the City's Community Resilience Building Workshop, as part of the state's **Municipal Vulnerability Preparedness (MVP)** grant program, participants across the City further identified the direct climate change impacts that residents have begun to see in their own neighborhoods. From the workshops, coastal flooding, storm surge and sea level rise were identified as the top hazards by the participants. Extreme weather events in the form of winter storms, snow, high winds, extreme heat, fire, and drought were also mentioned frequently. According to workshop participants, these hazards are already having a direct impact on several natural areas, roads, and critical facilities within the City. Several areas were identified as highly vulnerable to these hazards:

- **Neighborhoods:** Inner Harbor, parts of Downtown, East Gloucester, Back Shore, Riverdale, and Lanesville
- **Ecosystems:** Good Harbor/Wingaersheek/Coffins Beaches, Marshes and Dunes, Annisquam River, and Great Marsh salt marsh
- **Roads:** East Main Street, Rogers Street, Parker Street, Washington Street, Thatcher Road, and Atlantic Road, Eastern Point Boulevard
- **Facilities:** Waste Water Treatment Plant, Thatcher Road and Good Harbor, Goose Cove, Little River Sewage Pump Stations, Transportation, Shelters and Cooling Stations, Nursing Homes, Library and Museums, Schools, Gas Stations, Affordable Housing, Sewage Treatment, Marinas, Hotels, Seawalls, and Parks

The City's **Coastal Climate Change and Vulnerability Assessment** and Adaption Plan included extensive flood modeling that predicted and described the potential future effects to Gloucester's shoreline infrastructure and resources. The study outlined the following changes to Gloucester's coastal landscape:

Projected Major changes from 2011 to 2030:

- Loss of approximately 185 acres of irregularly flooded marsh. This is primarily due to conversion of irregularly flooded marsh (high marsh) to regularly flooded marsh (low marsh), as sea level rises over time. Conversion of high marsh to low marsh is not necessarily a problem, as low marsh still provides a variety of ecosystem services, including habitat and protection from storm surge. Most of these losses occur along the Annisquam River, with big changes in northwest quadrant of the River. Some significant changes also occur to the marsh system landward of Good Harbor Beach.

- Loss of approximately 45 acres of upland area. The loss of upland area due to increasing sea levels occurs primarily along the upper fringes of the Annisquam River. A number of roads and property areas would potentially begin to convert from uplands to wetlands, if allowed to do so.

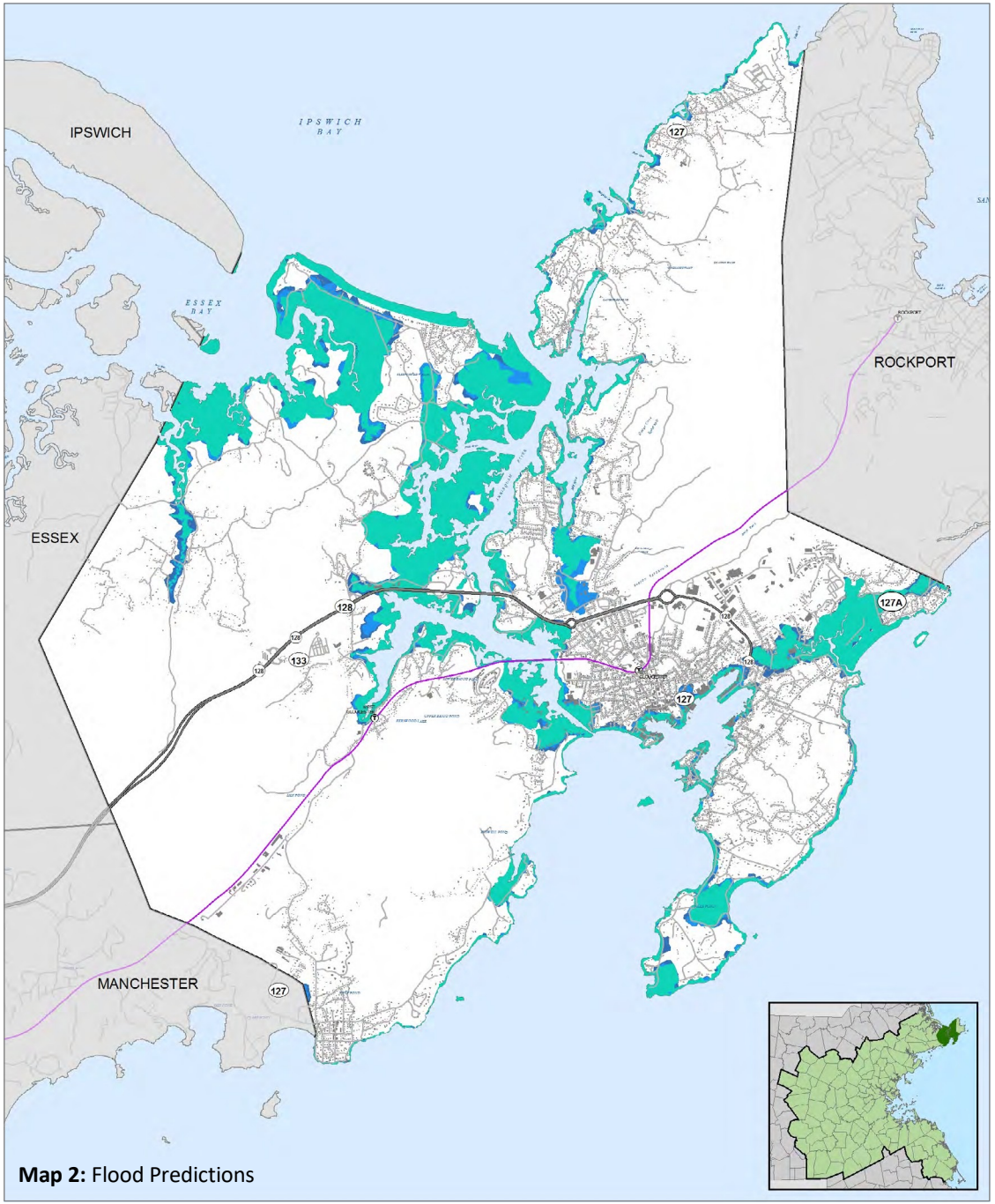
Coastal areas may be at more risk over time
Photo by Remi Muinatu Ibraheem on Unsplash

Projected Major changes from 2030 to 2070:

- Loss of approximately 750 additional acres of irregularly flooded marsh (high marsh). By 2070, the high marsh in Gloucester has been all but eliminated (only 36 acres total remain). The areas will be converted to low marsh, tidal flats, tidal creeks, or estuarine open water. All of the salt marsh systems in Gloucester (Essex Bay, Annisquam River, Good Harbor region) have insignificant high marsh remaining, indicating a breakdown of the diversity in the marsh system.

- Loss of approximately 215 additional acres of upland area. This is due to conversion of uplands to wetlands as sea levels rise over time. Most of the upland area loss occurs in the low lying Annisquam River complex and the Essex Bay area.

The following map demonstrates the projected likelihood and depth of flooding under the sea level rise scenarios at 1.2 feet, 2.4 feet, and 4.2 feet. These projections give a sense of the potential risk and damage to Gloucester's shoreline, existing infrastructure, homes, and their associated costs.



Map 2: Flood Predictions

GLOUCESTER, MA

Coastal Flooding 1% Storm Floodplains Comparison of Future Predictions

Annual Chance of Coastal Flooding

- 1.2ft Mean Sea Level (NAVD88), 1% chance or greater
- 2.4ft Mean Sea Level (NAVD88), 1% chance or greater
- 4.2ft Mean Sea Level (NAVD88), 1% chance or greater

0 0.25 0.5 Miles

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Produced by MAPC Data Services
60 Temple Place, Boston, MA 02111 (617) 451-2770

Data Sources:
Metropolitan Area Planning Council (MAPC)
Massachusetts Geographic Information System (MassGIS)
Northeast States Emergency Consortium (NESEC)
Massachusetts Emergency Management Agency (MEMA)
Federal Emergency Management Agency (FEMA)
Imagery © Google
MC-FRM: MassDOT, UMass Boston, Woods Hole Group (2021)

Building Climate Action and Community Resilience Together

Community members and stakeholders were the driving force behind action identification, with over 500 climate actions suggested by the public at community workshops, stakeholder meetings, and in surveys.

The process of planning for the City's CARP was led by Gloucester's Clean Energy Commission (CEC) in partnership with the City's Community Development Department. What follows is a summary of the planning process, which included setting goals, identifying strategies, and developing implementation blueprints for priority strategies.

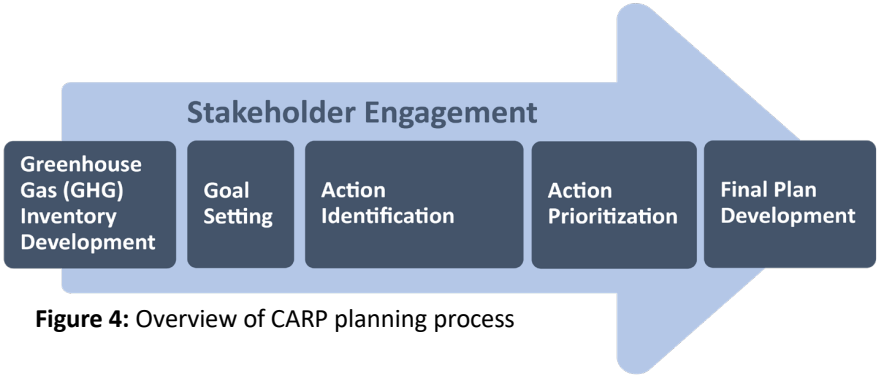


Figure 4: Overview of CARP planning process

Aligning with Massachusetts's Climate Goals

As Gloucester worked with community members to identify its climate goals and priorities, the City also looked to align its efforts with the Commonwealth's recent, Act Creating a Next Generation Roadmap for Massachusetts Climate Policy. This bill codified the State's commitment to reducing GHG emissions, from 45% to 50%, by 2030, and achieving net zero by 2050.

This historic Act also defines Environmental Justice (EJ) populations for the first time in state statute, requires state agencies to develop more robust, equitable outreach and engagement approaches, in addition to implementing policies and programs that better protect EJ communities across Massachusetts.

Other key provisions include authorizing the Administration to implement a new, voluntary energy efficient building code for municipalities, establishing a new opt-in net zero stretch code for municipalities, considering the social cost of carbon in Mass Save program's cost benefit analyses, and allowing the Commonwealth to procure an additional 2,400 Megawatts (MW) of clean, reliable offshore wind energy by 2027, just to name a few.

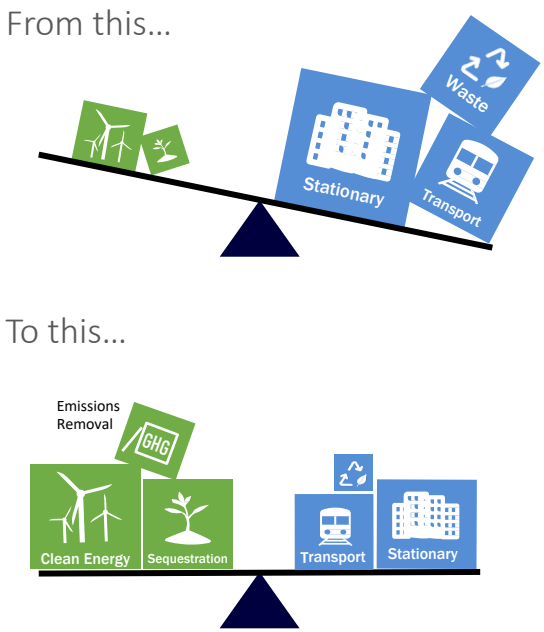


Figure 5: What Net-0 emissions looks like

Guiding Principles

The following guiding principles informed the development of the CARP. They served as the lens through which to evaluate whether a goal or a strategy fit into Gloucester's climate vision.

1. Consider **greenhouse gas emissions reduction** potential within the City and across the region.
2. Enhance **community resilience** by incorporating climate considerations into all decision-making.
3. **Center equity** to ensure equal access and improve accessibility of resources to support Gloucester residents, especially those that are climate vulnerable and historically marginalized members of the community.
4. **Maximize co-benefits** of climate actions that amplify Gloucester residents' quality of life, health and well-being, and priorities.
5. Engage Gloucester residents in climate action **through robust education and communication**.
6. Participate in collaborative regional actions and **advocate for systems change** needed at the federal and state level to meet collective climate goals.

Centering Equity

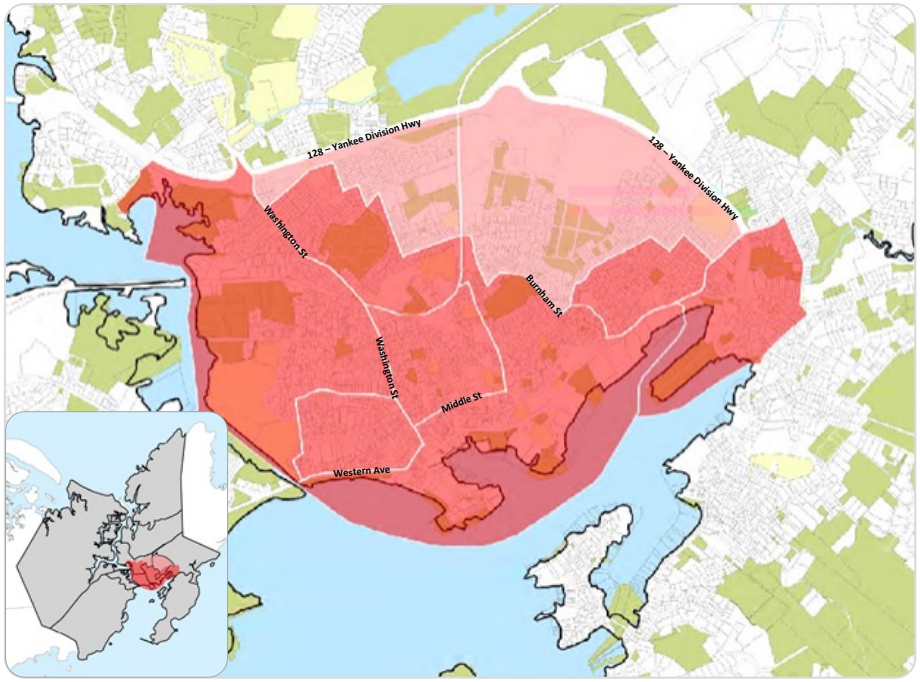
Climate change is an existential challenge, but it is also an opportunity to reimagine Gloucester's future, and to make that future safe, affordable, and equitable for all who live and work in this community.

