

November 2024 Update

Portsmouth's Climate Future

A Roadmap to Net Zero Emissions and Climate Resilience



PREPARED FOR



City of Portsmouth
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Acknowledgments

Special thanks are extended to the following groups for their support in developing *Portsmouth's Climate Future*. Their guidance and active participation will serve as a foundational factor in the success of this plan.

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Climate Action Plan RFP Committee

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The City would also like to thank its Consultant Team for their support in the development of this plan:



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Finally, the City is especially grateful to its **Climate Ambassadors** and the many individuals who live, work, and play in Portsmouth who shared their ideas and comments to make this plan unique to your needs and your future.



CITY OF PORTSMOUTH

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Dear Residents of Portsmouth:

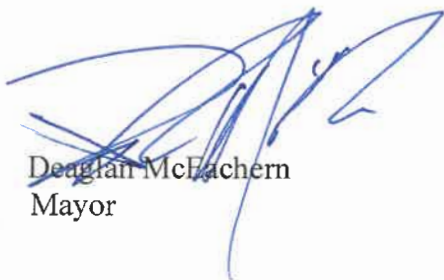
We believe in the City of Portsmouth and together we must choose our path. Portsmouth's Climate Future presents us with an incredible opportunity serving as a comprehensive roadmap charting a course for Portsmouth to contribute to a climate safe planet for our children and our future. The time is short and the task is large.

We understand we are facing an existential threat and we must act with the urgency needed to address that threat. The Climate Action Plan is the path to take the City to a zero carbon future. While we have been an Eco-Municipality since 2006, the scale of the problem has become more clear and supports the need for bold action to accelerate our current efforts. With this plan, we are committing to reduce our greenhouse gas emissions to zero by 2050.


Our municipal government can take steps such as those outlined in this plan to oversee and control its Climate Future. The larger community, which includes residents, businesses, workers, and visitors is also presented a path forward with this plan. Together, we will implement priority strategies that incorporate energy efficiency renewable energy, sustainable transportation, and climate adaptation. By directing our energy and earnest efforts, we will succeed in supporting a global shift to a low carbon future, support a resilient community and offset some of the negative impacts of climate change.

By adopting this plan, we ask that we all come together to act and demonstrate our belief in the City and its people, by moving it to a safer climate future for all. This means a future worthy of the 400 years of strength and solidarity that has made Portsmouth what it is today and stronger than it has ever been. Portsmouth has met challenges in the past and faced them head on. This plan gives the City an opportunity to meet head on the challenge of our time and come together to address it.

Sincerely,



Deaglan McEachern
Mayor



Karen S. Conard
City Manager



Bert Cohen
Chair of the Sustainability Committee

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Acronyms

AFOLU	Agriculture, Forestry, and Other Land Use
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ATIIP	Active Transportation Infrastructure Investment Program
BAU	Business-As-Usual
BE	Building Energy Conservation and Efficiency
BEMS	Building Energy Management System
BEVs	Battery Electric Vehicles
BRIC	Building Resilient Infrastructure and Communities
CAFE	Corporate Average Fuel Economy
CCAP	Comprehensive Climate Action Plan
CDBG	Community Development Block Grant
CDFA	Community Development Finance Authority
CH ₄	Methane
CO ₂	Carbon Dioxide
COAST	Cooperative Alliance for Seacoast Transportation
COP21	United Nations 21st Conference of Parties
CSLU	Climate Smart Land Use
DC	Direct Current
DTS	Decarbonization Transportation Systems
EPDs	Environmental Product Declarations
EPP	Environmentally Preferable Purchasing
ER	Energy Resilience
FCEVs	Fuel Cell Electric Vehicles
FEMA	Federal Emergency Management Agency
FR	Flood Resilience
GHG	Greenhouse Gas
GPC	Global Protocol for Community-Scale Greenhouse Gas Emission Inventories
GRIP	Grid Resilience and Innovation Partnerships
GSCF	Granite State Clean Fleets
GWP	Global Warming Potential
HMGP	Hazard Mitigation Grant Program
HPDs	Health Product Declarations
HR	Heat Resilience
HVAC	Heating, Ventilation, and Air Conditioning
IPCC	Intergovernmental Panel on Climate Change
LCCA	Life Cycle Cost Analyses
LEDs	Light Emitting Diodes
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
MT CO ₂ e	Metric Tons of Carbon Dioxide Equivalents
N ₂ O	Nitrous Oxide
NCA	National Climate Assessment
NH	New Hampshire

PACE	Powering Affordable Clean Energy
PCAP	Priority Climate Action Plan
PPAs	Power Purchase Agreements
PUC	Public Utilities Commission
PV	Photovoltaic
RE	Renewable Energy Production and Procurement
REC	Renewable Energy Certificates
RGGI	Regional Greenhouse Gas Initiative
RPS	Renewable Portfolio Standard
RSA	Revised Statutes Annotated
SEACAN	School Eco Club and Seacoast Climate Action Now
SIMAP	Sustainability Indicator Management & Analysis Platform
SWIFR	Solid Waste Infrastructure for Recycling
U.S. EPA	U.S. Environmental Protection Agency
UNFCCC	United Nations Framework Convention on Climate Change
USGBC	U.S. Green Building Council
V	Volts
VMT	Vehicle Miles Traveled
WM	Sustainable Waste Management
ZEVs	Zero-Emission Vehicles

Introduction





1

Introduction

The City of Portsmouth proudly introduces *Portsmouth's Climate Future*, a community-driven climate action plan aimed at reducing greenhouse gas (GHG) emissions from both community and local government sources to net zero levels. This initiative is part of a larger global effort to mitigate the worst impacts of climate change and build resilience for the future. Climate change stands as one of the most pressing challenges of the 21st century, making it imperative to act for the health, prosperity, and overall well-being of our residents, economy, and the surrounding natural environment.

While often seen as a daunting challenge – and understandably so, climate change also offers a unique opportunity to advance our community's vision, guided by the five themes laid out in the City's Master Plan: Vibrant, Authentic, Diverse, Connected, and Resilient.¹ It also empowers us to address historical inequities while ensuring fairness and justice as we forge ahead on our climate journey.

In this chapter, we introduce *Portsmouth's Climate Future* by outlining the basics of a climate action plan and exploring the key planning efforts and factors that shaped its development. Beyond this discussion, Chapter 2, *Community Participation*, describes the opportunities the City created to engage and obtain feedback from its stakeholders during the planning process. Chapter 3, *Greenhouse Gas Emissions Inventory*, establishes the GHG emissions baselines² at both the community and local government

¹ The City of Portsmouth's Master Plan is available at <https://www.cityofportsmouth.com/planportsmouth/master-plan>.

² In this context, the word "baseline" refers to the reference measurement used to compare future emissions and measure the effectiveness of climate mitigation actions.

scales, as well as forecasts those emissions under business-as-usual (BAU)³ conditions. Chapter 4, *Implementation Roadmap*, charts a clear path towards a **net zero⁴ future community-wide by 2050 and for the local government by 2040**. Finally, Chapter 5, *Enabling Success*, discusses the next steps in building community capacity to ensure successful implementation of the plan.



VIBRANT

A City that provides a high quality of life with an abundance of opportunities for living, working and playing.



AUTHENTIC

A City that treasures its unique character, natural resources and historic assets.



DIVERSE

A City that welcomes residents of all ages, backgrounds and economic levels and supports a wide variety of businesses.



CONNECTED

A City that provides strong links throughout the community, supports all forms of mobility and encourages walking, bicycling and transit.



RESILIENT

A City that considers and values the long term health of its natural and built environment.

Themes from the Portsmouth 2025 Master Plan

1.1 What is *Portsmouth's Climate Future*?

Portsmouth's Climate Future is our community's guide to addressing climate change together. This plan builds upon previous and ongoing planning efforts at the local, regional, and statewide levels, highlighting the actions and policies necessary to reduce GHG emissions and adapt to shifts in our climate. It reflects our shared commitment to enhancing our current sustainable practices and launching innovative new initiatives in six key focus areas or pathways:

- › **Building Energy Conservation and Efficiency** – Leveraging the latest technologies and sustainable building practices to reduce energy consumption where we live, work, and play.

³ "Business-as-usual" refers to the projected trends of GHG emissions assuming no significant actions are taken to reduce them.

⁴ In the context of GHG emissions, "the term Net Zero" refers to achieving a balance between the amount of GHGs emitted to and removed from the atmosphere, effectively resulting in no net increase in atmospheric GHG levels.

- › **Decarbonizing⁵ Transportation Systems** – Reducing our vehicle miles traveled through active transportation, shared mobility,⁶ and public transit modes while simultaneously increasing our adoption of electrified vehicles.
- › **Renewable Energy Production and Procurement** – Enabling and promoting the installation of local renewable energy systems and pursuing financial mechanisms to close the gap.
- › **Sustainable Waste Management** – Redirecting our waste streams away from landfills and incinerators through increased composting, source reduction, reuse, and recycling.
- › **Climate-Smart Land Use** – Enabling our natural lands and ecosystems to better serve their role as carbon sinks and utilizing land use controls to support the aims of the plan’s other pathways.
- › **Enhancing Climate Resilience** – Preparing and safeguarding our critical assets and resources against the potential impacts of climate change.

Portsmouth's Climate Future also serves as a detailed roadmap, featuring implementation timelines, designated responsibilities, estimated financial commitments, and funding opportunities. This roadmap is designed to leverage public resources efficiently while fostering a culture of climate action and shared responsibility among our community and key partners.

1.2 Driving Factors for Climate Action in Portsmouth

The following factors drove the City of Portsmouth to prepare this climate action plan and were carefully considered in its development.

1.2.1 Global Planning Context

Assessment reports from the Intergovernmental Panel on Climate Change (IPCC) have made it clear that our activities are directly warming the planet. This change has resulted in more frequent and severe weather events, such as heavy rainfall, droughts, and heat waves, as well as rising sea levels. The latest IPCC report (AR6), released in 2021 and 2022, revealed that the global average temperature has risen by 1.1°C since the pre-industrial era (i.e., the period before the Industrial Revolution) and that this average could exceed 2°C in the future without immediate and sustained GHG emissions reductions. A rise of 1.5°C or more would result in even more intensified climate hazards, creating greater risk to human health, economies, and natural ecosystems. Due to inherent socioeconomic disadvantages (e.g., poverty and minority status), such risks would be disproportionately borne by the most vulnerable of communities.

As a global crisis, climate change requires a global response. The Paris Agreement, adopted in December 2015 during the 21st Conference of Parties (COP21) to the United Nations Framework

⁵ “Decarbonization” refers to the process of reducing carbon dioxide (CO₂) and other GHG emissions (e.g., methane [CH₄] and nitrous oxide [N₂O]) through the implementation of climate mitigation measures, such as cleaner energy sources and energy efficiency measures.

⁶ Per the Shared-Used Mobility Center, shared mobility is defined as transportation services and resources that are shared among users, either concurrently or one after another. This includes public transit; micromobility (bikesharing, scooter sharing); automobile-based modes (carsharing, rides on demand, and microtransit); and commute-based modes or ridesharing (carpooling and vanpooling).

Convention on Climate Change (UNFCCC), is a global commitment involving almost every country in the world, both developed and developing. It is a legally binding agreement where all signatories commit to take actions that limit global temperature rise to less than 2°C above pre-industrial levels, aiming for even lower at 1.5°C to avoid the worst impacts of climate change. The Paris Agreement also aims to help countries become climate resilient and increase their ability to adapt to the adverse effects of climate change.

In this global planning context, initiatives like *Portsmouth's Climate Future* play a crucial role in contributing to the collective effort to combat climate change and ensure the well-being of our planet for future generations.

1.2.2 National Planning Context

As part of its commitment under the Paris Agreement, the United States has pledged to reduce its emissions by 50-52 percent below 2005 levels by 2030. Further commitments have been made, including reaching 100 percent carbon pollution-free electricity by 2035, as outlined in Executive Order 14057, and achieving a net-zero emissions economy by 2050 and delivering 40 percent of benefits from federal investments in climate and clean energy to disadvantaged communities, per Executive Order 14008.⁷ *The Long-Term Strategy of the United States* lays out pathways to achieve a net-zero GHG emissions economy by 2050.⁸

To achieve such reductions, policies and legislation are being leveraged or have been enacted, including the Clean Air Act which has been used to regulate GHG emissions from major sources such as power plants and vehicles; the Inflation Reduction Act which allocated significant funding to renewable energy, electric vehicles, and energy efficiency improvements; and the Infrastructure Investment and Jobs Act, which provided significant funding to sustainable infrastructure projects (e.g., public transportation and modernizing the electrical grid).