As the CARP goals and strategies were developed, and as they are implemented, the City of Gloucester seeks to address the following key questions:

Figure 6: Equity assessment questions

Environment Justice Communities

Environmental Justice (EJ) is based on the principle that all people have the right to be protected from environmental pollution and to live in and enjoy a clean, healthy environment. Various forms of discrimination and racism have created long-standing health inequities for people of color and lower-income individuals. These populations have historically been excluded from meaningful participation in decisions that impact their communities' environmental health. People of color and people with limited incomes are more likely to live near toxic waste sites, in areas with high air pollution, and in low-quality housing because of the inequitable distribution of high pollution sites.[4]



Map 3: Environmental Justice Community's in Gloucester Source: Massachusetts Department of Public Health - Bureau of Environmental Health

In Massachusetts, a neighborhood is defined as having an Environmental Justice population if at least one of the following criteria are true:

- ❑ The annual median household income is not more than 65% of the statewide annual median household income;
- ❑ Minorities comprise 40% or more of the population;
- ❑ 25% or more of households lack English language proficiency; or
- ❑ Minorities comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income.

The annual median household income is not more than 65% of the statewide annual median household income

Minorities comprise 40% or more of the population and the annual median household income is not more than 65% of the statewide annual median household income

[4]Massachusetts Department of Public Health - Bureau of Environmental Health, Mass Tracking: Environmental Justice https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html

Community Survey

The CARP survey garnered 382 responses from a broad demographic distributed throughout the community. Map 3 breaks down the survey participation across Gloucester's neighborhoods/ wards, showing a fairly even geographic spread. Most respondents to the survey were long-time Gloucester residents, with 71% of respondents reporting that they have lived in Gloucester for over 10 years.[5] This may be linked to the type of living arrangements reported by most respondents, the majority of which, 73%, were homeowners. This is slightly below the actual demographic breakdown in the City, suggesting that outreach to renters in Gloucester will be an important part of equitable implementation.

Although respondents to the CARP survey may be somewhat self- selecting – i.e. those who are worried about the impact of climate change are more likely to respond to a survey about climate change, the overwhelming majority of respondents, 82%, ranked their concern about climate change higher than 5 out of 10. Even more impactful, 48% of respondents ranked their concern at 10 out of 10. Opinions about how quickly society needs to act to address climate change followed similar patterns – suggesting that, not only are participants worried about climate change, they are worried about it in the near term.

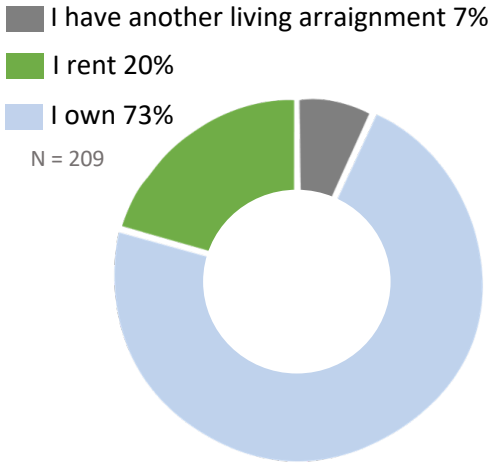
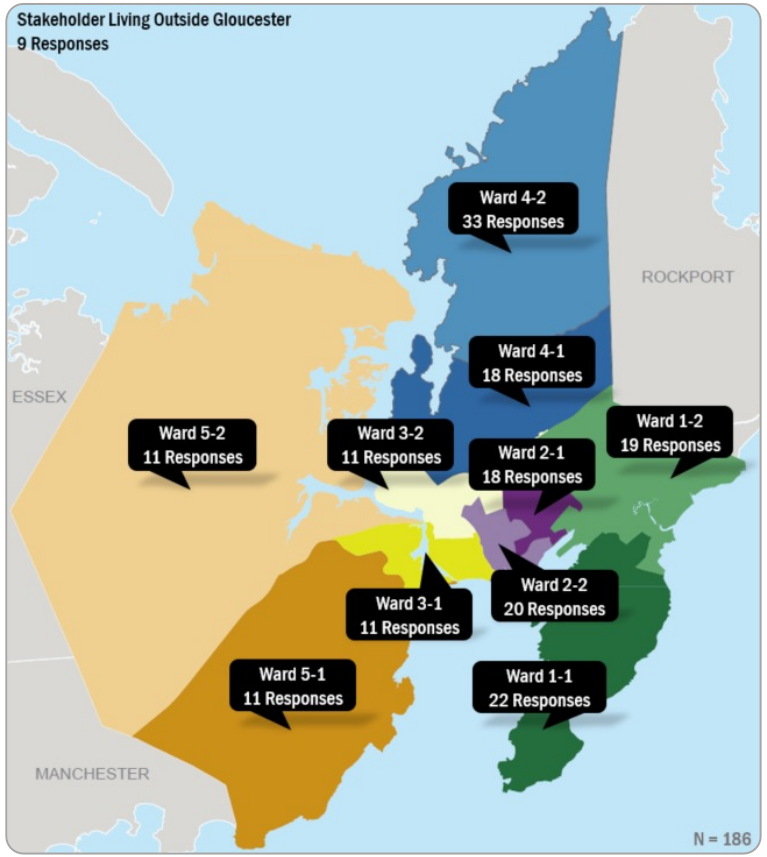


Figure 9: Survey respondents by living arrangements



Map 4: Survey Responses by Ward

Generally, survey participants shared similar concerns regarding climate change, recognizing the increased frequency and intensity of harsh weather conditions such as extreme storm events, heatwaves, and flooding. They also realize other external implications associated with climate change such as rising cost of living, public health issues, and a range of environmental issues. Figure 10 breaks down the top concerns of residents regarding climate change impacts.

[5] Survey questions about demographics were optional.

Most Important to Respondents About Climate Change

22% More severe weather events and impacts (storms, flooding, heat waves, wildfires, etc.)

21% Impacts to environmental/natural resources (invasive species, risk to local trees, water quantity and quality, etc.)

17% Rising cost of living (food, utility, bills, transportation, etc.)

17% Rise in pubic health issues (insect-borne diseases, heat-related illnesses, displacement, etc.)

Figure 10: Survey respondents' top concerns related to climate change

In terms of how the City should address climate change, survey results demonstrated a strong interest in seeing the City advocate to state, federal, and regional organizations for wider change. Respondents further preferred actions related to how the City regulates land use and development. Respondents strongly advocated for protecting Gloucester's natural resources and increasing green space in the City. 57% of respondents reported wanting to minimize new development in the flood zone, and 57% reported wanting to incorporate green building requirements for new developments.

The support for these regulatory types of actions underscores the importance of garnering community backing and political support as part of implementation — any change to the City's ordinances or laws will be accomplished through a City Council process with constituent support.

Top Actions Considered as High Priority in Gloucester

57%
Minimize new residential development in high flood risk areas

70%
Protect natural resources and increase green space

64%
Advocate to state and federal lawmakers for climate funding and policies

57%
Incorporate green building requirements for new development

Figure 11: Survey respondents' top selection of high priority climate action.

Community Workshops

The City's CARP represents the collective efforts of City residents, stakeholders, experts, municipal staff, and community organizations. Direct input on how community members envision a more sustainable and climate resilient Gloucester was the driving force behind action identification. The City is deeply grateful for the time and energy expended by Gloucester residents and stakeholders, which made this Plan possible.

The City hosted four virtual workshops at key development phases of the planning effort to ensure community input was central at each progression point.

Planning Kick-Off
Wednesday, November 17, 2021

Goal Development
Wednesday, February 2, 2022

Strategy Identification
Thursday, February 24, 2022

Strategy Evaluation and Prioritization
Thursday, March 31, 2022

Planning Kick-Off: What Does Gloucester Look Like in 2050?

For the CARP's first community-wide activity, community members were asked to "send" a postcard from their future selves describing what Gloucester looks like in 2050." Responses reflected some of the concerns, hopes, perspectives and priorities with regard to making Gloucester a more sustainable and climate resilient community. Some common themes included:

- Many responses expressed anxiety about the impacts of sea level rise and storm surge.
- Some postcards pictured a City with more reliable and inter-connected energy sources (such as microgrids) that tie together various renewable options from wind, to solar, to new technologies that have yet to be explored.
- Fishing was also a theme — several postcards envisioned an active fishing community that practices sustainable fishing methods and utilizes energy efficient boats and equipment.
- With support from the City, many participants hoped that all Gloucester residents will to be able to transition to having low carbon or zero emissions homes.
- Participants also pictured electrified public transit and a pleasant, walkable environment to make getting around more sustainable and enjoyable.
- Many also imagined that natural systems in the community are protected and restored.
- Finally, it was a common theme to describe a future where everyone in Gloucester is informed and aware of climate issues through a robust community-wide education and outreach program.

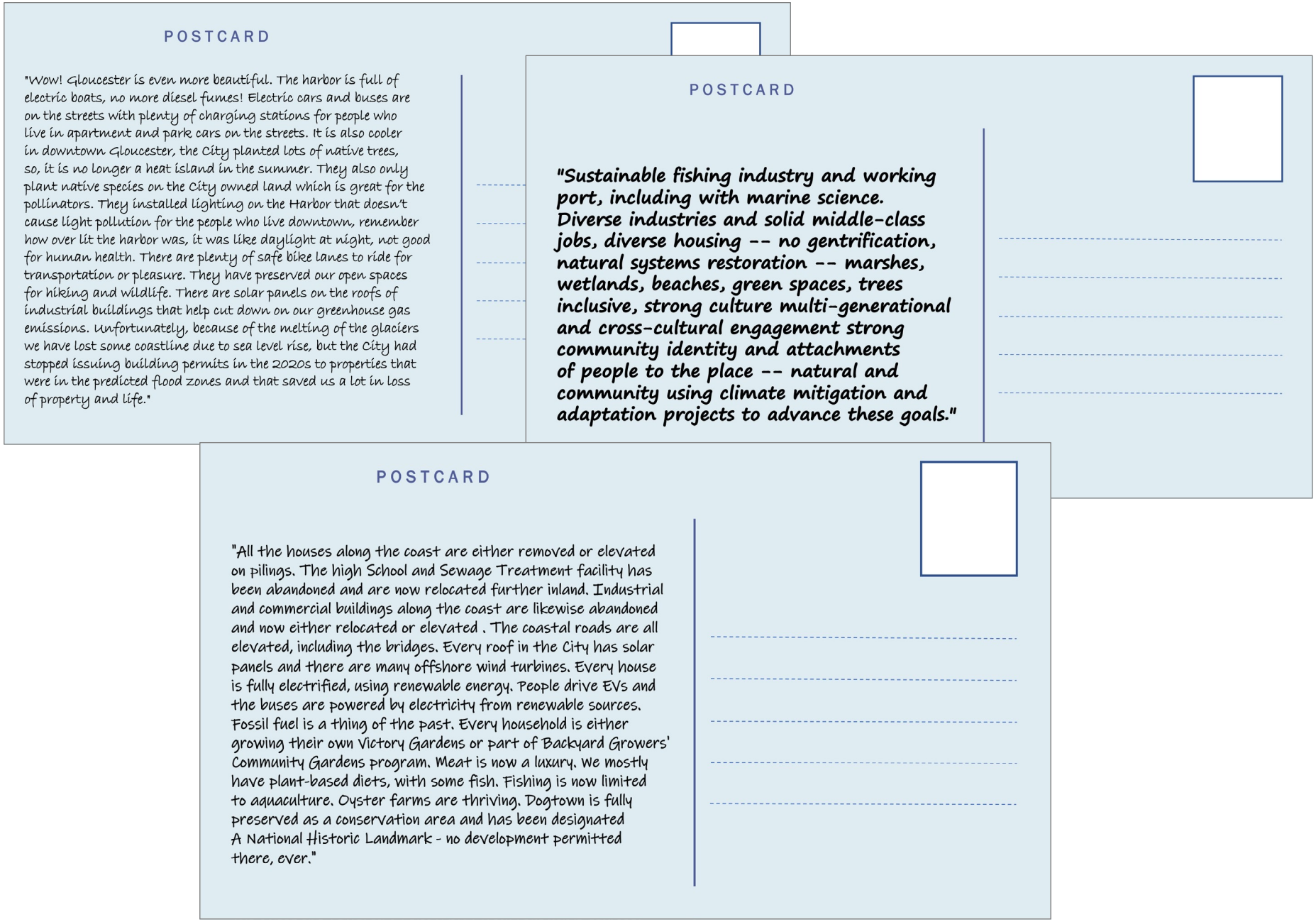


Figure 7: Examples of visioning postcards created by Gloucester community members.

Goal Development: Jamboard Activity

At the CARP's second workshop, the results of the City's GHG Emissions Inventory were shared and contextualized. The community was also introduced to the seven focus areas of the CARP Plan. In breakout groups, participants were asked to consider goals within each category. Facilitators noted goals on virtual sticky notes. These notes were used to develop the final set of goals outlined in this Plan.

Strategy Identification: Speakers and Discussion

The second workshop was focused on identifying tangible climate actions. To help the community do this, several state, local and national organizations from all facets of the climate action community, graciously answered an invitation to present. These organizations spanned several topics including CATA sharing their work and services, the Department of Environmental Protection's RecyclingWorks, Energy Efficiency Programs through Action Inc., Nature-based Solutions through the Nature Conservancy, Zoning and Permitting ideas, Health Impacts and Resilience, and Mobility Strategies through MAPC. In breakout participants were asked to describe what strategies they thought would be most important for Gloucester. All strategies suggested at this event, as well as other sources such as the survey, were compiled into a preliminary set of strategies.