From a climate resilience perspective, the National Climate Assessment (NCA), produced by the United States Global Change Research Program, examines climate trends, vulnerabilities, and projected future changes on the national and regional scales. The NCA notably calls attention to rising average temperatures, more frequent and severe heat waves, changes in precipitation patterns, and rising sea levels. It assesses climate impacts on health, agriculture, water resources, coastal areas (including the City of Portsmouth), ecosystems, and infrastructure. The report underscores the importance of coordinated climate adaptation strategies implemented alongside efforts to reduce GHG emissions.

Among key federal policies that advance climate resilience, the *National Climate Resilience Framework* serves as a guide to help all levels of government anticipate, prepare for, adapt to, and recover from the impacts of climate change, and Executive Order 14008 requires federal agencies to develop climate adaptation and resilience plans that address the impacts of climate change on their operations and assets. Notable related legislation includes the American Recovery and Reinvestment Act and the Energy Policy Act, which enhance the energy sector's

⁷ The White House. (n.d.). "President Biden's Historic Climate Agenda." Accessed from, <https://www.whitehouse.gov/climate/>

⁸ United States Department of State and the United States Executive Office of the President. (2021). *The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050*. Accessed from, <https://www.whitehouse.gov/wp-content/uploads/2021/10/us-long-term-strategy.pdf>

resilience, and the Coastal Zone Management Act, which includes provisions to enhance the resilience of coastal communities to sea level rise and extreme weather events. Additionally, funding opportunities through the Federal Emergency Management Agency (FEMA), such as through the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC) Program, along with the Infrastructure Investment and Jobs Act and the Water Resources Development Act, further support resilience efforts.

1.2.3 State Planning Context

The New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental, and Economic Development Future, published in March 2009, includes strategies and actions to reduce GHG emissions and enhance the state's resilience to climate change, with a focus on energy efficiency, renewable energy, and sustainable land use. It set a non-binding statewide GHG emissions reduction target of 80 percent below 1990 levels by 2050. In 2015, through the Resolution Concerning Climate Change and other collaborative agreements, New Hampshire, along with other New England states, committed to reducing statewide GHG emissions by 35-45 percent from 1990 levels by 2030. As one of New Hampshire's most densely populated communities and most popular tourist destinations, the efforts the City of Portsmouth undertakes to reduce its GHG emissions can significantly contribute to achieving these targets.

In 2022, the New Hampshire Department of Energy published *New Hampshire: 10-Year Energy Strategy*, which sets policy goals for energy efficiency, renewable energy development, and energy resilience.

In March 2024, the State released the *State of New Hampshire Priority Climate Action Plan*, prepared in collaboration with the U.S. Environmental Protection Agency (U.S. EPA) with funding provided through the U.S. EPA's Climate Pollution Reduction Grant Program. The Priority Climate Action Plan (PCAP), which shall supersede the 2009 Climate Action Plan, establishes a detailed statewide GHG emissions inventory and creates a pathway to support statewide investment in policies, practices, and technologies that reduce GHG emissions, as well as other harmful air pollutants while supporting high-quality jobs, economic growth, and quality of life for residents. The PCAP will be followed by a Comprehensive Climate Action Plan (CCAP) that will set near- and long-term GHG emissions reduction targets. The CCAP is expected in August 2025. *Portsmouth's Climate Future* and the State's PCAP and upcoming CCAP will be aligned and work together towards similar objectives.

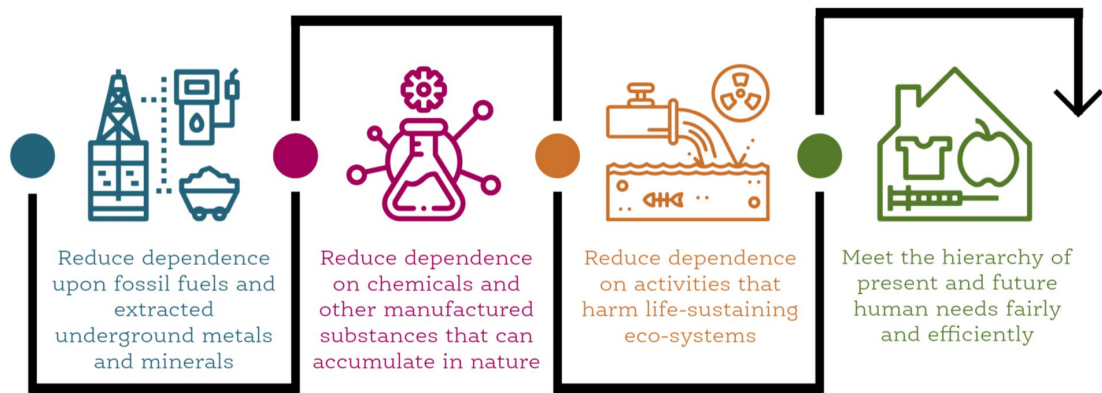
In addition to the planning efforts described above, New Hampshire is also a participant in the Regional Greenhouse Gas Initiative (RGGI), a cooperative effort among northeastern states to cap and reduce carbon dioxide (CO₂) emissions from the energy sector. Relatedly, New Hampshire's Renewable Portfolio Standard (RPS) statute, RSA 362-F, requires 25.2 percent of the state's energy supply to come from renewable energy sources by 2025.

From a climate resilience perspective, the State is currently updating its *2019-2020 New Hampshire Coastal Flood Risk Summary*, which highlights the increasing risk of coastal flooding due to sea level rise and extreme weather events. It stresses the need for immediate adaptation strategies and underscores partnerships between state agencies, local governments, and stakeholders to enact resilience-positive policies.

1.2.4 Local Planning Context

In the City of Portsmouth, our local planning efforts are deeply rooted in a comprehensive strategy that addresses both current issues and opportunities, as well as emerging challenges, with environmental stewardship at the core of our focus.

The Mayor’s Blue Ribbon Committee on Sustainable Practices – now the Sustainability Committee – was established in 2007 after the City’s 2005 Master Plan highlighted the community’s desire to be more sustainable and ecologically friendly. On the recommendation of the committee, the City Council declared the City to be an Eco-Municipality. The following graphic depicts how the City intends to become more sustainable through this commitment.



Credit: VHB, Adapted from The Natural Step Guiding Objectives

Our 2025 Master Plan, published in 2017, advances this approach. Of particular relevance to *Portsmouth’s Climate Future* is how the 2025 Master Plan aims to address the long-term health of our natural and built environments under the theme of “Resilient,” through the following goals:

- › Implement best management practices and site design standards to ensure the sustainability and resilience of public and private infrastructure;
- › Manage public open spaces for passive recreation and environmental preservation;
- › Promote effective stewardship to enhance the City’s natural resources;
- › Promote efficient use and management of resources; and
- › Incorporate climate change impacts and adaption into all development review and planning efforts.

Building on the above, as the following list demonstrates, we have a strong commitment to the continued implementation of climate-focused projects and programs.



Solar Photovoltaic (PV) Array at the Madbury Water Treatment Plant

- › Between 2016 and 2017, the City upgraded its entire streetlight system to light-emitting diodes (LEDs).
- › The City completed two large solar photovoltaic (PV) arrays at the Portsmouth High School and Madbury Water Treatment Plant, which combined produce around 700,000 kilowatt hours of renewable electricity annually.
- › In 2017, the Mayor signed a letter promoting the Paris Agreement’s goals for increasing efforts to cut GHG emissions, creating a clean energy economy, and standing for environmental justice.
- › In 2018, following a report from the Renewable Energy Committee, the Portsmouth City Council adopted a Renewable Energy Policy that moved the entire City, beginning with the local government, towards becoming a “Net Zero Energy”⁹ community.
- › In 2023, with support from the Portsmouth Energy Advisory Committee, the City Council adopted the Portsmouth Community Power Plan. Portsmouth Community Power combines the buying power of residents and businesses to expand energy choices, including options with greater renewable content than those obtainable directly from the utility while lowering costs.



Portsmouth Community Power Logo

⁹ “Net zero energy” is defined on a source energy basis (i.e., accounting for losses in transmission and distribution) and as the actual energy consumed on an annual basis is less than or equal to locally generated renewable energy.

- › In 2023, the City Manager approved a new purchasing policy that guides all new municipal construction and major renovation projects to include energy-efficient technologies and utilize sustainable practices, such as U.S. Green Building Council’s (USGBC’s) Leadership in Energy and Environmental Design (LEED) Silver-equivalent certification for all new municipal building projects.
- › In May 2024, the City Council voted unanimously to pass zoning amendments to increase access to electric vehicle charging stations by expanding the number of districts in the City where they can be installed. The City has installed one charging station (two ports) in the lower parking lot at City Hall on Junkins Avenue.
- › The Sustainability Committee continues to serve in its capacity as a resource and educational conduit for the advancement of sustainability in the community.

In addition to the above, the City and its Sustainability Committee routinely work with local and regional community organizations, such as the Portsmouth High School Eco Club and Seacoast Climate Action Now (SEACAN). Over the last few years, these partnerships have brought forth actions like the community carbon footprint tracking dashboard BrightAction

(<https://brightaction.app/newhampshire/portsmouth>), the annual Sustainability Fair held every April to promote sustainability in the community, and Eco Day at the Portsmouth Farmer’s Market every August to highlight local sustainability initiatives in our food systems and beyond. These collaborative partnerships are key to building community capacity to advance common sustainability and climate action goals.



Electric Vehicle Charging Station at City Hall

1.2.4.1 Climate Change in Portsmouth

As a coastal community, the City of Portsmouth faces substantial risks stemming from the impacts of climate change. Rising sea levels and storm surges pose significant threats to the City’s infrastructure, including roadways, buildings, and public utility systems, potentially jeopardizing their functionality as well as the safety of residents and visitors. Such hazards are already impacting areas surrounding North Mill Pond, South Mill Pond, the South End, Peirce Island, Little Harbor, and Sagamore Creek – areas home to significant historical and cultural resources – as well as vital economic assets, such as the downtown business district and fisheries-based activities.

To address its coastal vulnerability, the City of Portsmouth undertook the 2013 Coastal Resilience Initiative, which mapped areas of the community most vulnerable to sea level rise as well as

severe coastal storms and identified adaptation strategies,¹⁰ and completed the 2018 *Historic Resources Climate Change Vulnerability Assessment and Adaptation Plan*,¹¹ which evaluated the economic and cultural impact of flooding and sea level rise in the Downtown Historic Register District. The City is currently updating its Hazard Mitigation Plan, which will enable it to apply for certain types of non-emergency funding under FEMA's HMGP.

The City has also worked closely with its partners, namely the Rockingham Planning Commission, on several studies, including the *Portsmouth Tides to Storms Vulnerability Assessment* (2015) and the *Seacoast Transportation Corridor Vulnerability Assessment* (2022). While the Tides to Storms Vulnerability Assessment focused on municipal assets within Portsmouth, the Corridor Vulnerability Assessment provides a broad assessment of at-risk transportation infrastructure – notably including Junkins Avenue, Parrott Avenue, Marcy Street, and State Street/Daniel Street, as well as US 1 at Sagamore Creek and New Hampshire (NH) 1B. Each of these reports continues to aid Portsmouth's local planning and implementation efforts for future climate adaptation measures.

The City was also chosen to be a host site for the 2023 Keeping History Above Water Conference where the City of Portsmouth Planning and Sustainability Department and Water, Wastewater, Stormwater Division of the Department of Public Works along with Strawberry Banke Museum and the University of New Hampshire Institute for the Study of Earth, Oceans, and Space welcomed 165 attendees to the three-day conference to explore "Water Has a Memory: Preserving Historic Port Cities from Sea Level Rise." This national conference brought to light many of the climate adaptation issues facing Portsmouth in terms of our unique port city and the preservation of our historical resources.

Aside from sea level rise and storm surge, per the *New Hampshire Climate Assessment 2021*, New Hampshire's climate is already becoming warmer and wetter, with temperatures across the state increasing by an average of 3°F since 1901 and annual precipitation increasing by 12 percent over the last 120 years – with the greatest increases occurring since 1971. Higher temperatures and levels of precipitation are projected to continue over the course of this century, with implications for various sectors such as transportation, infrastructure, outdoor recreation, energy, public health, and the environment.