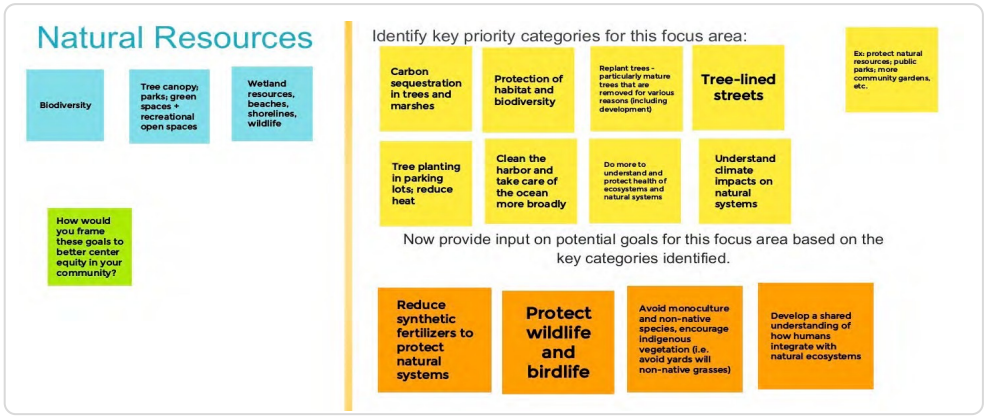


Figure 8: Examples of sticky note activity pages

Strategy Evaluation, and Prioritization: Speakers and Discussion

At the final community workshop residents were again asked to suggest strategies. In this round of outreach, however, participants were also shown the preliminary strategies generated from the previous meeting. Based on these preliminary strategies, participants were asked to fill in missing strategies and highlight high priority strategies. This put resident input at the center of action identification.

Stakeholder Meetings

The City conducted several stakeholder meetings with local organizations and departments within the City. These included:

- ✓ Action Inc.
- ✓ Gloucester Housing Authority
- ✓ The Greater Cape Ann Chamber of Commerce
- ✓ CATA
- ✓ The Open Door
- ✓ Fishing Industry Representatives
- ✓ Cape Ann Climate Coalition
- ✓ TownGreen2025
- ✓ Engineering Department
- ✓ Building Department
- ✓ Health Department
- ✓ Conservation Department

Community Engagement Interns

The City employed two community engagement interns as part of this planning effort. The community engagement interns were able to get out into the community, help generate ideas, make connections, and reach stakeholders who may not traditionally engaged in the City's planning efforts.

Mila Barry, 2021 Gloucester High School graduate and current Harvard student

"Climate change is a vast and complex issue, so getting involved can feel really intimidating. My goal as an intern is to make it easier for Gloucester residents to identify small, meaningful steps they can take to educate themselves and make climate conscious decisions."

Cammi Cooper, 2022 Gloucester High School graduate

"Climate change is an issue I have been passionate about for quite some time now, and I plan to further study environmental issues in college. As an intern my goal was to make it accessible for Gloucester residents to voice their input and concerns for climate change in our City."

Meeting-In-A-Box Pilot

A new effort piloted as part of this planning process was Meeting-In-A-Box. This is an outreach strategy that leverages local networks to get input from residents. Interested local organizations were invited to have a representative attend a training session where they learned how to run an action identification workshop in their own group. The City's community engagement interns also supported facilitation by local organization volunteers. Meetings at Gloucester High School, the Annisquam Village Church, and SeniorCare Inc. brought new voices to the table and highlighted the specific needs of these populations.

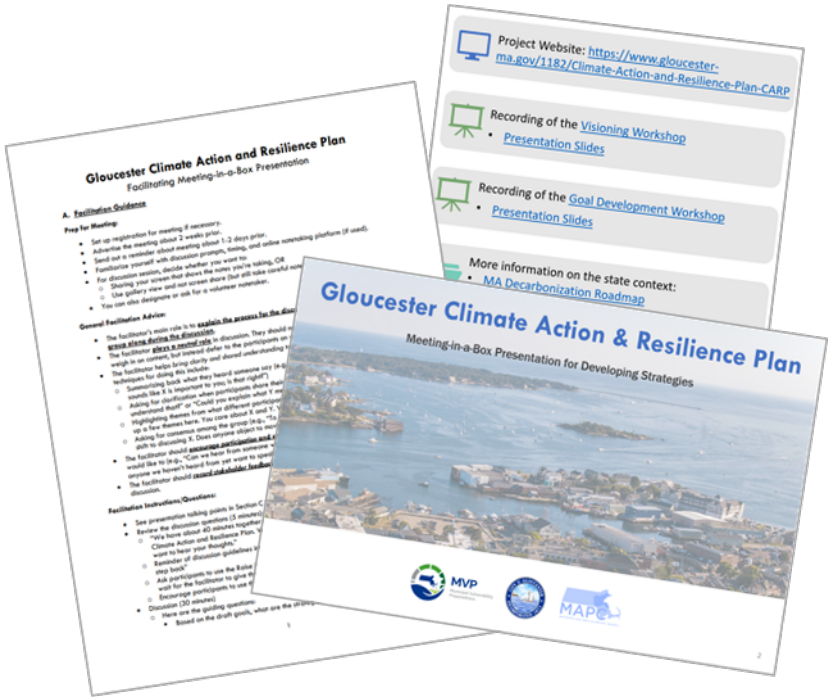


Figure 12: Meeting-In-A-Box Materials

Reaching Out to Youth

Typically the most difficult population, by age, to reach in Gloucester is those under 30. Special care was taken in this planning effort to include youth voices. One engagement intern position was reserved to be filled by a Gloucester High School student who acted as an ambassador to Gloucester High School's principal, students, and teachers. Some outreach strategies specifically targeted at youth included:

- Post flyers at GHS
- Articles in the Gillnetter (school newspaper
- Post links on Google classroom
- Create a climate action bulletin board at the high school
- Offer National Honors Society students volunteer hours to participated in community workshops
- Leverage social media – particularly Instagram

As a result of these strategies, almost a quarter of survey respondents were under the age of 18, a significant amount of youth engagement in local City planning.

Other strategies were employed to reach out to young families and young adults, in the 25–35 age range. One example was reaching out to local Parent Teacher Organizations (PTO). These strategies improved participation compared to previous efforts. However, this age range continues to be a challenging population to reach and will be an important demographic to target as part of implementation.

Continuing to Reach Out

Main Street Block Party

Throughout the CARP planning process, the City aimed to foster an inclusive engagement with residents, businesses, and community-based organizations across sectors. The work of addressing climate change in Gloucester is just beginning. It will require an engaged, well informed, and well-resourced public.

Ongoing community engagement beyond this planning effort will be key to ensure that identified actions are effectively implemented and that everyone in the community has a say in Gloucester's climate resilient future.

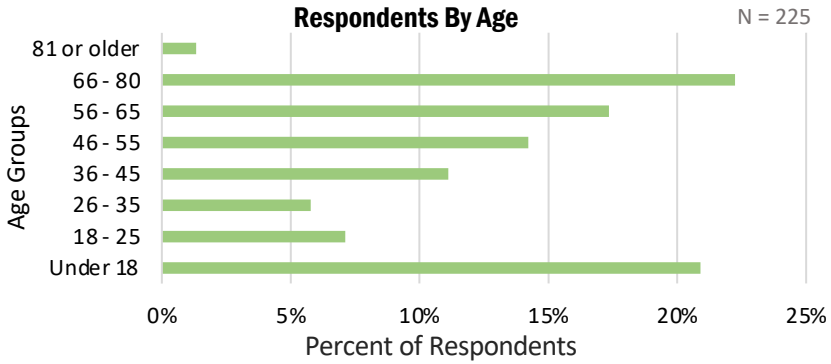


Figure 13: Survey respondents by age groups

Gloucester's Climate Action and Resilience Goals and Strategies

Climate actions intersect with many facets of life, from the built environment, infrastructure that keeps the City running, to public health, the economy, and the natural world.

As such, the CARP's goals and strategies are organized into seven planning areas:

Buildings

Infrastructure

Energy

Natural Resources

Solid Waste Resources

Mobility

Social Resilience

Goal and Action Setting:

Based on Gloucester's climate planning efforts to date, as well as input from municipal staff and community members, the CARP goals are designed to be bold, but also realistic, to guide the City's mitigation and resilience efforts going forward. These goals also align with current state goals and targets to achieve net zero and enhance community resilience.

Implementation Strategy Development:

The City strived to develop CARP strategies that encompass many interconnecting benefits: environmental, social, and economic. It is important to make sure the prioritized climate actions have the maximum co-benefits realized – not only to address climate change issues but also protect and improve Gloucester's natural resources and enhance the community's public health, well-being, and quality of life.

Spheres of Influence

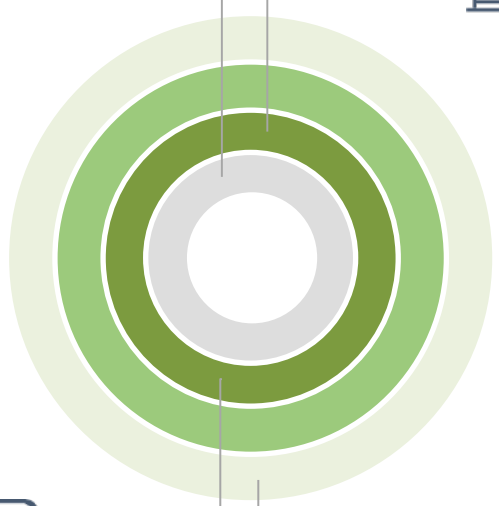
To demonstrate how Gloucester plans on achieving its climate goals, this Plan also identifies the realm of influence of each strategy. This allowed each goal to define more clearly what the City's role looks like moving actions forward. All CARP strategies are organized into the following "Sphere of Influence" categories:

City

Strategies organized under this sphere of influence are those that the City can lead and advance by leveraging grant funding sources, community partnerships, and other resources at the City's direct disposal. These strategies include enhancing municipal staff and organizational capacity, upgrades to municipal facilities/ infrastructure, management of public spaces, coordination of local community organizations, and safety initiatives.

City Ordinances or By-Laws

Strategies organized under this sphere of influence involve changes to the current City ordinances, by-laws, or policies that must be passed by the City Council or another City Boards or Commissions. These strategies require political support from community members and elected officials. The role of the City in these strategies is to provide technical support and to initiate a legislative process at the appropriate governmental level.



Residents/Businesses

Strategies organized under this sphere of influence are those that individual residents, businesses, and landlords can take to contribute to community-wide climate efforts. For example, installation of rooftop solar, home composting, energy efficiency updates, switching to an EV, taking public transit, and more. The City's role in implementing these strategies will be to provide technical and financial assistance that promotes and encourages adoption by the public.

State/Federal/Regional

Strategies organized under this sphere of influence involve City staff and elected officials leveraging opportunities to advocate for regulatory changes at the regional, state, and federal level.

Figure 14: Sphere of Influence

Implementation Blueprints for Priority Strategies

The following section presents implementation details for select priority strategies. These strategies were considered as priorities based on input and feedback from the CEC and from community input in CARP workshops. These implementation details will help City staff put the plan into action.

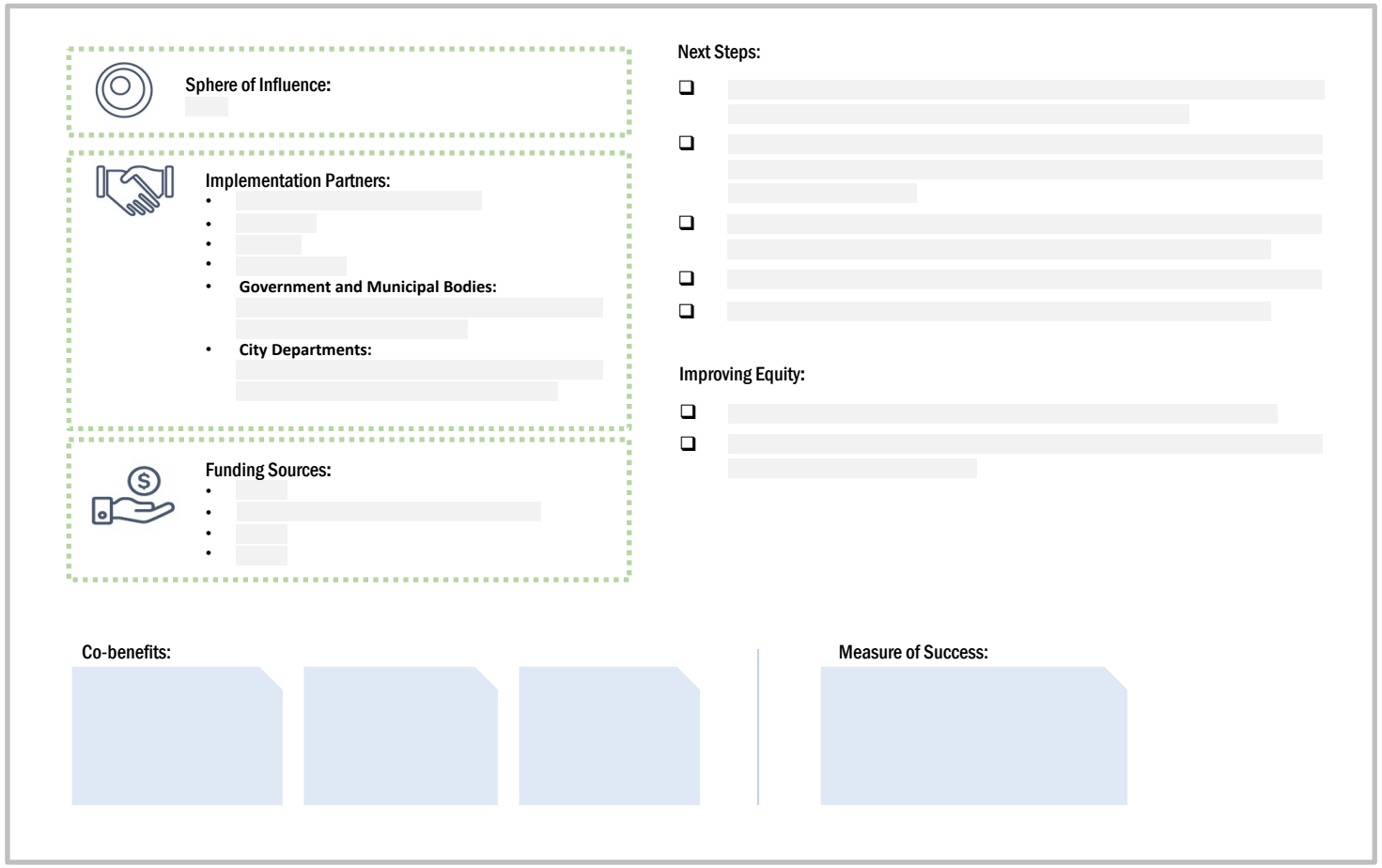


Figure 15: How to read a Strategy Implementation Blueprint

Buildings

Examples of building decarbonization measures include energy efficiency upgrades, transitioning to electrification (in both existing buildings and new construction), and incorporation of on-site renewable energy sources (where feasible). These types of actions are critical to scale up significant emissions reduction across the City. Particularly in flood-prone areas buildings should also be retrofitted or constructed to withstand climate change impacts. Improvements to buildings can have benefits in operational cost savings and occupants' health and comfort.

When considering how to move forward in retrofitting and updating the community's building stock for a clean-energy future, special care will need to be given to equity, in particular the impact on housing cost. Through a combination of technical assistance and incentives the City can ensure that Gloucester's residents benefit from the energy cost savings, economic development, and quality of life improvements associated with updates, rather than being burdened by them.

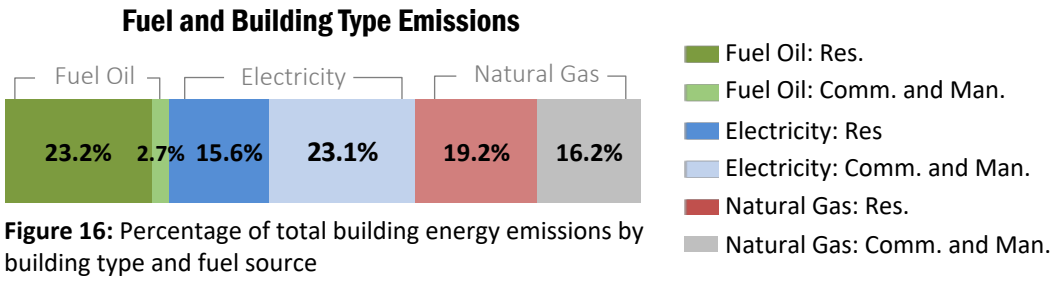


Figure 16: Percentage of total building energy emissions by building type and fuel source

Goals

1. Commercial and residential buildings in Gloucester are retrofitted and built to be energy efficient, resilient, and utilize renewable energy.
2. Major renovations and new constructions meet net zero energy building performance methods.
3. Major renovations and new constructions integrate climate resilience and adaptive reuse measures in their design, construction, and operations and maintenance.
4. The transition to building electrification and decarbonization include sufficient technical and financial resources to ensure the needs of those most impacted by climate change issues (e.g., vulnerable populations, EJ communities, low-income residents, etc.) are at the forefront.

As noted in the 2017 GHG Emissions Inventory findings, buildings in Gloucester represent nearly 60% of the City's overall emissions and are therefore the greatest opportunity to address climate change. Particularly, 54% of the stationary energy sector's emissions come from residential buildings.

The major energy sources for buildings in Gloucester are fuel oil and natural gas. As shown below, Figure 14, the majority of residential buildings' emissions come from fuel oil, followed by natural gas, and electricity.

What's been done so far?

Green Communities. Gloucester is leading the way by ensuring that City facilities are energy efficient. The City was one of the first communities in the state to achieve Green Communities Designation in 2010. At that time, the City adopted the States Stretch Energy Code. By becoming a Green Community, Gloucester has been awarded grants that help fund various energy conservation projects. To date, the City has invested over 1 million dollars into energy efficiency updates at municipal facilities.

Gloucester Energy Challenge. The Gloucester Energy Challenge Encourages residents to make home energy efficiency upgrades. The City's goal is to insulate more than 200 homes and upgrade more than 200 HVAC systems across Gloucester, reducing energy costs and emissions in the Gloucester community.

Take Climate Action Today

Schedule your assessment or energy efficiency upgrades now by calling (781) 305-3319 or visiting HomeWorksEnergy.com/Gloucester.

If you qualify as low-income, you could receive additional benefits at no-cost through Action Inc. Find out more at MassSave.com/Gloucester or calling (351) 529-6372 for voice prompts.

Follow Innovate Gloucester for more ways to take climate action:

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Harbor Village, North Shore CDC

Regional Highlight: Harbor Village

The North Shore Community Development Corporation was awarded a $120,000 grant from the Massachusetts Clean Energy Center (MassCEC) and built a 30-unit affordable housing development in Gloucester.[6]

The building, Harbor Village, has high efficiency units which help improve air quality indoors, lower energy costs for residents, and provide other day to day benefits. The property has energy efficient heat pumps for its heating and cooling needs, as well as lighting and appliances that all have an EnergyStar certification.

Visit NorthShoreCDC.org for more details.

[6] MassCEC Passive House: https://www.masscec.com/program/passive-house-design-challenge

Home energy assessment, HomeWorks.

Regional Highlight: Home Energy Assessments

The Melrose Energy Commission has been providing residents with free home energy assessments. They've been able to do this through a partnership with HomeWorks Energy, the largest home performance contractor in the state that partners with the Mass Save program.[7] Melrose has had over 3,500 of their residents take advantage of this service, who are now seeing many of the benefits, such as saving energy in their homes and lowering their energy costs.

Check out MelroseEnergy.org/Residential for more details.

[7] HomeWorks Energy: https://www.omeworksenergy.com/

Climate Zoning. The City of Gloucester has been working collaboratively with the Town of Winthrop and MAPC to workshop, and learn from one another, regarding the implementation of climate-smart zoning tools. The goal of this informal relationship is to integrate climate resilience and mitigation into local zoning codes, policies, and processes in a way that is adapted to the specific community needs of a coastal City.

Figure 17: Changes to Zoning can encourage developers to take steps to protect their property from future flood impacts. For example, requiring an applicant to understand their future flood insurance premiums might lead to more development that takes advantage of freeboard or other flood resilient building techniques. Image Source: Mass.gov

Key Limitations. At the time of the publishing of this plan the state statutes restricts most municipalities from unilaterally imposing additional local restrictions on the building inspector's statutory obligation to issue building permits; this includes restricting municipalities from banning fossil fuel uses in building construction. New state law now makes an allowance for 10 communities to pilot fossil fuel bans. Gloucester, however, is not likely to meet several thresholds established as part of the new law in order to be eligible

Despite these limitations on local municipal regulatory powers, there are several strategies the City can employ to reduce the impact of emissions from building construction. This includes adoption of the new State stretch code when it becomes effective, provisions in City ordinances that require developers to evaluate clean building strategies, incentives for developers employing clean building strategies, and general outreach and education within Gloucester's local development community.

B1 Work with affordable housing developers and landlords to ensure affordable housing units are implementing high-performance building standards, including feasibility to transition from gas hook-up and incorporate on-site renewable energy technologies.

Sphere of Influence:
City

Implementation Partners:
- Gloucester Housing Authority
- Action Inc.
- YMCA
- North Shore CDC
- **Government and Municipal Bodies:** Mayor's Office, Affordable Housing Trust, City Council, Community Preservation Committee, Clean Energy Commission
- **City Departments:** Community Development (Housing Rehab, HOME, CDBG), Planning, Building, Engineering

Funding Sources:
- HUD
- Gloucester Affordable Housing Trust
- CDBG

Next Steps:

- ❑ Work with the Affordable Housing Trust to ensure they are prioritizing support for developments that use high-performance building standards.
- ❑ Continue to ensure that the City's Affordable Housing Trust is connected to reliable funding sources.
- ❑ Work with Gloucester's Housing Rehab program to encourage the use of high-performance building methods, taking advantage of existing incentives, and educating developers.
- ❑ Work with the Gloucester Housing Authority to support implementation of their energy efficiency goals.
- ❑ Partner with a willing developer to pilot an affordable high-efficiency low-income housing development.

Improving Equity:

- ❑ Host focus groups with current low-income households and renters
- ❑ Ensure sustainable land use practices, access to green spaces, and improve infrastructure for bikes and pedestrians as part of new developments, in addition to high performance building standards
- ❑ Provide training to building occupants on building technologies for long-term operations and maintenance.

Co-benefits:

- Improve building occupants' wellbeing, comfort, and safety
- Reduce long-term operational costs for building owners and occupants
- Improve building resiliency to extreme weather conditions

Measure of Success:

Number of new affordable housing units constructed or rehabilitated that incorporate high-performance building methods

B2 Develop guidance for new construction and major renovations, including standards for a high-performance building design (i.e. LEED, net zero) and incorporating climate resilience measures into practices.

Sphere of Influence:
Residents/Businesses

Implementation Partners:

- Gloucester development community
- Greater Cape Ann Chamber of Commerce
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** Clean Energy Commission, Planning Board, Conservation Commission, Board of Health, Mayor's Office
- **City Departments:** Building, Planning, Engineering, Conservation, Community Development (Housing Rehab, HOME, CDBG, First Time Home Buyers)

Funding Sources:

- MassDEP
- MassCEC
- Department of Energy Resources (DOER)
- National Grid

Next Steps:

- ❑ Establish a multi-department/stakeholder working group to facilitate discussion around feasibility and best practices.
- ❑ Determine the potential need for incentives to support developer acceptance (i.e. expedited permitting).
- ❑ Develop a go-to resources page with best practices, case studies, and available guidance relating to high performance building designs including use of electric tools, recycled building materials and C&D waste reduction.
- ❑ Host informational sessions and/or trainings for municipal staff and developers to increase understanding.
- ❑ Improve professional development opportunities for City inspectors.

Improving Equity:

- ❑ Consider incentives structures that prioritize affordable units.

Co-benefits:

- Improved indoor air quality, building occupants' health and comfort
- Reduced operational costs for retrofitted or new buildings
- Increased access to renewable energy through on-site generation

Measure of Success:

- Increased adoption of high-performance building design methods

B3 Restrict residential development in flood zones and create guidelines for additional areas prone to flooding or expected to see further flooding in the future.

Sphere of Influence:
City Ordinances or Regulations

Implementation Partners:
- Coastal residents
- Gloucester development community
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** City Council, Planning Board, Conservation Commission, Open Space and Recreation Committee, Mayor's Office
- **City Departments:** Planning, Conservation, Building, Public Safety

Funding Sources:
- Executive Office of Energy and Environmental Affairs (EEA)
- District Local Technical Assistance (DLTA)

Next Steps:

- ❑ Develop a comprehensive list of all potential department procedures, regulations, and ordinances to be reviewed (as well as the scope and status of any recent updates) and identify opportunities to incorporate resiliency measures into these documents.
- ❑ Prioritize key zoning procedures, regulations or bylaws to be updated, and establish a timeline and process for implementation (including assigned implementation leads).
- ❑ Communicate key changes to the zoning and permitting requirements; and host a public review process for proposed revisions
- ❑ Create a climate resilience checklist for all proposed developments undergoing the permitting process.

Improving Equity:

- ❑ Take steps to identify vulnerable populations that may live in impacted areas, to ensure they are informed and a part of decision making.

Co-benefits:

Reducing potential economic loss associated with climate change impacts to the City (tax revenues) and residents (cost to repair/ relocate)

Reduce the risk to public safety officials by mitigating potential hazards.[8]

Preserve natural resources like coastal dunes and wetlands that can absorb flooding/storm surge and protect adjacent infrastructure and homes.

Measure of Success:

Reduced number of flood insurance claims for residential homes

[8] https://www.mass.gov/info-details/flood-safety-tips#flood-watches-and-warnings-

Additional Strategies Identified for Buildings

Strategy	Realm of Influence
B4 Continue and build further capacity to provide information and assistance to businesses, landlords, and residents (homeowners and renters) in applying for grants, technical assistance, and utilities incentives to make energy efficiency updates (Mass Save, the Property Assessed Clean Energy (PACE) program, and similar initiatives).	Residents/Businesses
B5 Require new construction and major renovations to conduct energy efficiency, renewable energy feasibility, and a flood vulnerability assessment as part of permitting requirements.	City Ordinance or Regulations
B6 Consider adopting the state's specialized opt-in stretch code when it becomes effective.	City Ordinance or Regulations
B7 Developing a carbon emissions performance standard for existing buildings to reduce GHG emissions overtime.	City Ordinance or Regulations
B8 Develop an educational program to raise awareness regarding indoor building's health and safety issues.	Residents/Businesses
B9 Review and revise existing requirements, in addition to exploring incentives, to advance energy efficient, resilient building performance measures. Ensure that these programs do not negatively impact the cost of living for renters.	City Ordinance or Regulations
B10 Partner with community groups to target information about grants, technical assistance, and utilities incentives to low-income, non-English speakers, and elderly populations.	Residents/Businesses
B11 Advocate for more funding and/or finance mechanisms for electrification of residential heating and cooling efforts.	State/Federal/Regional
B12 Retro-commissioning and energy efficiency improvements that maximize renewable energy use and efficiency in all municipal buildings and facilities.	City
B13 Developing a carbon emissions performance standard for existing buildings to reduce GHG emissions overtime.	City Ordinance or Regulations

Energy

Tying closely to the improvements of building performance, transitioning to clean, renewable energy, as well as having a reliable energy system is critical to reducing Gloucester's GHG emissions. The electrification of cars and home heating and cooking equipment is key to achieving net zero – both in Gloucester and contributing to the state's overall goal of becoming carbon neutral by 2050.

Photo by Vivint on Unsplash

Goals

1. Energy consumption (e.g., building HVAC, transportation) in Gloucester is supplied from fossil-fuel free, renewable, reliable, and affordable sources.
2. All municipal electricity consumed in Gloucester will come from or be offset by renewable energy sources.
3. The City participates in regional collaboration to support state legislation and policies to decarbonize the region's electricity.

What's been done so far?

Renewables Development. In 2011 the City permitted a two-turbine 4MW renewable energy project proposed by Equity Industrial Partners LLC, located in the Blackburn Business Park. After permitting the project, the City successfully negotiated a Power Purchase Agreement with the operator of the project, Equity Industrial Turbines LLC. Under the agreement, a substantial portion of the City's electricity is purchased from this highly local renewable energy source at a discounted rate. The two turbines currently offset approximately 85% of Gloucester's municipal electricity demand (data updated as of May 2022).