In Portsmouth, annual average maximum and minimum temperatures are expected to rise by 2.0-2.1°F over the next two decades, with an increase of up to 9.1°F possible by the end of the century. Such temperature increases would result in an 8-35 percent decrease in heating degree days (a measure of the energy demand required to heat buildings) and a 34-198 percent increase in cooling degree days (a measure of the energy demand required to cool buildings). Extreme heat days (i.e., days above 90°F) – exacerbated by the urban heat island effect in heavily developed communities such as Portsmouth due to impervious cover (i.e., buildings and pavements) – are also expected to rise to over 50 days by the end of the century – posing a significant risk to populations including the elderly, children, persons with chronic illness, and

¹⁰ More information on the Coastal Resilience Initiative is available at <https://www.cityofportsmouth.com/planportsmouth/cr/>.

¹¹ A Story Map illustrating the Historic Resources Climate Change Vulnerability Assessment and Adaptation Plan is available at <https://portsmouthnh.maps.arcgis.com/apps/MapJournal/index.html?appid=302cb9580dfb4d4dbd66d66dbb39055a88e>.

lower-income households who have limited ability to adapt to rising temperatures, such as those that cannot afford to live in a dwelling with air conditioning.

Total annual precipitation is projected to increase, particularly during winter and spring seasons, by up to 4 percent over the next two decades and by up to 10 percent by the end of the century. Additionally, the frequency and intensity of extreme precipitation events are expected to rise, with the number of days with the most extreme precipitation (i.e., greater than two inches within 24 hours) increasing by up to 69 percent. Such extreme conditions can result in inland and coastal flooding, damages to infrastructure or disruptions to their functionality, and risks to human health including increases in respiratory and heart disease, and diseases due to pests, as well as water supply contamination, among other potential impacts.

The above-described climate trends and projections, as well as the concerning findings of related research, highlight the need to adapt to existing impacts and to reduce GHG emissions to avoid the worst effects of climate change.

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Community Participation



2

Community Participation

At the launch of this planning effort, the City of Portsmouth prepared a comprehensive public outreach and engagement plan designed to seamlessly integrate and set detailed timelines for various outreach strategies. Our diversified approach—encompassing in-person meetings, virtual events, surveys, a dedicated project website, and targeted signage—ensured that all residents and stakeholders had meaningful opportunities to actively participate or otherwise follow our progress. This robust strategy was vital for spurring community interest and securing widespread buy-in, which is critical for the success of *Portsmouth's Climate Future*. Through their involvement, participants helped to set greenhouse gas (GHG) emissions targets, as well as identify and refine actionable strategies to address local climate change challenges. The following sections further describe our outreach strategies.

2.1 Public Engagement Events and Surveys

Three in-person public workshops were held over the course of this project. An online alternative was also made available for each workshop, and assistance with language and other accessibility needs was offered. Workshop 1 was held in May 2023 at the Eileen Dondero Foley City Council Chambers (63 attendees), serving as a project kickoff meeting. It focused on the project goals while highlighting the urgency of climate action, known vulnerabilities, and an overview of engagement opportunities available to the public throughout the project schedule. Workshop 2 was held in July 2023 at the Portsmouth Public Library (29 attendees), where the 2021 GHG emissions inventories and draft GHG emissions reduction measures were presented, along with updates on the project's engagement process. Returning to the Eileen Dondero Foley City Council Chambers, Workshop 3 was held in February 2024 (25 attendees). This last workshop allowed participants to provide feedback on the draft GHG emissions reduction targets, along with the pathways and prioritized actions to reach those targets.

For each of the public workshops, an online survey was also created to encourage broader participation and feedback outside of the meeting itself. Alongside Workshop 2, draft actions were presented in the EasyRetro platform (<https://easyretro.io/>), where participants were able to “vote” on those they supported and provide direct comments to convey their suggestions, thoughts, or questions. The EasyRetro results are presented in **Appendix A**.

In addition to the public workshops, the City created a dedicated project website that provided monthly updates on the planning process, relevant resources to give context to the project, and a feedback form that allowed the public to submit questions or comments on the project.

To bring the project further into the community, City Staff and Climate Ambassadors tabled at a series of events including the Sustainability Fair (April 2023), the Piscataqua RiverFest (June 2023), Market Square Day (June 2023), and Eco Day at the Farmer’s Market (August 2023). At these events, the project team informed the community about *Portsmouth’s Climate Future* and related planning efforts, while soliciting feedback on local climate issues and what residents want their community and their City to do in terms of GHG emissions reduction and climate adaptation. Finally, in September 2023, the project team hosted a community get-together at a local brewery in Portsmouth to discuss the plan and overarching goals of moving the City of Portsmouth toward a net zero future.

2.2 Climate Ambassadors

Early on in this plan’s development, it became clear that additional capacity to carry out the extensive outreach envisioned would be necessary. To bridge this gap, we established a Climate Ambassador Program, soliciting volunteers to engage with a broader assortment of citizens. A training workshop was held in April of 2023, after which the Ambassadors actively conducted outreach by attending meetings of existing organizations and interacting with groups of residents. The Ambassadors provided project information and collected valuable feedback and ideas that informed the drafting of this climate action plan. This was a new approach for Portsmouth and could be replicated in the future. As with any new initiative, there is room for improvement. For example, if replicated, the City should recruit Ambassadors with existing trusted relationships with disadvantaged groups, including low-income communities, communities of color, persons with limited English proficiency, and the intellectually and developmentally disabled, as well as seniors and youth.

Calling all Climate Ambassadors!

Come and learn about the plans for Portsmouth’s Climate Future and how you can help bring the community together to give input to and support the City’s upcoming climate action plan.

MONDAY APRIL 17TH, 2023

HILTON GARDEN INN ROOM
PORTSMOUTH PUBLIC LIBRARY

6 - 7:30 PM

Stop by the kickoff meeting or email kehome@cityofportsmouth.com if you have questions

Climate Ambassadors Recruitment Flyer



Top: Public brainstorming at Workshop 1. **Middle:** Discussion facilitation at Workshop 2. **Bottom (Left):** Kate Homet with the City of Portsmouth's Planning & Sustainability Department at a tabling event. **Bottom (Right):** Project signage welcomed in local storefronts, on lawns, and at events.

Greenhouse Gas Emissions Inventory

3

3

Greenhouse Gas Emissions Inventory

To date, the City of Portsmouth has developed four greenhouse gas (GHG) emissions inventories – in 2006,¹² 2012,¹³ 2018,¹⁴ and 2021. This chapter of *Portsmouth's Climate Future* publishes the results of the most recent inventory at two scales: the community as a whole and local government operations. In addition to reporting baseline emissions, this section forecasts GHG emissions at both scales under business-as-usual (BAU) conditions. Notably, community emissions far surpass local government emissions, underscoring the necessity for substantial community responsibility and action in reducing overall emissions.

3.1 Portsmouth's Greenhouse Gas Emissions Baseline

For calendar year 2021, with support from a community volunteer, the City of Portsmouth prepared an update to its GHG emissions inventory using the University of New Hampshire Sustainability Institute's Sustainability Indicator Management & Analysis Platform (SIMAP®). SIMAP is typically used within the higher education industry to account for GHG emissions at the campus level; however, the City modified the platform to apply the tool to the GHG emissions generated within the community and from its operations. Due to some limitations in adapting this tool, it was not possible to compare the 2021 inventories to previous years. Additionally, the lingering impacts of the COVID-19 pandemic may have influenced the data. Therefore, the City of Portsmouth is encouraged to conduct regular updates to its GHG emissions inventories and reassess its mitigation targets and implementation strategies, as necessary.

¹² The City of Portsmouth's 2006 GHG Emissions Inventory is available at https://files.cityofportsmouth.com/files/ww/2006_ICLEI_Inventory_w_appdx.pdf

¹³ The City of Portsmouth's 2012 GHG Emissions Inventory is available at https://files.cityofportsmouth.com/files/ww/Portsmouth%202012%20GHG%20Inventory_w_appendix.pdf

¹⁴ The City of Portsmouth's 2018 GHG Emissions Inventory is available at https://files.cityofportsmouth.com/files/planning/2018_GHG_Portsmouth_Final.pdf

3.1.1 Community-Wide Emissions

The community-scale portion of the 2021 GHG inventory includes emissions generated from electricity, natural gas, and other fuel consumption within the residential, commercial, and industrial sub-sectors. It also includes transportation emissions resulting from on-road vehicle miles traveled within the City of Portsmouth’s jurisdictional limits, upstream energy-related activities (i.e., natural gas leakage from piping infrastructure and transmission and distribution losses from purchased electricity), and waste generated from within the City but processed outside of its boundaries. It does not account for emissions from agriculture, forestry, and land use; aviation; waterborne navigation; and wastewater processing.

In 2021, total community-wide emissions amount to 163,397 metric tons of carbon dioxide equivalents (MT CO₂e). In other terms, this total represents 7.5 MT CO₂e per person, which is less than the State of New Hampshire at 11.0 MT CO₂e per person.

GHG Emissions per Capita (2021)

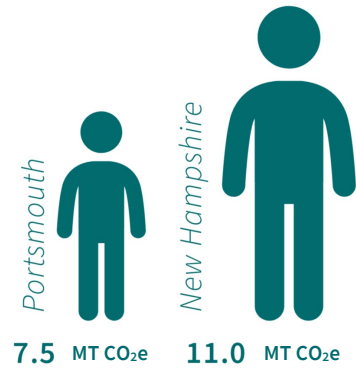
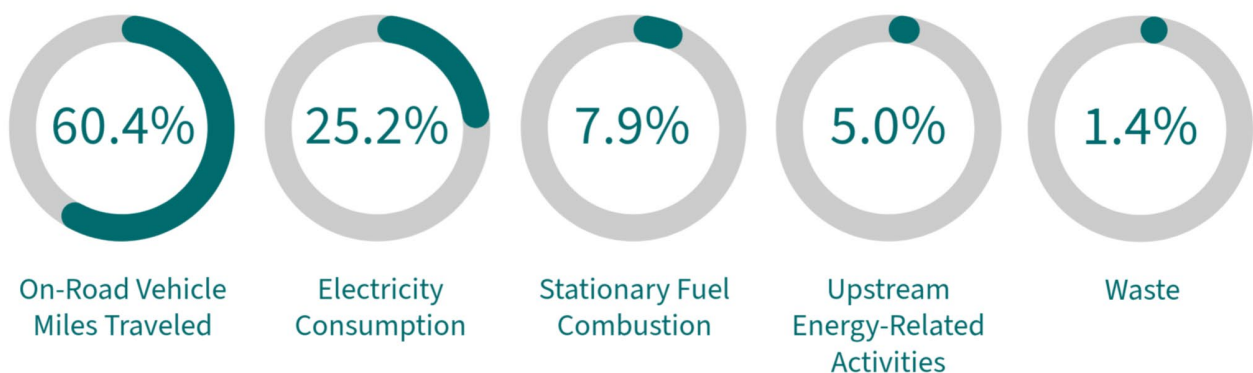


Figure 3-1 illustrates the breakdown of emissions resulting from activities occurring within the Portsmouth community. As shown, the largest source of estimated emissions was from the transportation sector at 60.4 percent, followed by grid-supplied electricity consumption at 25.2 percent. This indicates an opportunity for the community to reduce its GHG emissions by minimizing vehicle miles traveled (i.e., shifting from driving cars to active transportation, public transport, and shared mobility), transitioning to zero-emission vehicles (ZEVs) (i.e., battery electric vehicles [BEVs] and hydrogen fuel cell electric vehicles [FCEVs]), and implementing energy efficiency measures in the existing building stock (e.g., lighting upgrades; heating, ventilation, and air conditioning [HVAC] system improvements; building insulation and sealing; energy efficient appliance and equipment upgrades, power management and controls, and renewable energy integration). While there are many opportunities to facilitate supporting cleaner energy across Portsmouth households, opting for a cleaner energy mix from Portsmouth Community Power is one of the most accessible options.