Wikimedia, CC 3.0. Work attributed to user Fletcher6

Clean Energy Commission (CEC). The City established the Clean Energy Commission (CEC) in 2009 to promote clean energy options in Gloucester including energy efficiency, conservation, and the development of clean and renewable energy sources.

Community Aggregation. Since 2018, the City of Gloucester offers a Community ElectriCity Aggregation (CEA) Program, which has demonstrated to be highly impactful in reducing emissions from electricity. This program uses bulk purchasing power to offer residents and businesses an unobtrusive path to renewable, local electricity sources. Community members pay fixed, competitive rates by purchasing power together, and support the local clean energy economy. All National Grid accounts in Gloucester are automatically enrolled in the default program, which provides 10% renewable energy.

Figure 18: How CEA works

Take Climate Action Today

Gloucester residents and small businesses can easily switch over to the City's 100% renewable energy option – you'll still receive a single utility bill each month from National Grid. Compare prices and sign up for the 100% energy option at gloucester-cea.com

Follow Innovate Gloucester for more ways to take climate action:

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Green Justice Coalition

Regional Highlight: Chelsea Microgrid

In partnership with Resilient Urban Neighborhoods (RUN) and the Green Justice Coalition (GJC), the City of Chelsea and Boston's Chinatown have been working to develop community microgrids for residential neighborhoods in the City of Chelsea and Boston's Chinatown since 2016. What makes this effort special is its collaboration with local community leadership, from identifying these communities' needs and priorities to incorporating their input into the microgrid model design. The community leaders also serve as the project leaders.

Visit greenjusticecoalition.org/blog/community_microgrids-2/ for more details.

E1 Ensure designated shelters and facilities used for emergency are retrofitted and equipped with energy-efficient and renewable back-up power.

Sphere of Influence:
City

Implementation Partners:

- **Service Organizations:** YMCA, Addison Gilbert Hospital, North Shore CDC, SeniorCare, The Open Door, Action Inc., Wellspring House, Annisquam Good Neighbors, Pathways for Children, Younity
- **Government and Municipal Bodies:** Mayor's Office, City Council, Board of Public Health, Community Preservation Committee, Clean Energy Commission, School Board
- **City Departments:** DPW, Planning, Building, Public Safety, Community Development (CDBG), School Department, Veterans Services, Rose Baker Senior Center

Funding Sources:

- MVP
- Office of Energy and Environmental Affairs (EEA)
- National Grid
- MassCEC
- Green Communities
- AARP Age and Dementia Friendly Program

Next Steps:

- ❑ Host a working group that includes representatives from the Mayor's office, public safety departments, and facilities managers of key sites to assess vulnerabilities and adaptive capacity of all current designated shelters and facilities.
- ❑ Consider how Gloucester can improve the connectivity of designated shelters and other key public health and safety sites (microgrids).
- ❑ Catalog and note the location of all emergency response resources in the City, such as generators and battery backup capacity.

Improving Equity:

- ❑ Prioritize shelters and facilities that are located in EJ communities and identified climate vulnerable areas.
- ❑ Ensure accessibility of designated shelters by people with disabilities.
- ❑ Work with local community support groups to ensure that emergency response protocols and support systems are communicated to residents where necessary. Including consideration of the need for food, health care, and pet care etc. in an emergency sheltering scenario.

Co-benefits:

Reduced public safety risks.

Reduced long-term operational and maintenance costs of City facilities.

Measure of Success:

All designated shelters and facilities are energy retrofitted and equipped with energy efficient and renewable back-up power.

A catalog of emergency response resources in the City, such as generators and battery backup, is regularly updated by designated staff persons.

E2 Update local policies, codes, and zoning to increase the feasibility of solar installations and streamline the permitting and inspection processes, including for residential, businesses, and industrial uses.

Sphere of Influence:
City Ordinances or Regulations

Implementation Partners:

- Homeowners and landlords
- Gloucester development community
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** City Council, Clean Energy Commission, Planning Board, Mayor's Office
- **City Departments:** Planning, Conservation, Building

Funding Sources:

- Executive Office of Energy and Environmental Affairs (EEA)
- District Local Technical Assistance (DLTA)

Next Steps:

- ❑ Research best practices on language that define net zero technology.
- ❑ Review current policies, building codes, and zoning regulations to determine existing barriers as well as opportunities for incorporation of net zero technology. For example: add a provision to exclude solar energy systems (as well as other emerging green technologies) from building height requirements.

Improving Equity:

- ❑ Ensure that any zoning changes that benefit residents are clearly communicated in accessible terms.

Co-benefits:

Increased access to renewable energy through on-site generation.

Measure of Success:

More streamlined processes to incorporate energy efficient and renewable energy technologies in homes and businesses.

E3 Promote 100% Local Green energy opt-in[9] provided through Gloucester's municipal aggregation program.

Sphere of Influence:
City

Implementation Partners:
- National Grid customers
- Department of Energy Resources (DOER)
- GoodEnergy or applicable aggregation consultant
- MassCEC
- Action Inc. (LEAN Agency)
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** Clean Energy Commission, Mayor's Office
- **City Departments:** Planning

Funding Sources:
- GoodEnergy or applicable aggregation consultant
- Mass Save

Next Steps:

- ❑ Work with aggregation consultant to develop educational and promotional materials; conduct outreach and info-sessions for residents about the program.

Improving Equity:

- ❑ Ensure robust engagement with residents, landlords, and renters in EJ communities and climate vulnerable populations, to better understand their priorities, needs, and barriers that prevent them from participating in the program.
- ❑ Partner with trusted community organizations on messaging rate options.

Co-benefits:

Improve stability in electricity pricing for residents.

Promote development of local renewable energy generation.

Measure of Success:

Number of aggregation customers that opt into the 100% Local Green energy opt-in.

[9] Products described as Green contain Renewable Energy Certificates (MA Class I RECs) above that required by the Commonwealth and come only from solar, wind, anaerobic digestion and low-impact hydro located within New England. Local refers to New England. All of the additional RECs included in the program are designated as Massachusetts Class I. RECs are the accepted legal instrument used to track renewable energy generation and to substantiate claims of renewable energy use.

E4 Encourage local schools to offer vocational training on energy efficiency/building retrofit techniques, clean energy technologies and high-performance building measures.

Sphere of Influence:
State/Federal/Regional

Implementation Partners:
- National Grid, Grid for Good Program
- Gloucester High School
- Essex Technical and Agricultural High School
- North Shore Community College
- GMGI
- The Cornerstone Creative
- Local Parent Teacher Organizations (PTOs)
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** School Committee, Mayor's Office, Clean Energy Commission
- **City Departments:** School Department

Funding Sources:
- MassHire
- National Grid

Next Steps:

- ❑ Work with local technical schools and technical programs at Gloucester High School to incorporate green technology into curriculums, as an example integrate EV training in vocational classes.
- ❑ Incorporate high school student participation in energy efficiency measures taken by the City.
- ❑ Identify existing programs that can be leveraged or partnered with to promote green technology education in Gloucester.

Improving Equity:

- ❑ Consider financial assistance to support students from low-income households participating in training programs, purchase training materials/supplies, etc.

Co-benefits:

Increased new and local clean energy workforce.

Increased community resilience.

Measure of Success:

One or more training programs offered at local schools and institutions.

Additional Strategies for Energy

Strategy	Realm of Influence
E5 Consider how renewables can be incorporated into the design of any updates of local facilities including the wastewater treatment facility.	City
E6 Conduct a community-wide energy resiliency assessment.	City
E7 Conduct a feasibility assessment to install solar on municipal facilities and properties (rooftops, parking lots, etc.) as well as brownfields. In particular, consider feasibility of installing rooftop solar and on-site battery storage at schools for resilience and demonstration purposes.	City
E8 Provide information and assist businesses in applying for grants, technical assistance, and utilities incentives to invest in renewables. Partner with local businesses and institutions to install solar PVs on their properties, particularly key community spaces like the YMCA and Blackburn Industrial Park.	Residents/Businesses
E9 Provide information to residents (homeowners, landlords, condo associations, and renters) in applying for grants, technical assistance, and utilities incentives to invest in renewables.	Residents/Businesses
E10 Make municipal emissions data and communications more accessible to the community.	City
E11 Conduct a grid feasibility assessment of increasing renewable energy sources for municipal and community's energy demand. Evaluate equity of access to local renewable energy sources.	City
E12 Develop educational materials on components of high-performance building standards for renters and homebuyers to reference in their home search.	Residents/Businesses
E13 Conduct a feasibility assessment to pilot microgrid or energy storage projects at municipal critical facilities, local institutions (such as hospitals), business centers/districts, housing developments, etc.	City
E14 Conduct education outreach to support increasing share of renewable energy portfolio in the Community Energy Aggregation program. Consider potential costs and cost stabilization to residents.	City

Additional Strategies for Energy

Strategy	Realm of Influence
E15 Advocate for state and federal policies and incentives to support renewables and needed retrofit efforts, particularly for low-income households, with the long-term goal of transitioning to clean energy.	State/Federal/Regional
E16 Explore options for adding new City-sponsored renewable energy.	City
E17 Identify potential City partnerships to create a community solar program.	City
E18 Continue participating in state and regional discussions to align strategies to achieve statewide GHG reduction and net zero energy goals.	State/Federal/Regional
E19 Collaborate with neighboring communities in the region to advocate for increased renewable energy sources on the grid.	State/Federal/Regional
E20 Encourage local tech schools/institutions to offer curriculum on energy efficiency/ building retrofit techniques, clean energy technologies, high-performance building measures through vocational training program at the high school. Potential partnership includes National Grid's Grid for Good program.	State/Federal/Regional
E21 Continue to monitor and participate in regional conversations regarding Gloucester's opportunities to support offshore wind development. Advocate for discussion of potential offshore wind development that is in concert with ocean habitat and the seafood/ fishing industry.	City

Natural Resources

Natural resources pertain to Gloucester's open spaces, natural ecosystems, habitat areas and water resources — all of the things that are vital for maintaining functional natural environments that support both wildlife and ecosystem services for the City.

In this changing climate, the City's natural resources can both serve as a buffer and a refuge, by mitigating climate impacts (such as heat waves and urban heat island effects) and helping the City adapt through nature-based solutions. In aggregate, Gloucester's existing dense forest contributes to the larger State sequestration resources — an invaluable tool that naturally filters emissions from being emitted. Therefore, the City must continue to protect, manage, and restore the it's natural systems and waterways.

Goals

1. The City's natural resources (i.e., natural systems and waterways) are protected, managed, and restored, particularly those that are vulnerable to climate change, as well as those that strengthen Gloucester's resilience, public health, and biodiversity.
2. Gloucester's trails, open space, and recreational areas are connected and accessible for all residents.
3. Gloucester's harbor and waterfront areas are protected and enhanced in response to increased flooding and sea level rise.
4. Tree canopy/coverage is equitably planned for and distributed in all neighborhoods.

Aerial image of Gloucester

What's been done so far?

Gloucester Open Space and Recreation Plan 2022 Update. Currently the City is renewing its Open Space and Recreation Plan to provide a way forward for another 7 years of stewardship of the City's open spaces. The City's update to the Open Space and Recreation Plan represents a renewed commitment to protect and improve the open space and recreational resources that raise the quality of life in the City. The Open Space and Recreation Committee (OSRC) envisions a City where residents take great pride in the care of Gloucester's outstanding range of open space and recreation assets and ensure they are fully enjoyed and valued.

The Trustees of Reservations

Using Nature Based Solutions. Including nature-based solutions in mitigating the future impacts of climate change is a high priority for the City of Gloucester. A key success in this area was the Little River Restoration and Flood Mitigation project, which involved day-lighting portions of buried waterway, replacing an aging concrete channel with a natural stream bed, and restoring sensitive coastal wetlands. The restoration effort has already dramatically improved ecological conditions, eliminated a public safety hazard, reduced flooding risks, and enhanced climate change resiliency in the small coastal stream that flows from Lily Pond to the Annisquam River.

Newburyport Discounted Rain Barrel Program

Regional Highlight: Newburyport Discounted Rain Barrel Program

The City of Newburyport has a rain barrel program, where rain barrels can be purchased by residents at a discounted rate. Using these barrels to capture and store water can help households reduce their water bills and can decrease stormwater runoff while promoting water conservation. Captured rainwater is an excellent source for plants, gardens, lawns, and non-potable use. It is reportedly "one tenth of an inch of rain on a 1000 square foot roof—about 25 minutes of moderate rainfall — will fill a 60-gallon rain barrel."

Visit www.Cityofnewburyport.com/recycling-energy-resiliency-sustainability/pages/rain-barrels for more details.

NR1 Incentivize the incorporation of green infrastructure (i.e. permeable pavement, green roofs, bioswales, and tree planting) in new development or major renovation projects.

Sphere of Influence:
City Ordinances or Regulations

Implementation Partners:

- Gloucester development community
- Homeowners and landlords
- Backyard Growers
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** City Council, Planning Board, Zoning Board, Conservation Commission, Open Space and Recreation Committee, Mayor's Office
- **City Departments:** Planning, Conservation, Building, Health

Funding Sources:

- MassDEP
- Green Communities
- EPA

Next Steps:

- ❑ Establish a multi-department/stakeholder working group to facilitate discussion around feasibility and best practices.
- ❑ Determine the potential need for incentives to support developer acceptance (i.e. expedited permitting).
- ❑ Host informational sessions and/or trainings for municipal staff and developers to increase understanding.
- ❑ Improve professional development opportunities for City inspectors.
- ❑ Create a green infrastructure design guideline for new development and major renovation projects.

Improving Equity:

- ❑ Ensure sustainable land use practices, access to green spaces, and improve infrastructure for bikes and pedestrians as part of new developments, in addition to green infrastructure.
- ❑ Provide training to building occupants on building technologies for long-term operations and maintenance.

Co-benefits:

Improved environmental quality of air, water, and green spaces.

Reduced stormwater run-offs.

Measure of Success:

Increased number of new projects with green infrastructure measures incorporated.

NR2 Develop additional tree planting requirements for any new development project. Promote the use of native species.