Figure 3-1: Total Community GHG Emissions by Sector/Source (2021)

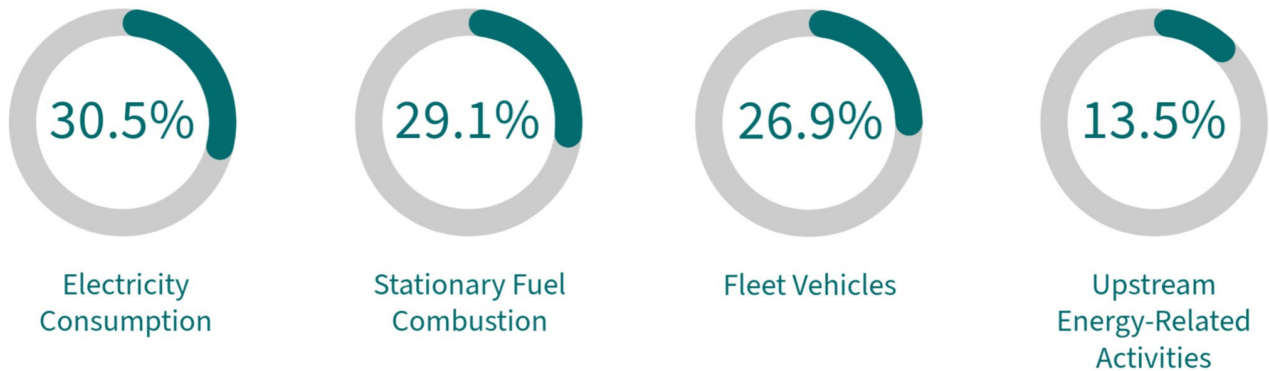


3.1.2 Local Government Operations

For local government operations, the 2021 GHG inventory includes all emissions resulting from energy consumption within City-owned buildings and facilities, government-operated vehicles and equipment, street and traffic lights, and water and wastewater infrastructure. It also includes indirect emissions resulting from upstream energy-related activities. It does not account for fugitive emissions from refrigerants and fire suppression equipment, nor does it include indirect emissions from waste generated by government operations, employee commuting, or employee business travel.

In 2021, total local government operations emissions amounted to 8,214 MT CO₂e, representing 5 percent of total community-wide emissions. As shown in **Figure 3-2**, the largest source of these estimated emissions was grid-supplied electricity consumption, accounting for 30.5 percent. This was followed by stationary fuel combustion at 29.1 percent and fuel consumed by government-operated vehicles at 26.9 percent. Notably, School Department operations, including powering school buildings and running school buses, contributed 43.4 percent of total local government operations emissions.

Figure 3-2: Total Local Government GHG Emissions by Source (2021)



3.2 Business-As-Usual Forecast

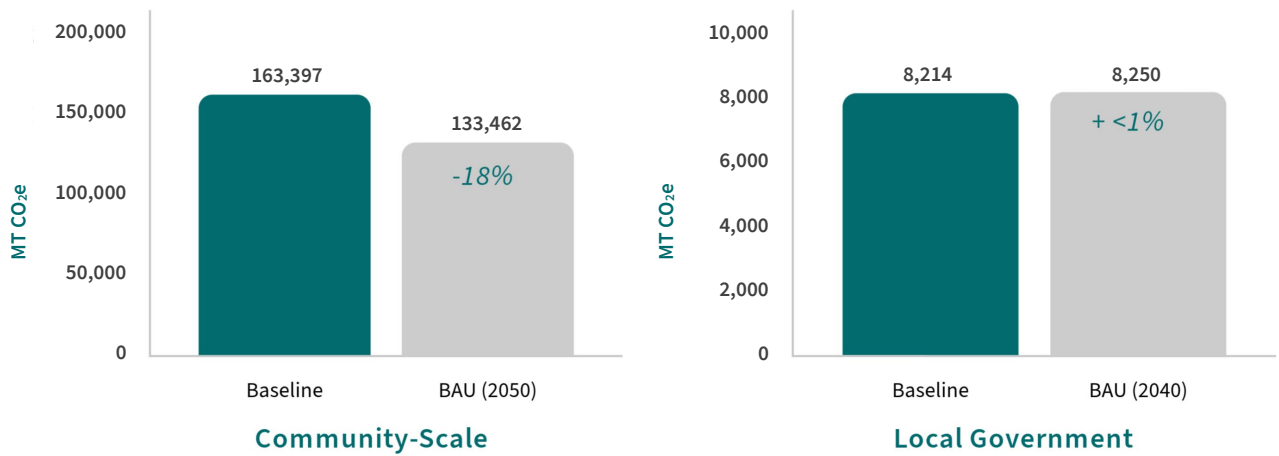
BAU forecasts were prepared to demonstrate projected trends of community-wide GHG emissions and GHG emissions from local government operations if no significant action were to be taken to reduce them. For the City of Portsmouth, due to limitations of the 2021 GHG emissions inventories, it is important to note that these forecasts were heavily dependent on assumptions that included population growth provided by the New Hampshire Department of Business and Economic Affairs,¹⁵ local government employee growth based on historical growth rates as revealed through a review of the City’s Annual Comprehensive Financial Reports,

¹⁵ New Hampshire Department of Business and Economic Affairs. (2022). *State of New Hampshire: State, County, and Municipal Population Projections: 2020-2050*. Accessed from, <https://www.nheconomy.com/getmedia/0205c62d-9c30-4b00-9c9e-d81d8f17b8b3/NH-Population-Projections-2020-2050-Final-Report-092022.pdf>

Corporate Average Fuel Economy (CAFE) standards,^{16,17} and the contribution of renewable energy sources to the statewide electrical grid as dictated by the State’s Renewable Portfolio Standard (RPS).¹⁸ Any variances impacting these assumptions or additional influences (e.g., new regulations or governmental policy) can result in significant changes to these forecasts.

The BAU forecasts for the City of Portsmouth were aligned with the GHG emissions reduction target years for the community (2050) and local government (2040) (see Chapter 4, *Implementation Roadmap*). As shown in **Figure 3-3**, despite projected population increases of around 11 percent, community-wide GHG emissions were forecasted to decrease by approximately 18 percent from the 2021 baseline to 2050. CAFE standards were the largest contributor to this reduction. As for local government emissions, they are expected to remain stable, increasing less than 1 percent by 2040.

Figure 3-3: Business-As-Usual (BAU) Forecasts – Community (2050) and Local Government (2040)



It should be noted that the State’s RPS aims to achieve substantial renewable energy targets by 2025. Accordingly, no further renewable energy contributions to the statewide electrical grid were assumed thereafter as part of these BAU forecasts. Due to the short-term focus of this policy, communities such as Portsmouth are compelled to create and implement strategies to bridge the gap and fully address emissions reductions from purchased electricity.

¹⁶ CAFE standards, or Corporate Average Fuel Economy standards, are U.S. regulations aimed at improving the average fuel efficiency of cars and light trucks to reduce energy consumption and GHG emissions.

¹⁷ As CAFE standards do not apply to school buses, a conservative 10 percent efficiency gain was applied to this emissions source under the local government BAU forecast. Such efficiency gains can be expected through advancements in engine and powertrain technology, improvements in aerodynamics and weight reduction, idle-reduction technologies, and stricter remissions regulations. This estimate does not take into account the potential electrification of the School Department’s bus fleet.

¹⁸ More information on the New Hampshire Renewable Portfolio Standard is available at <https://www.energy.nh.gov/renewable-energy/renewable-portfolio-standard>.

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Implementation Roadmap



4

Implementation Roadmap

This chapter establishes greenhouse gas (GHG) emissions reduction targets for the Portsmouth community and local government, as well as lays out actions for each to reach the targets while simultaneously enhancing Portsmouth’s resilience to climate change. The details herein serve as a flexible guide to the implementation of *Portsmouth’s Climate Future* – the who, what, and how.

4.1 Toward a Net Zero Emissions Future

In adopting *Portsmouth’s Climate Future*, Portsmouth’s City Council is setting a target to reach net zero emissions within the community by 2050. Leading by example, it is committing to reducing local government-owned and controlled activities to net zero levels by an earlier target date of 2040. These targets were established with careful consideration, and the planning process revealed robust community support for their adoption.¹⁹

Figures 4-1 and 4-2 illustrate the net zero targets at the community scale and local government scale, respectively. They mirror or are more aggressive than existing local, regional, and national commitments, including that of the State of New Hampshire which aims to reduce GHG emissions by 80 percent below 1990 levels by 2050.²⁰ Consistent with climate science, they are designed to help achieve a long-term global warming outcome below 1.5 degrees Celsius,²¹ thereby avoiding the worst effects of climate change.

¹⁹ Many participants at Workshop #3 desired to see a more ambitious net zero target for the community, aligning it with the local government. However, it was determined that achieving net zero emissions at the community scale by 2040 would be difficult and the flexibility of the longer-term target would better allow different sectors/sources to adapt considering their specific challenges. Further, such a short-term goal could lead to trade-offs, potentially including the diversion of substantial investments from other purposes.

²⁰ The State of New Hampshire is currently in the process of updating its Climate Action Plan, which will presumably include updated commitments for GHG emissions reduction.

²¹ The Intergovernmental Panel on Climate Change (IPCC). (2023). *AR6 Synthesis Report Climate Change 2023*. Accessed from, <https://www.ipcc.ch/sr15/>

Figure 4-1: Drawdown to Zero – Community Activities

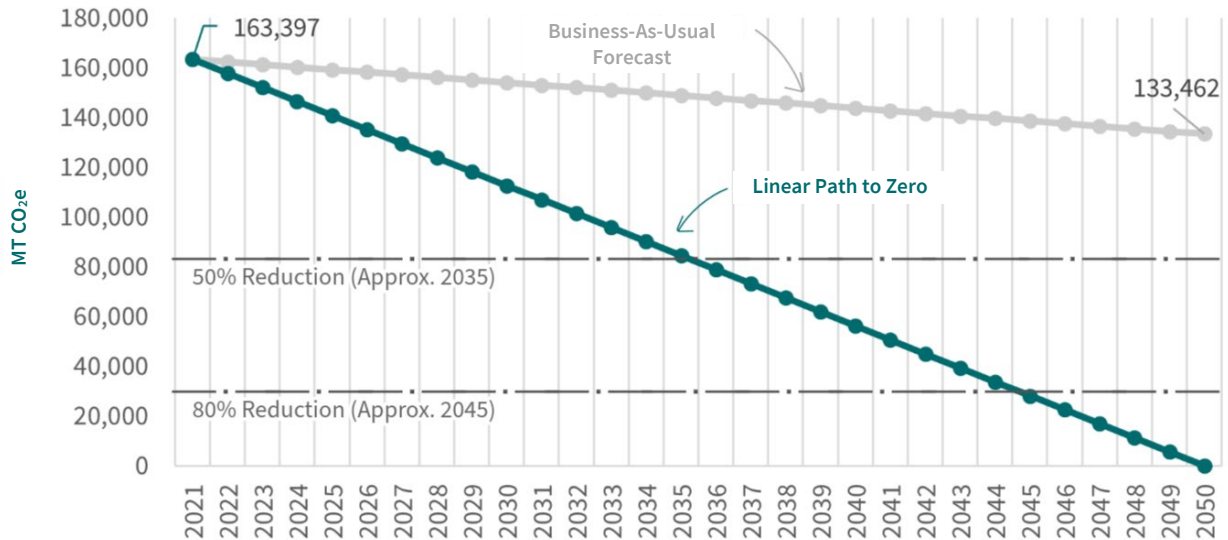
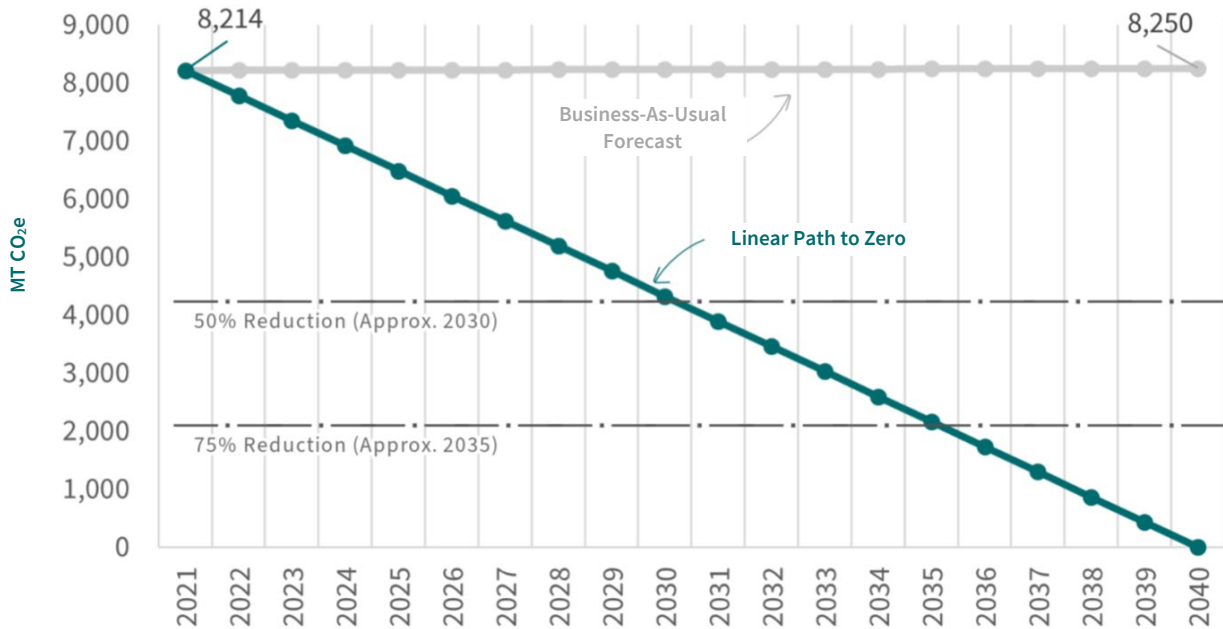


Figure 4-2: Drawdown to Zero – Local Government Operations



While challenging, these targets can potentially be reached through the comprehensive implementation of the priority and supporting actions laid out in this plan. It is essential, however, to acknowledge the possible practical challenges of implementation, including resource allocation, technological barriers, and stakeholder cooperation. Crucially, significant and sustained public support and action are necessary to fully realize GHG emissions reductions at the community scale. As necessary, addressing residual emissions (i.e., any emissions remaining after all feasible actions have been taken) through offsets and carbon removals

(see **Section 4.1.1**) is possible, though they will require rigorous verification and high standards to ensure their effectiveness and integrity.

It is important to note that these targets are based on the data as well as the sectors and sources covered in the City's 2021 GHG emissions inventories. As the City continually updates its emissions inventories with more refined data and to cover a broader set of sectors and sources, it should regularly review how it defines its net zero targets. Similarly, the City should routinely review its progress toward meeting the targets to identify and address any projected shortfalls and adjust for continuous improvement purposes.

4.1.1 A Note on Carbon Sinks

This plan prioritizes direct emissions reductions within the community; however, it recognizes the critical role of carbon sinks – natural reservoirs that absorb and store more carbon dioxide (CO₂) than they release into the atmosphere. Examples of carbon sinks include forests, soils, oceans, and wetlands. **Projects that create or enhance natural land covers, such as through reforestation, afforestation, wetland restoration, and urban green infrastructure, can be indispensable components in achieving a community's net zero targets.** They can compensate for residual emissions – those emissions that remain after all feasible measures to reduce or eliminate emissions have been implemented – or even enable a carbon-negative community (i.e., removing more carbon from the atmosphere than is generated).

4.2 Roadmap Organization

As presented in this section, the actions to be undertaken by the community and the local government in *Portsmouth's Climate Future* are organized by pathway:

- › Building Energy Conservation and Efficiency;
- › Decarbonizing Transportation Systems;
- › Renewable Energy Production and Procurement;
- › Sustainable Waste Management;
- › Climate-Smart Land Use; and
- › Enhancing Climate Resilience.

These pathways give focus to the priority actions that aim to both mitigate and adapt to climate change in the City of Portsmouth. In the following sections, these actions are defined in terms of their implementation details such as their implementation timelines, champions and supporting entities, costs and funding opportunities, co-benefits, and equity considerations.

4.3 Equity Considerations

This plan addresses the causes of climate change by targeting GHG emissions while recognizing that disadvantaged populations, often the least responsible for these emissions, are the most affected. On an academic level, this inequity may arise from their increased exposure to environmental hazards like floodplains, decreased adaptive capacity resulting from economic

constraints and limited access to infrastructure (e.g., waterbodies, natural environments, high-quality housing, healthy foods, broadband), and pre-existing health conditions combined with limited access to healthcare, political marginalization, barriers in education and information gathering, and disproportionate economic impacts such as energy burden (i.e., relatively higher electricity, home heating and cooling, and transportation energy costs).

According to the Demographic Index and Supplemental Demographic Index provided by the U.S. Environmental Protection Agency's (U.S. EPA's) EJScreen, concentrations of disadvantaged populations in the City of Portsmouth are in U.S. Census Block Groups 330151071001 and 330151071003. These areas also face critical service gaps in broadband access, health insurance, and housing affordability, and these deficiencies can hinder residents' ability to engage in community-wide efforts to reduce GHG emissions and limit their capacity to adapt to and respond to climate hazards. It is important to note, however, that disadvantaged populations reside throughout the City – not just in the above-referenced locations. Therefore, equity considerations should be applied universally and not only when an action impacts an area with higher concentrations of these populations.

This plan recognizes that climate action requires a just transition, meaning that associated benefits (e.g., cost-saving energy efficiency technologies, access to renewable energy, resilient neighborhoods, green jobs, access to natural areas) and burdens of climate action (e.g., costs of energy efficiency upgrades and retrofits), must be fairly distributed. Accordingly, the implementation of the actions detailed in this chapter requires careful consideration of their potential direct, indirect, and compounding consequences on the City's disadvantaged populations, as well as their key support structures, including community organizations such as Cross Roads House, Families First, and Operation Blessing. To this end, the City should:

- › Better understand its low-income households and the energy burden (i.e., the percentage of a household's income that is spent on energy costs, which include expenses for electricity, heating, cooling, and transportation fuel) and energy deficit (i.e., where the energy supply is insufficient to meet the energy demand – perhaps due to issues of affordability) that exists within the City. The U.S. Department of Energy's Low-Income Energy Affordability Data Tool can be helpful in this regard.
- › Prioritize households with a high energy burden for energy efficiency incentives and create targeted communications for these households to relay information on available funding opportunities.
- › Ensure new infrastructure or enhancements to such infrastructure are equitably sited throughout the City, taking into consideration existing access and need. For example, there is likely a greater need for electric vehicle charging infrastructure in areas with multi-family housing and for cooling centers in areas that may not have access to air conditioning.
- › Consider subsidizing any direct costs of new public infrastructure or new services to users. For example, the cost of charging electric vehicles at public stations located in lower-income areas should be minimized to the extent practicable.

- › Assess the impacts of decision-making and the siting of new infrastructure on impacted communities to ensure they avoid, minimize, or mitigate any disproportionate effects on surrounding low-income and minority populations. For example, energy infrastructure such as power plants have historically been sited in low-income and minority communities, leading to disproportionate exposure to pollution and health risks. To be effective, this process should include community consultation.
- › Recognize that some actions may require households to purchase new products or services, for example, reusable products and organic waste collection. The implementation of such actions should consider free or discounted options for low-income households to ensure that these measures are accessible and do not impose additional financial burdens on disadvantaged communities.
- › Work to close any gaps in understanding the actions needed to be taken at the community level and awareness of opportunities to engage in those actions. This may require targeted educational campaigns with language accommodations.

4.4 Supporting Actions

In the development of this plan, we identified several measures that, while not directly reducing GHG emissions, would facilitate and amplify the emissions reduction benefits of the prioritized actions. Additionally, for certain actions, the City may not have direct implementation authority but could play a strategic role in facilitating their execution. These supporting actions identified during the planning process for *Portsmouth's Climate Future* include:

- › Staffing
 - Appoint a Climate Action Manager/Sustainability Manager to manage the implementation of *Portsmouth's Climate Future*.
 - Identify staff to continue to monitor federal and state incentives, rebates, and tax breaks that support climate mitigation and resiliency.
- › Policies and Procedures
 - Continue regularly updating the City's GHG Emissions Inventories, improving their accuracy and comprehensiveness. Institute data governance to support this effort.
 - Continue to assess City plans and reports to ensure they appropriately acknowledge and integrate *Portsmouth's Climate Future* so that efforts are unified and consistently directed toward achieving long-term climate resilience and sustainability goals.
 - Launch a publicly available reporting dashboard to track progress toward achieving the GHG reduction targets included in *Portsmouth's Climate Future*. This dashboard should also report on implementation progress by pathway and prioritized action. Provide an alternative to the online dashboard for those with limited access to technology.
 - With state approval, as necessary, incorporate carbon emissions and the cost of carbon as evaluation criteria in the City's capital planning process and in department operating budget requests, where relevant.

› Education and Awareness

- Develop, launch, and maintain a consolidated community education program that engages residents and other property owners/developers to provide resources on a range of energy efficiency and transition technologies, relating to buildings (e.g., Weatherization Assistance Program) and building systems (e.g., NHSaves), electric vehicles (e.g., Granite State Clean Fleets, Plug-In Electric Drive Vehicle Tax Credit), and renewable energy deployments (e.g., Low-Moderate Income Solar Renewable Energy Grant). Organize and tailor such resources and information to their target audiences. Afford this program a prominent place on the City's website, enlist staff and/or community members such as the Sustainability Committee and other local organizations, to serve as "Coaches" to perform direct engagements, and engage partners in planning and conducting community-scale education events.
- Raise awareness about local climate impacts through art and cultural events (e.g., shows, installations, etc.) In the process, highlight Portsmouth's cultural diversity.
- Continue to support community conversations on climate and sustainability topics to keep the momentum going upon completion of *Portsmouth's Climate Future* and to further the culture of climate awareness in Portsmouth. These conversations should be held across the City, but particularly in neighborhoods that experience/are exposed to the most impact. Follow best practices in planning and holding meetings with disadvantaged populations to encourage the greatest levels of participation possible.
- Provide educational resources on the installation of solar panels on historic properties. Information should be in line with City regulations, the National Park Service, and the Secretary of the Interior Design Standards for Rehabilitation. Build upon the ordinance amendment adopted in July 2024 that makes it easier for homeowners to install solar arrays in the City's historic district.
- Develop community support and capacity for conducting waste characterization studies to better understand and communicate the composition of the local government and community waste streams.

› Partnerships

- Invest in workforce development to support clean energy jobs, including through partnerships with the School Department and local/regional colleges. These investments should prioritize the City's disadvantaged populations to reduce their economic constraints and support greater adaptive capacity.
- Partner with utilities to evaluate the existing capacity and redundancy of the electric grid, considering the expected future demand due to electrification of vehicles and building systems. As part of this study, identify smart electric grid technologies that could be implemented. Additional considerations should include microgrid technology and distributed energy resources. Where practicable, ensure that system upgrades are prioritized in the areas most vulnerable to the impacts of climate change.
- Work with partners (e.g., the State, Eversource, and Offshore Wind Developers) to leverage the City's coastal facilities to support offshore wind construction and energy production, including manufacturing/marshaling, transmission interconnection, and

energy storage. Seek Host Agreements that would provide the City with various fiscal and economic benefits.

- Serve as an active participant in future state-wide climate action planning, including the upcoming Comprehensive Climate Action Plan (CCAP) under the U.S. EPA's Climate Pollution Reduction Grant program.²²
 - Support local agricultural entities and food co-ops to build awareness of and encourage farm-to-table practices (i.e., buying and ordering locally/regionally grown foods) to reduce transportation emissions. This action should leverage local Seacoast farmers markets.
- › Advocacy
- Support carbon pricing policies at the state and federal levels. The Citizens Climate Lobby can be leveraged for support.
 - Advocate for state-level rebates for the purchase or lease of new or used electric vehicles. Drive Electric NH is a potential partner.
 - Advocate for a Clean Heat Standard in New Hampshire, similar to Massachusetts and Vermont. A Clean Heat Standard generally requires heating energy suppliers to replace fossil heating fuels with clean heat over time. With low-income households more likely to have less money to upgrade their heating systems, revenue generated through this program could be directed at offsetting home retrofits for these households.
 - Advocate for an increase in the State's Renewable Portfolio Standard (RPS) requirements beyond 2025. Do so in partnership with organizations such as Clean Energy NH.
 - Encourage the state to implement a tourism tax to reduce the GHG emissions associated with tourist activities. Projects to be funded through this tax could support the tourism industry by positioning the City of Portsmouth as a "green destination." Encourage the state to engage small, disadvantaged business enterprises to hear their concerns and address them where feasible.
 - Advocate for the establishment of a Coastal Flood Risk Mitigation Fund at the state level that uses a percentage of the local Room & Meal tax receipts, parking fees, or other local revenue sources to purchase and install temporary or permanent flood protection measures and establish a rebate program to encourage property owners to install flood protection measures.