Sphere of Influence:
City Ordinances or Regulations

Implementation Partners:

- Greenbelt
- Generous Gardeners
- Cape Ann Trail Stewards
- Arbor Day Foundation
- Backyard Growers
- Project Elm
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** City Council, Open Space and Recreation Committee, Conservation Commission, Planning Board
- **City Departments:** Planning, DPW, Conservation, Building

Funding Sources:

- DLTA
- Complete Streets
- Shared Streets
- Safe Routes to School

Next Steps:

- ❑ Map and/or review existing tree canopy, tree planting locations to identify gaps and opportunities.
- ❑ Review existing requirements and/or policies related to managing and protecting trees.
- ❑ Propose to formalize tree planting and replacement requirements.
- ❑ Create a City-wide tree planting program.
- ❑ Increase standards for tree planting as part of site plan approvals.
- ❑ Start a Tree Fund into which developers, residents, and businesses can contribute to fund tree plantings across the City.

Improving Equity:

- ❑ Prioritize tree planting locations in EJ areas, or known “hot spots” in the City.

Co-benefits:

- Increased beautification and walkability in public spaces.
- Improved air quality and reduced urban heat island effect.
- Improved stormwater management and flood control.

Measure of Success:

- Number and location of street trees planted annually.
- Net number of residential trees planted annually as part of developments.
- Increased percentage of tree canopy coverage in the City.

NR3 Regularly review and update Gloucester's climate vulnerabilities and the potential impacts to existing natural resources in the City, as more climate data becomes available.

Sphere of Influence:
City

Implementation Partners:

- Executive Office of Energy and Environmental Affairs (EEA)
- Municipal Vulnerability Preparedness (MVP) program
- Metropolitan Area Planning Council (MAPC)
- Massachusetts Association of Conservation Commissions (MACC)
- Greenbelt
- **Government and Municipal Bodies:** Open Space and Recreation Committee, Clean Energy Commission
- **City Departments:** Planning, DPW, Conservation, Engineering

Funding Sources:

- MVP
- MassCEC
- Green Communities

Next Steps:

- ❑ Participate in state's MVP program for guidance on updated climate data and nature-based solutions/best practices.
- ❑ Continue regular review and updates on goals and strategies of the City's Hazard Mitigation Plan, Open Space Recreation Plan and this CARP.

Improving Equity:

- ❑ Ensure robust engagement with residents in EJ communities, identified climate vulnerable populations, to stay updated on their priorities and needs, and modify prioritized implementation strategies accordingly.

Co-benefits:

Increased community resilience.

Measure of Success:

Decision making and implementation strategies are relevant and in accordance with latest available climate information.

Additional Strategies for Nature Resources

Strategy	Realm of Influence
NR4 Assess climate vulnerabilities and potential impacts to existing natural resources in the City. Identify strategies to preserve, protect, and restore the City's natural systems and waterways.	City
NR5 Increase the City's street tree coverage, especially in areas where communities are most vulnerable to the urban heat island effect, and review options for active forest management to prepare for climate change impacts.	City
NR6 Provide community wide education on sustainable landscaping practices, including reducing or eliminating the use of synthetic fertilizers, while promoting rain barrels, flood protection, etc.	Residents/Businesses
NR7 Conduct assessment of flood storage capacity and explore nature-based solutions in preparing for more frequent and intense extreme weather events.	City
NR8 Promote the use of rain barrels by homes and businesses.	Residents/Businesses
NR9 Ensure the use of native plant species in City owned spaces including neighborhood streets, rotaries, courtyards, and parks.	City
NR10 Implement the City's Open Space and Recreation Plan which identifies and advocates for the protection of important flood resilience, sequestration, and recreational resources.	City
NR11 Preserve salt marshes, clear the phragmites out of Good Harbor Marsh, and clear the culvert that feeds the pond.	City

Infrastructure

Ensuring a reliable supply of potable water, wastewater services, and stormwater drainage, as well as viable means of providing community connectivity via roads, bridges, and energy supplies are essential to keeping Gloucester in operation — the community's lifelines. Climate change and its compounding impacts undoubtedly pose a major threats to these infrastructure systems and services.

A significant portion of the City's critical infrastructure is located in flood zones and therefore very vulnerable to climate change impacts, mainly flooding due to sea level rise, extreme storms and storm surge. These key infrastructure include Gloucester High School, a National Grid electrical substation, seawalls, stormwater systems, low-lying roads, several City pump stations, and particularly the City's Water Pollution Control Facility on Essex Avenue.

Maintenance of these systems will continue to be critical; at the same time, improvements must simultaneously enhance their adaptive capacity. Implementing innovative nature-based solutions, building systems back-up and/or redundancy, and promoting low-impact developments are some of the key changes and improvements the City will continue exploring to ensure the City's critical infrastructures and facilities are prepared for climate change impacts.

Goals

1. Critical utilities, systems, and infrastructure are improved and enhanced to withstand climate stressors.
2. Infrastructure improvement projects evaluate potential climate change impacts using best available local climate data, and incorporate adaptation measures, particularly green infrastructure measures or nature-based solutions, where applicable.

Gloucester Harbor

What's been done so far?

Shoring Up the City's Critical Infrastructure. To date, the City has worked to find solutions to shore up these key sites by taking protective measures. This includes protective infrastructure at Gloucester High School and the City's Water Pollution Control Facility (WPCF). The WPCF Flood Resilience Project consists of a flood resilience system to protect the wastewater facility from flooding during extreme storm events. The project will also restore a coastal bank and landscaped areas. The GHS project will protect the High School grounds from near-term storms, such as the 2018 flooding of the parking lot and adjacent fields and will mitigate future flood risk to the site's buildings. These projects ensure protection of the City's critical infrastructure into the future.

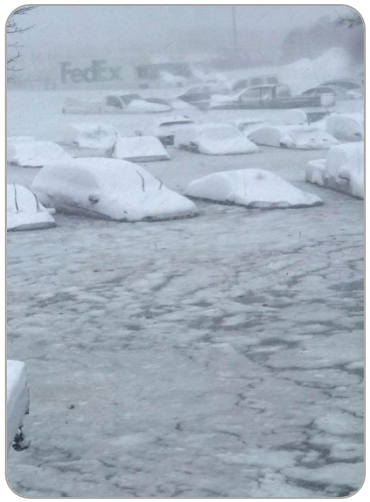

Photo of Flooding at Gloucester High School in 2018 @suepalkafox5dc

Gloucester Harbormaster's Office

Protecting the Harbor from Flooding. Gloucester is, first and foremost, a fishing community. Fishing and other water-dependent industries rely on access to the City's shoreline. The protection of coastal marine and fishing infrastructure from future flooding and storms is vitally important. It is equally important to invest in the economic development of marine dependent uses on the Harbor.

The Gloucester Municipal Harbor Plan is a strategic document to support the existing economic base of the harbor front and expand economic development opportunities, including both marine water-dependent and supporting uses of harbor properties. Development opportunities will be informed by clear resilience strategies to minimize risks to operations and assets, and maximize access to public and private investments.

The current update to the City's Harbor Plan is underway at the time of publishing this CARP. The City and consultant team are working closely with work being undertaken by the Office of Coastal Zone Management (CZM), to develop coastal resilience strategies to protect infrastructure needed to secure harbor assets and support the economic strategy.

I1 Develop measures and guidelines to enhance resilience of infrastructure in floodplains including seawalls, floodproofing, wet floodproofing, elevating, and potential relocation.

Sphere of Influence:
City

Implementation Partners:
- Coastal residents
- Coastal businesses and property owners
- U.S. Coast Guard
- United States Army Corps of Engineers
- **Government and Municipal Bodies:** Harbor Plan Committee, Mayor's Office, Planning Board, Conservation Commission, Open Space and Recreation Plan Committee, Board of Health
- **City Departments:** DPW, Engineering, Planning, Building, Harbormaster, Public Safety, Health

Funding Sources:
- MassDEP
- Green Communities
- EPA
- MVP
- CZM

Next Steps:

- ❑ Consider micro and macro solutions for protecting Gloucester's coastal infrastructure.
- ❑ Identify specific opportunities for updating and/or making recommendations for new resilient infrastructure design standards for example, upgrade the City's wastewater treatment facility using resilient building methods.
- ❑ Consider long term plans for relocation, decommissioning or switching to alternatives where long term resilience measures are not possible.
- ❑ Consider how renewables and energy efficiency technologies can enhance the operational capacity of the City's critical infrastructure.

Improving Equity:

- ❑ Ensure robust engagement to solicit community's feedback on priorities and needs associated with infrastructure improvements, particularly where relocation of sites is involved.

Co-benefits:

Improved resilience of the built environment.

Cost savings associated with reduced number of infrastructure projects needing repair or maintenance.

Measure of Success:

Investments in local infrastructure updates.

I2 Continue to assess and upgrade stormwater discharge system and drainage capacity.

Sphere of Influence:
City

Implementation Partners:
- **Government and Municipal Bodies:** Mayor's Office, Board of Health
- **City Departments:** DPW, Engineering, Planning, Building

Funding Sources:
- MassDEP
- Green Communities
- EPA
- MVP
- CZM

Next Steps:

- ❑ Develop evaluation criteria for stormwater infrastructure and system improvements. Incorporate climate projections into the evaluation process.
- ❑ Conduct a systematic review of each stormwater infrastructure system and asset using the evaluation criteria established above.
- ❑ Develop a database of assets and systems for management and ongoing monitoring and inspection.

Improving Equity:

- ❑ Prioritize infrastructure located in EJ communities and identified climate vulnerable areas.

Co-benefits:

Minimized infrastructure damage or failure that could result in disruption of the City's operations and business services.

Reduced risks associated with flooding, property damages, and public safety.

Measure of Success:

Percentage of stormwater and drainage infrastructure assessed, repaired, or upgraded.

I3 Pursue projects that will improve water quality, reliability of water supply, and management. Consider incorporating renewable energy technologies where feasible.

Sphere of Influence:
City

Implementation Partners:
- EEA Municipal Vulnerability Preparedness program
- FEMA
- U.S. Army Corp of Engineers
- MA Coastal Zoning Management (CZM)
- **Government and Municipal Bodies:** Mayor's Office, Board of Health
- **City Departments:** DPW, Engineering, Planning, Building, Health

Funding Sources:
- Green Communities
- MVP
- ARPA
- FEMA BRIC grant
- MassDEP Gap Funding

Next Steps:

- ❑ Work with applicable City departments to identify opportunities for updates and projects.
- ❑ Research best practices and case studies of projects being piloted or utilized for similar infrastructure types and based on similar climate change projections and considerations for Gloucester.
- ❑ Identify specific opportunities and pursue grant funding.

Improving Equity:

- ❑ Prioritize EJ communities and climate vulnerable areas.
- ❑ Ensure robust engagement to solicit community's feedback on priorities and needs associated with infrastructure improvements.

Co-benefits:

Improved environmental quality, protection of associated natural systems and waterways.

Increased community resilience, public health and safety.

Increased resilience of the built environment.

Measure of Success:

Improvements in water quality metrics regularly monitored by the City's Health and Engineering Departments

Additional Strategies for Infrastructure

Strategy	Realm of Influence
I4 Consider a municipal facility or property that can be utilized as a demonstration site for feasibility of nature-based solutions (such as installation of green roofs, pervious surface conversion, etc.).	City
I5 Provide educational materials for coastal businesses and property owners on resilient site management to minimize the impact of flooding.	Residents/ Businesses
I6 Advocate for improvements of the existing grid infrastructure, and better understanding of its vulnerability and capacity in responding to climate change impacts.	State/Federal/ Regional

Mobility

Transportation made up nearly 40% of Gloucester's overall greenhouse gas emissions in 2017. With the sector, most of the emission sources came from private passenger vehicles, passenger vehicles make up 36.4% of the City's total emissions. Electrification of the existing transportation system, transitioning from fossil-fuel dependent vehicles to electric vehicles (EVs), resident adoption of the use of public transit, as well as enabling more alternative low-carbon mobility modes (e.g., biking, walking, and taking public transit etc.) will all be critical in reducing the community's carbon footprint.

All these changes highlight the need to strengthen the transit systems — making public transit more accessible through education and improved service — making walking and biking safer and more pleasurable through better sidewalks, street trees, bike lanes and other amenities — and incentivizing the infrastructure needed for adoption of EVs. These steps lay the groundwork for an inclusive and equitable adoption of low and no-emissions transit options.

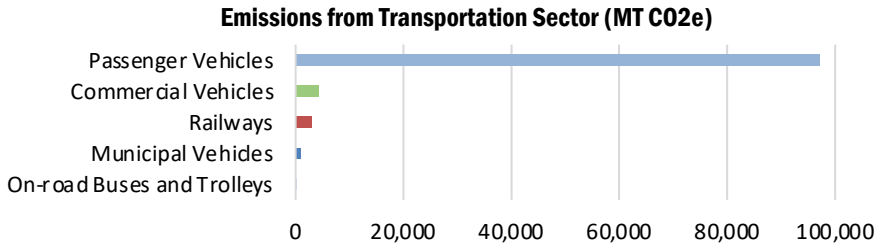

Figure 19: Emissions from Transportation Sector (MT CO2e)

Goals

1. Access to transit, walkability, and connectivity are prioritized in all municipal and development planning.
2. All residential neighborhoods, commercial centers, and community spaces are interconnected by multimodal transportation systems that are also affordable, reliable, and climate resilient.
3. Gloucester and neighboring communities are serviced with affordable, reliable, and accessible carbon-free regional transportation systems.
4. The City leads by example with transitioning all municipal fleets to low- or zero emissions.

What's been done so far?

City Leading the Way. Gloucester has a fleet of six electric cars, now in use by the City's Public Works and Inspection Services, and two electric vehicles, utilized by the Police Department. The City has also sponsored the installation of electric charging stations at City Hall and the City Hall Annex and has a Fuel-Efficient Vehicle Policy that ensures future vehicle purchases meet the City's energy efficiency goals.

Police Department EV

Making Public Transit Accessible. The City of Gloucester has supported efforts to modernize local transportation options and increase ridership. A collaboration between CATA and the Gloucester Economic Development and Industrial Corporation, CATA On-Demand, leverages a customized ride hailing mobile application that allows passengers to request a ride on demand then, matches passengers heading in the same direction to avoid lengthy detours. Rides are the cost of a regular CATA van ride, $2.00, and cover the area around downtown Gloucester.

CATA

CATA also offers an OnDemand, door-to-door, Dial-A-Ride program, geared towards seniors and people with disabilities and the Seniors-On-the-Go program, a shuttle that gives seniors greater access to recreational amenities, health and wellness locations, and food sources, make transit more access able.

Take Climate Action Today

For just $2 a trip you can request an on-demand ride from CATA

1. Search "CATA On Demand" in the App Store or Google Play Store and tap the download icon.
2. Open the app, press Get Started, and enter your personal info.
3. Enter your credit or debit card info.

You'll be able to request and track your ride on the app — it's a bit like Uber or Lyft but it's public transit!

Follow Innovate Gloucester for more ways to take climate action:

Innovate Gloucester **@InnovateGlosta** **@InnovateGlosta**

innovate gloucester ig

Green Justice Coalition

Regional Highlight: Good2Go

A community-based electric car sharing program called Good2Go, which began in the Roxbury neighborhood of Boston (and may expand to other areas in the future!) is one example of a program making electric vehicles more accessible to residents and visitors. The program has a standard rate of $10 per hour as well as a reduced rate of $5 per hour for those who are eligible. Reservations and payments can be made through the program app; other options for individuals who may not have access to a smart phone, or a bank account are also available. Membership includes insurance, roadside assistance, maintenance, and charging and bilingual customer support.

Visit evgood2go.org for more details.

M1 Expand public EV charging stations and prioritize EV charging stations in public, City owned parking areas.

Sphere of Influence:
City

Implementation Partners:
- Residents and business owners surrounding proposed EV charging stations
- **Government and Municipal Bodies:** Mayor's Office, Clean Energy Commission
- **City Departments:** DPW, Engineering, Planning, Building

Funding Sources:
- National Grid
- MassCEC
- MassDEP
- Green Communities
- EPA
- MVP

Next Steps:

- ❑ Map existing and municipal EV charging stations and determine strategic City properties that would be ideal for EV charging.
- ❑ Identify priority locations for EV charging stations and develop a plan for an EV charging station network.

Improving Equity:

- ❑ Plan for equitable geographic distribution of charging stations across the City and pair with programs to reduce economic barriers to EV adoption.
- ❑ Ensure that reserved EV charging parking areas on municipal property are not prioritized disproportionally in terms of distance and access to City facilities.
- ❑ Consider adopting utility pole mounted EV chargers to reduce the strain on parking.
- ❑ Consider locations where high speed charging could be advantageous.
- ❑ Ensure that all City EV charging stations are equipped with a payment system so that users are charged for the electricity drawn from the grid. This will ensure the ability to scale up in the future and avoid equity concerns.

Co-benefits:

Improved air quality.

Potential vehicle noise reduction.

Measure of Success:

Increased number of EVs registered in Gloucester.

Increase the use of EV's by Gloucester's seasonal and tourist population.

An equitable distribution of EV charging stations in public areas.

M2 Promote adoption of EV charging stations at local businesses, multi-family, and rental developments.

Sphere of Influence:
Residents/Businesses

Implementation Partners:

- Gloucester development community
- Housing management companies and landlords
- Commercial real-estate management companies
- Businesses
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** Clean Energy Commission, Community Preservation Commission, Affordable Housing Trust, Mayor's Office
- **City Departments:** DPW, Planning, Community Development (Housing Rehab, HOME)

Funding Sources:

- National Grid
- MassCEC
- MassDEP
- Green Communities
- MVP
- Green Energy Consumers Alliance

Next Steps:

- ❑ Identify partnership for EV charging station installation.
- ❑ Facilitate a public discussion to better understand feasibility, opportunities and barriers associated with installing EV charging stations.
- ❑ Encourage businesses/business centers, owners of multi-family building complexes to take on ownership of installing EV charging stations on their properties.
- ❑ Consider how zoning and other ordinances can incentivize or require EV charging as part of new development.

Improving Equity:

- ❑ Ensure improved or added EV charging stations do not raise premiums on rent, particularly for low-income households, which can result in affordability and displacement issues.

Co-benefits:

Improved air quality.

Potential vehicle noise reduction.

Measure of Success:

Increase the number of EV charging stations in the City.

All local businesses, multi-family and rental properties have at minimum 5% of their parking spots equipped with EV charging stations.

M3 Develop guides and maps to encourage public use of pedestrian and other modes of transport.

Sphere of Influence:
City

Implementation Partners:
- Local bicycle and pedestrian advocacy groups
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** Open Space and Recreation Committee, Mayor's Office, Clean Energy Commission
- **City Departments:** Planning, DPW, Health

Funding Sources:
- DCS
- Mass In Motion
- Complete Streets
- Safe Routes to School
- TIP
- Travel and Tourism Recovery Grant Program
- Visitor Center Funding
- AARP Age and Dementia Friendly Program

Next Steps:

- ❑ Identify priority areas to promote more biking and walking activities.
- ❑ Create a user-friendly guide that includes a comprehensive inventory of bike and pedestrian networks in the City.
- ❑ Leverage City mapping platforms to provide interactive access to trail networks.
- ❑ Collaborate with Police to help monitor and increase security and safety of pedestrians and bicyclists in mapped areas.

Improving Equity:

- ❑ Ensure robust engagement of vulnerable populations in the planning processes.
- ❑ Plan for the provision of equitable access to infrastructure investments.
- ❑ Consider the use of new and innovative modes of transportation in road and trailing planning.

Co-benefits:

Increased cardiovascular health from use of active modes of transportation.

Reduced air pollution from replaced vehicle trips with bike/walk trips.

Measure of Success:

Increased percentage of biking, and walking mode share (broken down by different demographics when possible).

Decreased number of bike and pedestrian injuries and avoid fatalities.

M4 Expand implementation of Complete Streets policy. Expand and improve the safety of the bike and pedestrian network (on and off street).

Sphere of Influence:
City

Implementation Partners:
- Local bicycle, and pedestrian advocacy groups
- Senior Care Inc.
- Pathways for Children
- MassDOT
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** Open Space and Recreation Committee, Mayor's Office
- **City Departments:** DPW, Planning, Community Development

Funding Sources:
- Complete Streets
- Safe Routes to School
- AARP Age and Dementia Friendly Program
- TIP

Next Steps:

- ❑ Review current efforts and projects that incorporate the Complete Streets policy and identify additional locations for potential expanded pedestrian, bike, and transit infrastructure around major attractions.
- ❑ Prioritize locations in need of improvements.

Improving Equity:

- ❑ Prioritize improvements in EJ areas.

Co-benefits:

Increased safety.

Measure of Success:

Mileage of new dedicated biking and/or walking trails.

M5 Pursue electric buses in the School District.

Sphere of Influence:
City

Implementation Partners:
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** School Board, Clean Energy Commission, Gloucester Youth Council, Mayor's Office
- **City Departments:** School Department, Planning, Community Development

Funding Sources:
- CDBG
- EPA
- National Grid

Next Steps:

- ❑ Continue research and discussions with potential EV school bus vendors with the School Department.
- ❑ Determine the scale of initial investment in EV charging infrastructure.
- ❑ Develop a request for proposal for EV Buses. Map out potential complementary funding sources – i.e. combine EV charging station incentives and grants with grants for electric buses.

Improving Equity:

- ❑ Ensure that initial adoption of EV in a pilot includes benefits to EJ communities. .

Co-benefits:

Improved air quality.

Educational benefits for students.

Measure of Success:

All Gloucester's school buses are electric.

Additional Strategies for Mobility

Strategy	Realm of Influence
M6 Work with fishing industry representatives to address challenges and opportunities to transition fishing infrastructure to more energy efficient, low-carbon solutions and also to prepare the industry for climate change impacts.	Residents/Businesses
M7 Advocate for electrification of regional public and private transit systems (CATA buses, trolleys, water shuttles).	State/Federal/Regional
M8 Advocate for community transit upgrades including supporting regional transit needs, route expansions, bus stop upgrades, and bus rapid transit.	State/Federal/Regional
M9 Promote neighbor-to-neighbor transit options including carpool options, car shares, and volunteer ride request for those with limited mobility access.	Residents/Businesses
M10 Ensure that the cost of electricity usage and financing mechanisms are considered to allow for payment of EV charging use now or in the future.	City
M11 Promote adoption of EV charging stations at local businesses, multi-family, and rental developments.	Residents/Businesses
M12 Require new developments to invest in or include sidewalks and bike paths as part of the projects.	City Ordinance
M13 Continue transitioning the City's municipal fleet to EVs or ZVs.	City
M14 Promote the use of existing transit options including CATA-On-Demand for both residents and visitors.	Residents/Businesses
M15 Improve public transit stations/stops with more visual and distinguished signage and sheltered seating areas.	City
M16 Evaluate bike-shared program options that would be appropriate for the City and ensure user safety.	City

Additional Strategies for Mobility

Strategy	Realm of Influence
M17 Sponsor a guided ride educational program for CATA buses available to students, seniors, and the broader community.	Residents/Businesses
M18 Partner with other regional and local organizations to determine options and potential of scaling a program to subsidize public transit fares.	City

Solid Waste

Current waste generation and practices for solid waste disposal are harmful to the environment as well as public health. Partnerships with businesses and institutions to enable local markets for recycling and reusing, expansion of community-wide composting programs, and consideration of more stringent policies and requirements around waste diversion are some of the increasingly popular (and effective) sustainable waste management approaches. At the same time, the City will also focus on increasing public outreach and awareness around waste reduction while building a culture that promotes shared resources and innovative solutions.

Goals

1. Gloucester becomes a model community for innovative waste management and reduction.
2. Gloucester increases its diversion rate through programs and policies to prevent, reduce, reuse, compost, and recycle waste.

What's been done so far?

The City of Gloucester offers weekly curbside trash and recycling collection service for single family – multifamily (4 apartment max) residences. Gloucester's current solid waste goes to nearby incineration. While incineration reduces the amount of waste that goes to landfills, the residual ash and remaining still end up in landfills. Newer incinerators may have technology to better filter and capture pollutants; however they don't eliminate them and therefore incineration of waste remains one of the major sources of toxic pollution to the surrounding communities.[10]

While it should be noted that Gloucester's solid waste makes up a very small portion (0.1%) of the community's overall GHG emissions portfolio, it still contributes to the regional air pollution and greenhouse emissions. As such, implementing strategies to reduce and divert waste, and ultimately getting to zero waste goal, will be a significant contribution to improving the region's environmental quality, public health, and GHG reduction efforts.

[10] https://www.clf.org/blog/whats-wrong-with-burning-our-trash-anyway/

SW1 Explore initiatives to increase waste diversion and continue supporting MassDEP efforts with implementing its Solid Waste Master Plan. Identify strategies to increase opportunities for waste reduction, diversion, recycling, composting, re-use, and recovery in the City's solid waste management.

Sphere of Influence:
City

Implementation Partners:
- MassDEP Solid Waste Division
- Metropolitan Area Planning Council (MAPC)
- Local waste haulers, composters, and waste management companies
- Backyard Growers
- **Government and Municipal Bodies:** Board of Health, Mayor's Office
- **City Departments:** DPW, Open Space and Recreation Committee

Funding Sources:
- MassDEP
- MVP
- Green Communities

Next Steps:

- ❑ Continue participating in regional conversations with MassDEP Solid Waste Division.
- ❑ Conduct a waste characterization study and establish a waste diversion goal.
- ❑ Consider adopting guidelines for solid waste management or waste diversion, such as Zero Waste Community Principles (from the Zero Waste Internal Alliance).

Improving Equity:

- ❑ Ensure robust engagement efforts with residents about resource needs and barriers for participation, particularly those in EJ communities and climate vulnerable populations.

Co-benefits:

Improved environmental quality.

Creating a circular economy, new businesses supporting waste reduction and diversion.

Measure of Success:

Increased City-wide waste diversion rate.

SW2 Promote recycling education in public spaces and buildings to inform the community on what is recyclable. Create comprehensive signage for public areas as well as for residential use.

Sphere of Influence:
City

Implementation Partners:
- MassDEP Solid Waste Division
- Local waste haulers, waste management companies
- Businesses and real-estate management companies
- Backyard Growers
- Younity
- Pathways for Children
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** Mayor's Office, Board of Health, Gloucester Youth Council, School Committee
- **City Departments:** DPW, Health, School Department

Funding Sources:
- MassDEP
- RecyclingWorks

Next Steps:

- ❑ Review and update existing outreach materials promoting waste reduction, recycling, composting, etc. – make them more attractive and easier to follow.
- ❑ Translate outreach materials into multiple languages.
- ❑ Distribute updated educational materials to all households, businesses, schools, and public facilities, ensuring all households receive physical copies of educational materials, with materials providing details to additional online materials if applicable.
- ❑ Consider how the City can implement public recycling facilities at parks and other public spaces.
- ❑ Partner with local businesses to promote and manage the use of public recycling facilities.

Improving Equity:

- ❑ Ensure robust engagement efforts with residents about resource needs and barriers for participation, particularly those in EJ communities and climate vulnerable populations.

Co-benefits:

Improved environmental quality.

Creating a circular economy, new businesses supporting waste reduction and diversion.

Reduced contamination in recycling materials, etc.

Measure of Success:

Increased City-wide waste diversion rate.

SW3 Evaluate food waste composting options at Gloucester Public Schools.

Sphere of Influence:
City

Implementation Partners:
- Local composting service providers or community organizations
- Backyard Growers
- Climate and sustainability activist organizations (Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability Inc. etc.)
- **Government and Municipal Bodies:** Board of Health, Gloucester Youth Council
- **City Departments:** School Department , DPW

Funding Sources:
- MVP
- DCS
- RecyclingWorks
- MassDEP

Next Steps:

- ❑ Pilot a composting program at Gloucester High School.
- ❑ Launch a composting education campaign; host workshops for students to learn about the benefits of composting, etc.
- ❑ Expand the program to remaining schools.

Improving Equity:

- ❑ Educational materials and programing that accommodate students of a wide range of ages, abilities, and prior knowledge about composting.

Co-benefits:

Replication of composting efforts at home.

Reduced waste generation.

Measure of Success:

Established a composting program in all schools.