4.5 Priority Actions

In the planning for *Portsmouth's Climate Future*, an initial list of potential actions was developed, informed by best practices and input from community and stakeholder engagement.

Recognizing the need for focused implementation due to resource limitations, the initially identified actions were evaluated for prioritization based on several criteria. The criteria below were weighted in the evaluation process relative to 1. The weights applied to each criterion are provided in parentheses.

²² More information on the U.S. EPA's Climate Pollution Reduction Grant program is available at <https://www.epa.gov/inflation-reduction-act/climate-pollution-reduction-grants>.

- › **Relevance to the City (Unweighted [Yes/No])** – The applicability of the action to Portsmouth's specific context.
- › **GHG Emissions Benefit (1.5)** – The potential reduction in emissions that the action could achieve.
- › **Cost (1.25)** – The City's financial obligations for action implementation.
- › **Implementation Complexity (0.75)** – The ease or difficulty of putting the action into practice.
- › **Staffing Needs (1)** – The human resources required to implement the action.
- › **Secondary Sustainability Impacts (1.25)** – Any additional sustainability benefits relating to one or more of the following: (1) Energy Conservation/Efficiency, (2) Water Conservation/Efficiency, (3) Natural Resource Protection or Enhancement, (4) Responsible Materials Management, (5) Community Health and Wellness, (5) Equity and Justice, and (6) Added Economic Value.
- › **The Climate Mitigation/Adaptation Intersection (1.5)** – The ability of the action to support both reducing emissions and adapting to climate change impacts.

The actions listed in the following sections include those that demonstrated the greatest cost-benefit through the above-described evaluation process, refined and supplemented by contributions from the community (Public Workshop #3) and City departments. Each action includes implementation details such as Action Champion (i.e., the groups expected to lead or motivate implementation), Time to Complete, and Approximate Cost to the City. Additionally, qualitative assessments are provided for each action including their relative GHG emissions reduction potential (assessed against other actions of the same focus – community or local government), payback potential, and the specific goals they support from the City's Master Plan.

For detailed information on the development, prioritization, and refinement of the priority actions, please contact the City's Planning & Sustainability Department.

4.5.1 Building Energy Conservation and Efficiency (BE)

The following actions aim to minimize energy consumption in existing and future buildings across residential, commercial, and industrial sectors. While the primary focus of the actions under Building Energy Conservation and Efficiency is energy reduction, co-benefits at the building level include lower operational costs, improved efficiencies, enhanced occupant comfort and staff productivity, and increased safety. More broadly, electrifying fossil fuel-based building systems can enhance local air quality, reducing electricity use can alleviate demand on the regional grid, and upgrading outdated heating, ventilation, and air conditioning (HVAC) systems can see higher global warming potential (GWP) refrigerants replaced with lower GWP alternatives. Collectively, these actions can also boost energy security by reducing dependence on fossil fuels and contributing to job creation in the building and clean energy sectors.

Of importance, in the implementation of actions under this pathway and those under Renewable Energy Production and Procurement, the City of Portsmouth should conduct higher-level planning for neighborhood-scale decarbonization to reduce dependence on fossil fuels and facilitate the decommissioning of natural gas pipelines. This includes building electrification

(e.g., heat pumps) and the development of thermal energy networks that utilize renewable energy sources (e.g., district heating with ground source heat pumps).

BE-1 Encourage community-wide building weatherization measures so that building heating/cooling is more effective and efficient.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Medium
Champion:	Time to Complete:	Master Plan Goal Alignment:
Sustainability Committee	Ongoing	Goal 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

BE-2 Support the adoption of tax incentives (e.g., preferential rates) for multi-family and commercial buildings that are both highly efficient and fossil-fuel-free.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Medium
Champion:	Time to Complete:	Master Plan Alignment:
Sustainability Committee	<5 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
\$100k to \$500k	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

BE-3 Advocate for the implementation and enforcement of building energy and emissions performance standards. Require multi-family and commercial buildings of a certain size to report their energy usage and GHG emissions to the City for purposes of enforcement and benchmarking. ENERGY STAR Portfolio Manager can be used to track, benchmark, and report data.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Medium
Champion:	Time to Complete:	Master Plan Alignment:
Sustainability Committee	<5 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
\$100k to \$500k	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

BE-4 Advocate for an advanced energy code, with an incentivized net-zero pathway. Include solar- and electric vehicle-capable, ready, and install requirements. Once adopted, ensure that resources are put in place to support code compliance.

Type:	Focus:	GHG Benefits:
Mitigation	Community	High
Champion:	Time to Complete:	Master Plan Alignment:
Sustainability Committee	<5 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

BE-5 Similar to Durham, establish a Powering Affordable Clean Energy (PACE) financing program to support energy efficiency retrofits, especially the older housing stock.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Sustainability Committee	10 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
\$500k to \$1m	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

BE-6 Conduct American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) energy audits of all municipal facilities and implement energy efficiency measures as feasible (e.g., LED lighting, HVAC equipment upgrades, water-efficient fixtures). For facilities in which energy upgrades were enacted within the last five years, implement a retro-commissioning program to ensure proper functioning. Retrofit projects can be supported by rebates and loans available through the state and utilities (e.g., NH Electric Co-op Commercial and Municipal Retrofit Energy Efficiency Programs).

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	Medium
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	10 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
\$1m to \$5m	Energy Cost Savings (Local Government)	

BE-7 Design all municipal construction projects (new or major renovations) to be net zero energy/ready. To support performance verification and reporting, adopt a requirement that these projects meet the U.S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) Zero Energy, as applicable.

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	High
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	Ongoing	Goal 5.4
Approximate Cost:	Potential Payback:	
Project by Project Basis	Energy and Operational Cost Savings (Local Government)	

BE-8 Implement a Building Energy Management System (BEMS) to monitor, measure, and control energy use in municipal buildings. Investigate a demand response and/or routine load-sharing program.

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	Low
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	<5 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
\$500k to \$1m	Energy Cost Savings (Local Government)	

BE-9 Eliminate building systems that utilize fossil fuel sources (i.e., oil, natural gas, propane) for space heating and domestic hot water and replace these systems either with electric alternatives or non-GHG emitting alternatives in all municipal and School Department buildings.

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	High
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	15 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
>\$5m	Energy and Operational Cost Savings (Local Government)	

4.5.2 Decarbonizing Transportation Systems (DTS)

The following actions have two main objectives: reducing vehicle miles traveled (VMT) and increasing the adoption of electric vehicles. Implementing these actions can also lead to secondary benefits such as reduced air and noise pollution and enhanced public health through active mobility. Furthermore, electric vehicle ownership can offer potential cost savings through lower energy and maintenance costs. Similar to the actions under “Building Energy Conservation and Efficiency,” electrification of transportation networks can boost energy security by reducing dependence on fossil fuels and contribute to job creation in the clean energy sector.

- DTS-1 Implement the recommendations of the City’s updated Bicycle and Pedestrian Plan, which shall support the creation of a viable alternative transportation network that reduces the community’s dependence on motor vehicles, thus reducing overall vehicle miles traveled. The plan’s implementation should be conducted in a timeframe consistent with the GHG emissions reduction targets of Portsmouth’s Climate Future.**

Type:	Focus:	GHG Benefits:
Mitigation	Community	Medium
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	15 Years	Goals 1.1, 1.2, 4.1, and 4.2
Approximate Cost:	Potential Payback:	
Covered under the Bicycle Pedestrian Plan	Vehicle Ownership and Fuel Cost Savings (Community)	

- DTS-2 Prepare an electric vehicle charging plan to identify feasible and strategic locations for the installation of publicly available charging supply equipment, informed by existing and future needs. Create partnerships to enable the installation of charging stations at priority locations, while promoting their co-location with renewable energy systems to improve the clean energy profile of transportation electrification and encourage the City government to acquire public space for City transformers. Charging equipment should be located outside of flood-vulnerable areas.**

Type:	Focus:	GHG Benefits:
Mitigation	Community	High
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	15 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
>\$5m	Consumption Charges (Local Government), Fuel Cost Savings (Community)	

DTS-3 Expand public transportation within as well as into/out of Portsmouth to attract more “choice” riders (i.e., those that can utilize other modes of transportation) regularly and more efficiently serve “captive” riders (i.e., those that must take public transportation). This includes making bus connections to regional transportation hubs, such as the rail stations in Dover and Exeter and Pease International Airport, as well as exploring new forms of public transit (e.g., passenger rail and privately funded shuttle services). To maximize the sustainability benefits of public transportation, plan to electrify public transit fleets.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Medium
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	Ongoing	Goal 4.4
Approximate Cost:	Potential Payback:	
\$1m to \$5m	Higher Property Valuations and Vehicle Ownership and Fuel Cost Savings (Community)	

DTS-4 Work with local and regional transportation partners in conducting a microtransit (bus demand responsive transport) feasibility study to identify projects that would augment and/or replace fixed-route public transit service. Depending on the results of the study, commit to developing one or more pilot projects. Note that the Cooperative Alliance for Seacoast Transportation (COAST) already has a fairly robust microtransit service for target populations.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goal 4.4
Approximate Cost:	Potential Payback:	
\$100k to \$500k	Vehicle Ownership and Fuel Cost Savings (Community)	

DTS-5 Increase the usage of e-bikes/e-cargo bikes/adaptive e-bikes by covering part of the purchase cost at local bike shops, as well as by expanding e-bike charging stations and infrastructure along key commuting routes.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 1.1, 1.2, 4.1, and 4.2

Approximate Cost:	Potential Payback:
\$100k to \$500k	Fuel Cost Savings (Community)

DTS-6 Work with the New Hampshire Port Authority, in supporting the development of local alternative fuel infrastructure and ship-to-shore power to reduce emissions from commercial maritime vessels, including cruise ships.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
City Manager	Ongoing	Goal 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Project Economic Value/Community Benefits Agreement (Community and Local Government)	

DTS-7 Develop and implement a fleet decarbonization plan with consideration of vehicle electrification and renewable fuels. As applicable, this plan should adequately assess future charging needs by department and vehicle use types. Install additional Level 2 (240 volts [V]) and direct current (DC) fast (480V) charging stations, as appropriate. The cost of this strategy may be offset through funds available through the Granite State Clean Fleets program.

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	Medium
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	15 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
>\$5m	Vehicle Ownership and Fuel Cost Savings (Local Government)	

DTS-8 Assess opportunities to right-size the municipal fleet to ensure the fleet inventory does not exceed operating requirements.

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	Low
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	15 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
Covered in DTS-7	Vehicle Ownership and Fuel Cost Savings (Local Government)	

DTS-9 Work with the School Department to electrify the school bus fleet.

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	High
Champion:	Time to Complete:	Master Plan Alignment:
School	15 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
>\$5m	Vehicle Ownership and Fuel Cost Savings (Local Government)	

4.5.3 Renewable Energy Production and Procurement (RE)

The following actions aim to increase the supply of renewable energy into the electric grid and energy market serving the City of Portsmouth. Inherently, they also enable local air quality improvements, generate significant economic value through job creation, economic growth, and energy price stability, and promote enhanced electric grid management by reducing demand and integrating battery storage.

RE-1 Build community support for amending zoning and other City policies to eliminate existing barriers to solar photovoltaic (PV) and solar PV plus battery storage development. For example, consider allowing solar arrays as a principal use and adopting a policy that allows solar energy production systems in the Historic District. Revisit recent limitations that were placed on rooftop solar arrays with the adoption of the 2015 International Fire Code.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

RE-2 Establish targets to increase participant sign-ups for the "Clean 100" option (i.e., 100 percent renewable content) under the Community Power program, established under RSA 53-E. Achieve these targets through continued education and awareness building among residents and businesses, as well as continuous efforts to ensure the option is price competitive.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Medium

Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	10 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Energy Cost Savings (Community)	

RE-3 Promote renewable energy development – including thermal energy networks – through regulatory incentives. For example, adopt dimensional incentives/density bonuses for new or redeveloped sites that incorporate solar power energy systems into building design (including their parking lots). Consider expediting the building permit and inspection process as well as lowering permitting fees for renewable energy distributed generation systems.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

RE-4 Encourage the development of community solar with battery backup, consistent with RSA 362-A:9, XIV (as amended), where residents who are unable to install solar energy production systems on their own accord (e.g., due to living in multi-family residential developments, financial limitations) can access the benefits of owning a solar PV system (e.g., credits on their electricity bill).

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	Ongoing	Goal 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Project Economic Value/Community Benefits Agreement (Community and Local Government); Energy Cost Savings (Community)	

RE-5 Actively promote offshore wind, tidal, and hydropower interconnection through the Piscataqua River into existing electric infrastructure in Newington/Portsmouth to improve the renewable energy mix in the ISO-NE grid.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	Ongoing	Goal 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Project Economic Value/Community Benefits Agreement (Community and Local Government)	

RE-6 Plan, design, and build solar arrays with battery storage of sufficient generating capacity to power municipal buildings. Solar panels could be distributed across building roofs and parking lots or aggregated into one site. The Public Undeveloped Land Assessment lists several sites that may be suitable. Loans and grants are available to support municipal renewable energy development (e.g., NH Community Development Finance Authority [CDFA] Clean Energy Fund), as are ownership and financing options (e.g., power purchase agreements [PPAs]).

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	Medium
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	10 Years	Goals 5.4 and 5.5
Approximate Cost:	Potential Payback:	
>\$5m	Energy Cost Savings (Local Government)	

RE-7 Track the City’s renewable electricity supply, produced and/or procured, and supplement as needed with certified REC purchases to ensure that 100 percent of the City’s electricity consumption is covered by renewable energy projects. Renewable Energy Credits (RECs) generated from solar and wind facilities located in Northern New England should be favored over those from outside the region.

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	Medium
Champion:	Time to Complete:	Master Plan Alignment:
City Manager	10 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
\$100k to \$500k	None	

4.5.4 Sustainable Waste Management (WM)

The following actions aim to minimize materials sent to a landfill (e.g., Rochester Neck Road Solid Waste Facility and Turnkey Landfill) or an incinerator (e.g., Wheelabrator Concord). Such measures have the added benefits of resource conservation, lower air and water pollution levels, reduced litter/community beautification, and a potential revenue stream for the City from the sale of recycled materials. A focus on purchasing materials and products with sustainable attributes (e.g., regionally sourced, recycled content) can also have significant embodied carbon benefits by reducing the carbon emissions associated with their extraction, production, and transportation.

WM-1 Building off the waste characterization studies, prepare and implement a Zero Waste Plan, which would see the Portsmouth community reduce, reuse, recycle, and compost at least 90 percent of its solid waste.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	10 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
\$100k to \$500k	Reduced Landfill Fees and Recycling Revenue (Local Government)	

WM-2 Explore the adoption of a ban on single-use plastics, such as plastic and polystyrene food and beverage containers, bottles, straws, cups, cutlery, and disposable plastic bags.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
City Council	<5 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Reduced Goods Purchases (Community and Local Government)	

WM-3 Support community efforts to create a voluntary certification program for Portsmouth restaurants working to reduce reusable plastics and food waste (levels might include "skip the stuff", composting, and offering smaller portion sizes).

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 1.1 and 5.4

Approximate Cost:	Potential Payback:
<\$100k	Project Economic Value (Community and Local Government)

WM-4 Support the expansion of curbside food waste collection services, perhaps in coordination with existing private-led services, to all residential households that receive Municipal Solid Waste and recycling services. Advocate for the requirement that all new multi-family development projects site potential locations for the adequate storage and handling of composting material should a municipal composting program become available in the future. Add information on at-home composting to the City's website.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Low
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	<5 Years	Goals 1.1 and 5.4
Approximate Cost:	Potential Payback:	
\$1m to \$5m	Reduced Landfill Fees (Local Government)	

WM-6 Adopt a municipal environmentally preferable purchasing (EPP) policy that can be used as a model for the private sector. Such a policy should prioritize products with available Environmental Product Declarations (EPDs) and/or Health Product Declarations (HPDs).

Type:	Focus:	GHG Benefits:
Mitigation	Local Government	Low
Champion:	Time to Complete:	Master Plan Alignment:
Finance	<5 Years	Goal 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Lower Capital and Operating Costs (Local Government)	

4.5.5 Climate-Smart Land Use (CSLU)

Leveraging land use controls and the City's open space lands, the following actions aim to achieve multiple objectives: reducing GHG emissions by minimizing the travel required by residents and encouraging shifts to low-emission modes of transportation (i.e., active transportation, shared mobility, and public transit), sequestering carbon from the atmosphere, and enhancing the community's resilience to the impacts of climate change. They jointly serve to improve the quality of life of residents in terms of improving water quality, managing stormwater, and mitigating the heat island effect. Additionally, some also drive economic benefits and/or support wildlife habitat protection and enhancement.

CSLU-1 Maintain the current zoning of the Schiller Station to ensure that the existing power infrastructure stays intact for future uses such as energy storage. Explore the opportunity for this site to support the conveyance and perhaps storage of power generated by offshore wind projects.

Type:	Focus:	GHG Benefits:
Mitigation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	Ongoing	Goal 5.4
Approximate Cost:	Potential Payback:	
<\$100k	Project Economic Value/Community Benefits Agreement (Community and Local Government)	

CSLU-2 Identify publicly-owned land areas, or privately-owned lands for acquisition, which are suitable for new or enhanced GHG emissions sequestration and storage. For example, reforestation, forest management, and wetland restoration. Work with private landowners and land trusts to develop and manage similar projects, where appropriate. This could include improved forest management plans. Note that such projects may be eligible to generate carbon credits that can be sold in carbon markets.

Type:	Focus:	GHG Benefits:
Mitigation and Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	Ongoing	Goals 5.2, 5.3, and 5.4
Approximate Cost:	Potential Payback:	
>\$5m	Project Economic Value (Community and Local Government); Sale of Verified Carbon Offsets (Local Government)	

CSLU-3 Analyze neighborhood completeness, focusing on the availability of amenities and services within walkable and bikeable areas, as well as current or prospective access to efficient shared mobility and public transportation through transit-oriented developments and corridors. Aim to achieve the desired outcomes using both regulatory mechanisms (e.g., zoning-based incentives) and non-regulatory methods (e.g., business recruitment, tax incentives).

Type:	Focus:	GHG Benefits:
Mitigation	Community	Not Estimated

Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 1.1, 1.2, 1.4, 3.2, and 3.3
Approximate Cost:	Potential Payback:	
\$100k to \$500k	Higher Property Valuations (Community and Local Government); Energy, Vehicle Ownership, and Fuel Cost Savings (Community)	

CSLU-4 Implement blue carbon strategies (i.e., carbon sequestration through coastal resource conservation).

Type:	Focus:	GHG Benefits:
Mitigation and Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 5.2 and 5.3
Approximate Cost:	Potential Payback:	
\$1m to \$5m	Sale of Verified Carbon Offsets (Local Government)	

CSLU-5 Continue to support the expansion of the City's tree cover to combat urban heat, enhance public health, and reduce the energy need for cooling. For example, plant a shade way at locations such as State Street in downtown and Parrott Avenue from the Public Library to Junkins Avenue.

Type:	Focus:	GHG Benefits:
Mitigation and Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	Ongoing	Goals 1.1, 5.2, and 5.3
Approximate Cost:	Potential Payback:	
\$1m to \$5m	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community)	

4.5.6 Enhancing Climate Resilience

The following actions have the primary intention of increasing local resilience to the impacts of climate change – concerning flooding, extreme heat, and risks to energy infrastructure. However, their benefits can extend beyond this focus to also reduce GHG emissions as well as improve community health, enhance public safety, boost economic stability, and foster a higher quality of life through cleaner air and water, reduced energy costs, and preservation of natural habitats.

4.5.6.1 Flood Resilience (FR)

FR-1 Continue to identify critical public and private properties and infrastructure subject to sea-level rise and identify potential adaptation measures for each location. Seek implementation financing through Coastal Resiliency Funds (RSA 36:53) and Coastal Resiliency and Cultural and Historic Resources District & Funds (RSA 12-A:68 & 69).

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	Ongoing	Goals 2.2, 5.1, and 5.5
Approximate Cost:	Potential Payback:	
\$100k to \$500k	Avoided Disaster Recovery Costs (Community and Local Government)	

FR-2 Strengthen Article 7.1 of the Site Plan Regulations to require Low Impact Development (LID) design practices and techniques in building design. Encourage the planting of trees and greenery around new or renovated buildings and sites that are being developed or subdivided. Prioritize the inclusion of open space.

Type:	Focus:	GHG Benefits:
Mitigation and Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 4.1 and 5.1
Approximate Cost:	Potential Payback:	
<\$100k	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community); Avoided Capital and Operational Expenditures (Local Government)	

FR-3 Strategically integrate green infrastructure with the City's existing and future stormwater, combined sewers, and roadway infrastructure, while prioritizing permeable pavements for all new municipal paving projects.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	10 Years	Goals 1.4, 4.1, and 5.1

Approximate Cost:	Potential Payback:
\$1m to \$5m	Higher Property Valuations (Community and Local Government); Energy Cost Savings (Community); Avoided Capital and Operational Expenditures (Local Government)

FR-4 Conduct and/or update previous hydraulic & hydrologic modeling studies of the City’s storm drain system and major road culverts/bridges to identify and rank capacity constraints that contribute to land-based flooding affecting critical transportation corridors and properties. Implement appropriate corrections in consideration of any adjacent undeveloped areas that could provide additional temporary flood storage in flood-prone drainage areas. Build upon the Coastal Hydraulic Model being developed by the New Hampshire Department of Environmental Services and Woods Hole Group.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	<5 Years	Goals 5.1 and 5.5
Approximate Cost:	Potential Payback:	
\$100k to \$500k	Avoided Disaster Recovery Costs (Community and Local Government); Avoided Capital and Operational Expenditures (Local Government)	

FR-5 Establish a more sustainable and consistent funding source, such as a Stormwater Utility Fee, to help plan for and fund stormwater capacity and flood resiliency improvements. A Stormwater Utility Fee would have the added benefit of encouraging the reduction of impervious surfaces through increased greenspaces.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	<5 Years	Goal 5.1
Approximate Cost:	Payback:	
\$100k to \$500k	Direct Revenue (Local Government)	

FR-6 Review, prioritize, and develop a plan to initiate the recommended adaptive strategies included in the Historic Vulnerability Assessment StoryMap, available at: <https://portsmouthnh.maps.arcgis.com/apps/MapJournal/index.html?appid=302cb9580dfb4ddd bd66dbb39055a88e>.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable

Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	15 Years	Goals 2.2, 5.1, and 5.5
Approximate Cost:	Potential Payback:	
\$1m to \$5m	Avoided Disaster Recovery Costs (Community and Local Government)	

FR-7 Explore "managed retreat" through zoning and overlay zones, where development in vulnerable coastal areas could be phased out and living shorelines would be promoted to continue existing coastal ecosystem connectivity.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Planning and Sustainability	<5 Years	Goals 5.1 and 5.5
Approximate Cost:	Potential Payback:	
<\$100k	Avoided Disaster Recovery Costs (Community and Local Government)	

4.5.6.2 Heat Resilience (HR)

HR-1 Develop a Citywide Heat-Health Warning and Protection Plan to activate public health warnings, cooling centers, and other relief measures when air temperatures exceed 90° F for prolonged periods. Integrate or align this measure with the City's existing Emergency Response Plan.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Fire	<5 Years	N/A
Approximate Cost:	Potential Payback:	
<\$100k	Healthcare Cost Savings (Community)	

HR-2 Assess and ensure public facilities, schools, and other critical community facilities are resilient to extreme heat (e.g., by providing access to cooling) and other severe weather events.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable

Champion:	Time to Complete:	Master Plan Alignment:
Public Works	10 Years	Goal 5.1
Approximate Cost:	Potential Payback:	
>\$5m	Healthcare Cost Savings (Community); Avoided Disaster Recovery Costs and Energy Cost Savings (Local Government)	

HR-3 Coordinate an Annual Heat Resilience Workshop to engage and support local/regional healthcare providers, professionals/organizations that provide frontline services, and healthcare educators in screening and connecting individuals at higher risk for heat-health impacts to prevention resources.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Health	15 Years	N/A
Approximate Cost:	Potential Payback:	
<\$100k	Healthcare Cost Savings (Community)	

HR-4 Integrate heat resilience goals, standards, and guidelines into open space and recreation planning for planned improvements to existing open space.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Recreation	Ongoing	Goals 1.1, 1.4, 5.2, and 5.5
Approximate Cost:	Potential Payback:	
Costs covered under the Open Space and Recreation Plan and Capital Planning	Healthcare Cost Savings (Community); Higher Property Valuations (Community and Local Government)	

HR-5 Work toward establishing a network of "cool corridors" that offer shade and/or misting stations along routes with high pedestrian traffic. Augment these corridors with the application of reflective coatings to sidewalks and streets.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Applicable
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	10 Years	Goals 1.1, 1.4, 5.2, and 5.3

Approximate Cost:	Potential Payback:
\$1m to \$5m	Healthcare Cost Savings (Community); Higher Property Valuations (Community and Local Government)

4.5.6.3 Energy Resilience (ER)

ER-1 Identify and map vulnerable electric and gas infrastructure and work with Eversource and Unitil on adaptation strategies as infrastructure is maintained and upgraded. This may include converting existing overhead electric infrastructure to underground conduits if wind shear is a concern or relocating ground-mounted transformers to poles where flooding is a concern.