Additional Strategies for Solid Waste Management

Strategy	Realm of Influence
SW4 Advocate for an "Extended Producer Responsibility" policy to ensure that producers/product manufacturers are also responsible for minimizing waste in their products and packaging processes.	State/Federal/ Regional
SW5 Expand access to composting services to all residents or consider a public and/or private partnership to promote composting.	City
SW6 Participate in regional procurement initiatives for waste management.	City
SW7 Explore opportunities for small-scale implementation of converting unavoidable food waste to energy.	City
SW8 Advocate for policy and adoption of technologies that require significant reduction of greenhouse gas emissions and toxic pollutions at waste incinerators.	State/Federal/ Regional

Social Resilience

High-quality healthcare resources and services, comprehensive emergency management and response protocols, as well as strong-knit neighborhood networks, are imperative to protecting and enhancing the adaptive capacity of Gloucester's residents in this changing climate.

What's been done so far?

Local Food Production. Burnham's Field Community Garden is a community space where Gloucester residents can grow their own food, connect with neighbors, and spend time outside. It is located in Burnham's Field, a public park in downtown Gloucester. There are 36 raised garden beds available for rent, and community garden members represent a wide range of ages, backgrounds, family sizes, and gardening experience. Recent investments of Community Development Block Grants included funds to the Backyard Growers for the expansion of the Burnham's Field Community Garden and a proposed walking path. The City has also supported Community Gardens at Veteran's Way housing complex, McPherson Park housing complex, and Pond View Village.

Backyard Growers

Goals

1. Public health resources and services are equitably distributed and accessible to support all residents' physical and mental health well-being.
2. All residents, especially vulnerable populations, are prepared for and can recover quickly from future climate-related impacts and disasters.
3. Emergency management communication systems and a plan for continuity of operations are improved and in place.
4. All identified vulnerable populations are accounted for by community-based support networks and first responders in extreme climate events or disasters.

Community Impact Unit. Chief Edward Conley initiated a Community Impact Unit (CIU), expanding on the department's existing Angel Program, to offer support and resources to anyone struggling with substance use of any kind and/or mental health concerns. The CIU also provides goods and resources to the homeless population, and the unit additionally includes the City's two School Resource Officers among its members.

Gloucester Police

Photo Credit: Medford Resilience Hubs

Regional Highlight: Medford Resilience Hubs

A great example of neighborhood support partnerships, much like mutual aid networks, are the City of Medford's Resilience Hubs. Resilience hubs can be sources of community support during extreme weather events and emergency events. Such community-based support provide residents with resources to connect, engage, and adapt alongside others within their neighborhoods or communities.

Visit www.medfordma.org/resiliency-hubs

Gloucester Service Organizations. Gloucester is a regional hub for community support networks with several local organizations focused on improving the wellbeing and resilience of residents. A sample of these organizations is outlined below:

Action, Inc.	Offers affordable housing and homelessness prevention, fuel assistance and energy conservation programs, and education and job training.
Backyard Growers	Offers programs that help low to moderate income individuals and families grow their own food in backyards, community gardens, container gardens and low-income housing developments.
The Open Door	Offers the community practical strategies to connect people to good food, advocating on behalf of those in need, and building food security.
Rose Baker Senior Center/ Council on Aging	Serves as a focal point where seniors and their families can access the local and state network of elder services while providing an integrated array of social, health, recreational, and educational programs for older men and women.
SeniorCare's Nutrition Program	Serves those 60 years of age, and older. Active older adults can join their peers for lunch at community dining rooms. Home Delivered Meals program "Meals on Wheels" brings a meal right to the door for frail and homebound elders. SeniorCare also offers a "Healthy Eating for Successful Living in Older Adults" workshop.
Annisquam Good Neighbors Group	A non-profit volunteer organization founded in 1994 which works to coordinate mutual support caring for ill or isolated residents, transportation, meals, social interactions, consolation, and emergency response greatly impacts the well-being of the Annisquam community.
Pathways for Children	Nurtures children and supports families impacted by economic and social inequity through programs that educate, enrich, empower, and motivate.
Wellspring House	Inspires families and adults on the North Shore to achieve employment and financial security through stable housing, education, job training and career readiness.
Addison Gilbert Hospital	A full-service, 79-bed medical acute care facility located in Gloucester, Massachusetts.
Glen T. MacLeod Cape Ann YMCA	A cause-driven organization that is for youth development, for healthy living and for social responsibility.
North Shore CDC	Offers a community-focused development model to invest resources into low-income or distressed neighborhoods on the North Shore to improve the quality of life for residents. North Shore CEC is committed to the community through affordable housing, economic and youth development, community engagement, small business assistance, and public art + placemaking.
Younity	Provides an array of services to transition-aged youth (ages 16-25) who are looking for social, psychological, and group support.

Take Climate Action Today

The Community Development Department has many opportunities for Youth and Student Internships – including internships related to climate action. Find out more on the City's website at gloucester-ma.gov/1233/Youth-and-Student-Internships

Follow Innovate Gloucester for more ways to take climate action:

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Cape Cod Commission

Regional Highlight: Cape Cod Commission's Youth Program

Through the Climate Ambassadors Program, the Cape Cod Commission seeks to engage and empower high school students to work together on climate change issues. The students learn about various climate topics, particularly on how to communicate effectively about climate issues, and are encouraged to participate in a small project that demonstrates how they can have a personal impact on climate change at home or in their school communities.

Visit capecodcommission.org

SR1 Organize neighborhood groups and partner with Police and Fire Department to identify vulnerable populations, especially seniors and residents with disabilities, during emergency events.

Sphere of Influence:
City

Implementation Partners:
- Annisquam Good Neighbors Group
- North Shore CDC
- SeniorCare's Nutrition Program
- Action Inc.
- Wellspring House
- The Open Door
- Gloucester Veteran's Affairs
- Gloucester Time Bank
- Pathways for Children
- Addison Gilbert Hospital
- **Government and Municipal Bodies:** Rose Baker Senior Center, Gloucester Veteran's Services, Mayor's Office
- **City Departments**: Community Development, Health, Building, Public Safety

Funding Sources:
- CDBG
- MVP Action Grant
- EOEEA Food Security Infrastructure Grant
- AARP Age and Dementia Friendly Program

Next Steps:

- ❑ Understand opportunities to leverage existing City systems to better flag and communicate the locations of vulnerable residents in emergency events.
- ❑ Partner with the City Inspectors such as the Health Department and Building Department to leverage institutional knowledge about risk and disseminate information and support services to vulnerable residents.
- ❑ Train Public Safety officials and ensure robust training for public safety and inspectional services in identifying and responding to at risk residents.
- ❑ Promote City staff and community organization training on disaster response measures.
- ❑ Launch a "community liaisons" network - Identify individuals/volunteers in each City neighborhoods to engage and recruit for partnership and participation in the community liaisons network.

Improving Equity:

- ❑ Consider fair compensation or stipend to support volunteer time and efforts.

Co-benefits:

Enhanced public health and safety.

Increased community preparedness during extreme weather or emergency events.

Measure of Success:

Increased number of formalized neighborhood support groups.

Minimize potential for fatalities in the event of emergencies.

SR2 Engage youth and young adults in implementing climate actions, including through volunteer and paid internship opportunities.

Sphere of Influence:
City

Implementation Partners:
- Younity
- Wellspring House
- Glen T. MacLeod Cape Ann YMCA
- Action, Inc.
- Wellspring House
- North Shore CDC
- Backyard Growers
- **Climate Activist Organizations:** Cape Ann Climate Coalition, TownGreen2025, Seaside Sustainability
- **Government and Municipal Bodies:** Mayor's Office, Youth Council
- **City Departments:** Community Development, Health

Funding Sources:
- CDBG
- YouthWorks
- YMCA
- Mass Save

Next Steps:

- ❑ Create youth climate action opportunities such as internships and volunteer events.
- ❑ Engage youth in future decisions and planning related to implementation of the CARP.
- ❑ Partner with Gloucester's youth council to implement the CARP and promote climate actions.

Improving Equity:

- ❑ Consider fair compensation or stipend to support intern time and efforts.

Co-benefits:

Increase community understanding of climate change issues.

Increase green jobs and training in the community, particularly for local youths.

Measure of Success:

Increased youth participation in community climate action events and programs.

SR3 Ensure that all residents, especially those identified as vulnerable populations, have the ability to grow and access healthy food sources.

Sphere of Influence:
City

Implementation Partners:
- The Open Door
- Backyard Growers
- Wellspring House
- Annisquam Good Neighbors Group
- SeniorCare's Nutrition Program
- Local farms and community gardens
- Local grocery stores
- Addison Gilbert Hospital
- **Government and Municipal Bodies:** Mayor's Office, Community Preservation Commission,
- **City Departments:** Community Development (CDBG), Health, Rose Baker Senior Center, Veteran's Services, Emergency Services

Funding Sources:
- CDBG
- YouthWorks
- MVP Action Grant
- YMCA
- EOEEA Food Security Infrastructure Grant

Next Steps:

- ❑ Partner with local food production and services, and social service organizations to develop a plan for supporting the identified vulnerable populations.
- ❑ Work with local partners to develop a directory of all food producers and services available in the City. Ensure the resource are available in multiple languages.

Improving Equity:

- ❑ Ensure robust engagement with identified vulnerable populations to better understand their priorities and needs regarding food resources.

Co-benefits:

Increased community resilience.

Improved public health.

Measure of Success:

Robust access to healthy food sources and services in every neighborhood.

All residents with limited mobility in the community are aware of resources and services.

Additional Strategies for Social Resilience

Strategy	Realm of Influence
SR4 Encourage the creation of community and backyard gardens. Partner with local community groups to develop or share resources addressing food security through local food production.	City
SR5 Develop an evacuation plan, particularly addressing isolation in neighborhoods during severe events and equip communities so that they have access to essential services, foods, clean water, and other necessities during an extreme event.	City
SR6 Identify resources to assist vulnerable populations in the City with home improvements and maintenance activities.	Residents/Businesses
SR7 Develop frequent and consistent messaging with stakeholders and the community to ensure a high level of engagement in climate actions.	Residents/Businesses
SR8 Continue to support and assess the social vulnerability of the populations most vulnerable to climate change impacts.	City
SR9 Incorporate potential climate impacts into emergency response planning for community needs such as shelter, food, and healthcare resources.	City
SR10 Designate and expand facilities that can serve as public cooling centers for extreme heat events, particularly in identified EJ and climate vulnerable communities.	City
SR11 Create a Sustainability Coordinator position.	City
SR12 Ensure climate actions are well communicated to populations in other languages in addition to English.	City

Implementation: What's Next?

The Climate Action and Resilience Plan (CARP) is a living document, a roadmap for how the City of Gloucester will take climate action in real and impactful ways. As has been demonstrated throughout the plan, both Greenhouse Gas (GHG) emissions, AND the power to mitigate their impacts, exist across spheres of influence. Therefore, the transition to a clean energy future requires an all-hands-on-deck approach – City staff, elected bodies, local community partners, residents, and businesses all have a role to play. The creation of this plan represents a commitment on the part of the City to leverage the municipal tools to achieve the CARP's goals. These tools include:

Governance

The City will work with the appropriate municipal departments and leaders to implement strategies in the City's sphere of influence. The creation of a Sustainability Coordinator position will improve the City's organizational capacity to understand and coordinate the elements of the CARP's goals across departments.

Aligning City planning efforts

Throughout CARP planning, alignment of the City's climate goals with past and ongoing planning was a key consideration. In particular, the City recently engaged in Open Space and Recreation planning (see page 42) and Municipal Harbor planning (see page 48). Within the context of both of these planning efforts, the impact of climate change was foundational in defining goals and objectives. This fact is exemplary of how climate change intersects with a wide breadth of topics and issues within the City. This understanding will extend to future planning, where goals and strategies should strive to be aligned and/ or weigh the impact to achieving the City's climate goals, outlined in the CARP. Updating the City's previous community development plan, completed in 2001, the City intends to initiate the creation of a comprehensive plan, this opportunity will create even further parity, and clarity, across City goals.

Implementation: What's Next?

Public engagement and education

The City will leverage engagement and educational tools to support implementation of strategies within the sphere of influence of residents and businesses. Initiatives like the Mass Save Community First Partnership connect residents with the resources they need to take climate action in there own lives. Outreach to the community can come in the form of tabling at events, forums and worships, educational materials, social media outreach, newspaper articles, interview, and mailers. The City will also continue to engage with volunteers and leverage youth internships to extend our outreach capacity to reach communities that are traditionally less likely to engage.

Partnerships and collaboration

Partners will be key to implementing the CARP's goals. Partners at the State and Federal level can be leveraged to advocate for climate actions outside the sphere of influence of City authorities. Local partners will also be a key touch point for reaching Gloucester residents with resources and information.

Gloucester Harbor, City of Gloucester

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Follow Innovate Gloucester's social media pages to to see how the Gloucester Climate Action and Resilience Plan (CARP) is being implemented:

Innovate Gloucester **@InnovateGlosta** **@InnovateGlosta**

List of Acronyms and Abbreviations

ARPA	American Rescue Plan Act
BRIC	Building Resilient Infrastructure and Communities (FEMA grant program)
CARP	Climate Action and Resilience Plan
CATA	Cape Ann Transportation Authority
CDBG	Community Development Block Grant
CEA	Community Electricity Aggregation
CEC	Gloucester Clean Energy Commission
CZM	Massachusetts Office of Coastal Zone Management
C&D	Construction and Demolition
DCS	Massachusetts Division of Conservation Services
DOER	Massachusetts Department of Energy Resources
EJ	Environmental justice
EOEEA	Massachusetts Executive Office of Energy and Environmental Affairs
EPA EV	U.S. Environmental Protection Agency
EV	Electric vehicle
FEMA	Federal Emergency Management Agency
GHG	Greenhouse Gas
HVAC	Heating, ventilation and air conditioning system
HUD	U.S. Department of Housing and Urban Development
LED	Light emitting diode
LEED	Leadership in Energy and Environmental Design
MACC	Massachusetts Assocation of Conservation Commissions
MAPC	Metropolitan Area Planning Council
MassCEC	Massachusetts Clean Energy Center
MassDEP	Massachusetts Department of Environmental Protection
MVP	Municipal Vulnerability Preparedness
MT CO2e	Metric ton of carbon dioxide equivalent
MW	Megawatt
NZ	Net zero
OSRP	Gloucester's Open Space and Recreation Plan
PACE	Property Assessed Clean Energy
PH	Passive House
PV	Photovoltaic
TIP	Transportation Improvement Program - a program of the Central Transportation Planning Staff (CTPS) for the Boston Region Metropolitan planning Organization MPO)
ZEV	Zero-emissions vehicle