Type:	Focus:	GHG Benefits:
Adaptation	Community	N/A
Champion:	Time to Complete:	Master Plan Alignment:
City Manager	Ongoing	Goal 5.5
Approximate Cost:	Potential Payback:	
<\$100k	Avoided Disaster Recovery Costs (Local Government)	

ER-2 Investigate the potential for an islandable microgrid of critical municipal and/or public infrastructure that could continue to provide services if the regional grid is offline. This would require integration of renewables and battery storage sufficient to power minimal facility electric/HVAC/refrigeration needs (e.g., shelter).

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Public Works	10 Years	Goals 5.4 and 5.5
Approximate Cost:	Payback:	
Covered under RE-6	Energy Cost Savings (Local Government)	

ER-3 Encourage the state's Public Utilities Commission (PUC) to provide a program to develop a citywide electric use notification system that has different advisory levels to encourage energy conservation during peak/high-cost periods.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
Fire	Ongoing	Goal 5.4
Approximate Cost:	Payback:	
<\$100k	Energy Cost Savings (Community)	

ER-4 Partner with Eversource, local businesses, and residents to encourage the development of load-sharing programs at various scales (community, campuses, and buildings). These programs aim to reduce peak demand energy use and implement operational changes to lower overall year-round energy demand. The City’s local government would be responsible for developing and enforcing policies geared towards load-sharing and energy management, as well as convening and engaging stakeholders as appropriate.

Type:	Focus:	GHG Benefits:
Adaptation	Community	Not Estimated
Champion:	Time to Complete:	Master Plan Alignment:
City Manager	<5 Years	Goals 5.4 and 5.5
Approximate Cost:	Payback:	
\$100k to \$500k	Energy Cost Savings (Community and Local Government)	

Enabling Success

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Enabling Success

The context and implementation planning presented in this document represent a blueprint that needs to be transformed into reality. This chapter dives into the essential steps required to ensure that the actions devised in the planning phase of *Portsmouth's Climate Future* are successfully brought into reality.

5.1 Community Buy-In and Shared Responsibility

Central to the successful implementation of *Portsmouth's Climate Future* is the indispensable role of the Portsmouth community, including its residents, businesses, and community/partner organizations. This role includes showing support for the plan and building awareness of it through various social and professional channels. The following are suggested ways that the community can raise awareness of and continue to build momentum around *Portsmouth's Climate Future*:

- › Leverage your social media channels to share information about the plan, showcase how you are contributing to achieving its net zero targets, and highlight any missed climate mitigation and adaptation opportunities. Use **#PortsmouthClimateFuture** to bring more attention to and amplify the message of the plan, enable those interested to discover past posts about the plan, and encourage participation in the conversation.
- › Host “neighborhood coffee talks” that serve as casual, relaxed gatherings where people are encouraged to informally share their ideas, experiences, and best practices as they relate to *Portsmouth's Climate Future*. These informal conversations can also serve to strengthen community cohesion.
- › Write articles and op-eds, and send letters to the editor, for local newspapers and magazines such as the Portsmouth Herald, Foster's Daily Democrat, the New Hampshire Gazette, and the Portsmouth Pulse. *Drive the conversation and keep the plan at the forefront of everyone's mind!*

- › In collaboration with community partners, organize community events, aligned with *Portsmouth's Climate Future*, such as tree plantings, material/product swap meets, screenings of climate change documentaries, eco-friendly home tours, and sustainable living workshops (e.g., energy conservation, rainwater harvesting).
- › Engage in municipal meetings to advocate for climate action during public comment periods and participate in planning committees, advisory boards, and advocacy groups to influence ongoing efforts from the City and the State.

The community's role also includes taking personal initiative to implement the actions of the plan on the individual or household scale. When these individual efforts are collectively embraced by the larger community, they will cumulatively generate significant benefits, driving the City of Portsmouth toward a sustainable and resilient future. Additionally, members of Portsmouth's community are encouraged to reflect upon the following high-level questions to reduce their greenhouse gas (GHG) emissions in their everyday decision-making. In addition to the information here, community members should also consider utilizing publicly available resources such as Portsmouth BrightAction (<https://brightaction.app/newhampshire/portsmouth>), to help track and reduce their individual carbon footprints. Note that some of these questions address broader climate action concerns, which, while extending beyond the specific scope of *Portsmouth's Climate Future*, remain aligned with its overarching objectives of climate mitigation and adaptation.

- › Energy Use
 - Are my lighting systems and appliances energy-efficient?
 - Are there opportunities to weatherize my home or building?
 - Am I using heat pump technologies for heating and cooling?
 - Am I using renewable energy sources/have I signed up for the "Clean 100" option (i.e., 100 percent renewable content) under the Community Power program?
 - How can I reduce my energy consumption today?
- › Transportation
 - Is there a low or zero-emission mode of transportation available to me today (e.g., walking, biking, carpooling, use of public transportation, or working from home)?
 - Am I driving a battery electric or plug-in electric vehicle?
- › What steps can I take to minimize waste?
 - Am I composting my organic waste and diverting recyclable materials from the landfill?
 - Instead of new products, can I buy second-hand or repurposed items?
 - How can I reduce the use of single-use plastics and packaging?
- › How can my food choices be more environmentally friendly?
 - Can I reduce my consumption of meat and dairy?
 - Am I purchasing locally grown/produced and organic foods?
- › Is water being used efficiently in my building or home?
- › Do I have an emergency preparedness plan in case of extreme weather events?

5.2 Local Government Responsibility

Although *Portsmouth's Climate Future* is envisioned as a community-driven plan, the local government serves as the main facilitator. Aside from implementing the actions under its direct authority, typical of its responsibilities in implementing its other community plans, it owns the responsibility of:

- › Internally communicating plan implementation as a priority and plan consistency as a criterion for municipal decision-making.
- › Dedicating and supporting qualified staff to manage plan implementation.
- › Ensuring that all City officials, departments, and boards and commissions understand the plan and are empowered to collaborate on plan implementation, creating cross-departmental working groups, as necessary.
- › Confirming that all City champions acknowledge their expected contributions and affording them with the necessary resources and skills to fulfill those contributions.
- › Allocating or otherwise securing external funding to enable plan implementation (see **Section 5.3** for potential external funding opportunities).
- › Forging and strengthening working relationships with community organizations and facilitating similar relationships between these and other relevant organizations and the community.
- › Keeping the conversation going with the community by representing *Portsmouth's Climate Future* at community events and meet-ups, and engaging advocacy groups for feedback.
- › Routinely monitoring and communicating progress on plan implementation and any issues encountered, as well as any necessary adjustments to the plan and its targets.*
- › Establishing and managing feedback loops to allow for internal and external stakeholder comments on the implementation process and using that feedback to refine the process as appropriate.

* ***Note that the City is planning to release a GHG emissions dashboard on its website that will enable users to track the City's progress towards reaching its net zero emissions targets. This dashboard will also provide status updates on action implementation.***

5.3 External Funding Opportunities

Allocating funding for the implementation of *Portsmouth's Climate Future* is essential. However, given the constraints of the municipal budget and the necessity to balance public funds between various capital investments and operational functions, securing third-party funding sources and financing mechanisms is a financially prudent strategy. The following sections identify example opportunities, excluding tax credits, categorized by each pathway outlined in the plan. The City of Portsmouth should consistently review these and other programs and share relevant details with the entities that could benefit from their funding.

Note that life cycle cost analyses (LCCA) can be used to maximize municipal capital investments by evaluating the total cost of ownership, including initial costs, operational costs, maintenance costs, and disposal costs. Such analyses should be conducted to compare project alternatives to ensure capital investments are allocated to those that have the greatest cost efficiency. Aligned with this plan, the City should consider integrating explicit carbon pricing into LCCAs to quantify the cost of offsetting the GHG emissions associated with a project as well as the social cost of carbon to quantify the economic damages associated with those emissions.

5.3.1 Building Energy Conservation and Efficiency

Program Name	Administering Entity	Eligible Entities and Sectors
Eversource – Commercial New Construction Energy Efficiency Rebate Program and Residential Energy Efficiency Rebate Program	Public Service of New Hampshire	City of Portsmouth, Commercial, Industrial, Residential

Summary: Eversource, in collaboration with NH Saves, offers rebates for energy-efficient equipment installations, with prescriptive and custom incentives available for various systems such as lighting; heating, ventilation, and air conditioning (HVAC); motors; and more.

Website: Commercial - <https://www.eversource.com/content/business/save-money-energy/equipment-rebates-discounts>; Residential - <https://www.eversource.com/content/nh/residential/save-money-energy/manage-energy-costs-usage/efficient-products>

Program Name	Administering Entity	Eligible Entities and Sectors
Commercial and Industrial Energy Efficiency	Unitil	City of Portsmouth, Schools, Commercial, Industrial, Multifamily Residential, Institutional

Summary: Offers rebates for commercial heating and kitchen equipment to gas customers in partnership with NH Saves.

Website: <http://www.unitil.com/energy-efficiency/natural-gas-programs-rebates-assistance-for-businesses>

Program Name	Administering Entity	Eligible Entities and Sectors
Business Energy Efficiency Loan Program	NH Business Finance Authority	Commercial, Industrial, Nonprofit, Agricultural

Summary: A revolving loan program designed to finance energy efficiency improvements.

Website: <http://www.nhbfa.com/businessenergyloan/>

Program Name	Administering Entity	Eligible Entities and Sectors
Clean Energy Fund	NH Community Development Finance Authority (CDFA)	City of Portsmouth, Commercial, Nonprofit

Summary: Invests in energy efficiency and renewable energy projects aimed at reducing costs.

Website: <https://resources.nhcdfa.org/programs/clean-energy-fund/application/program-overview-objectives/>

Also Applicable: Community Development Block Grant Program (CDBG) (see **Section 5.3.5**)

5.3.2 Decarbonized Transportation Systems

Program Name	Administering Entity	Eligible Entities and Sectors
Granite State Clean Fleets	NH Department of Environmental Services	City of Portsmouth, Schools, Institutional

Summary: Supports municipalities, public schools, and transit districts in replacing old diesel vehicles and equipment with electric models, and funds electric vehicle charging infrastructure and renewable energy and storage technologies.

Website: <https://www.des.nh.gov/business-and-community/loans-and-grants/volkswagen-mitigation-trust>

Program Name	Administering Entity	Eligible Entities and Sectors
New Hampshire State Clean Diesel Program	New Hampshire Air Resources/Technical Services Bureau	City of Portsmouth, Schools, Commercial, Institutional

Summary: A competitive grant program focused on lowering diesel engine emissions in the state. Funds may be used for the purchase of medium and heavy-duty electric vehicles, electric school and transit buses, and electric vehicle charging equipment.

Website: <https://www.des.nh.gov/business-and-community/loans-and-grants/dera>

Program Name	Administering Entity	Eligible Entities and Sectors
Charging and Fueling Infrastructure Discretionary Grant Program	U.S. Department of Transportation	City of Portsmouth, Rockingham Planning Commission, COAST, Nonprofit, Research Institutions, Private Entities

Summary: Aims to expand the national network of electric vehicle charging and alternative fueling infrastructure to facilitate a transition to cleaner transportation modes.

Website: <https://www.fhwa.dot.gov/environment/cfi/>

Program Name	Administering Entity	Eligible Entities and Sectors
Safe Streets & Roads for All (SS4A)	U.S. Department of Transportation	City of Portsmouth

Summary: Supports planning, infrastructure development, behavioral changes, and operational efforts aimed at preventing fatalities and severe injuries on roads and streets, including pedestrians, cyclists, public transit passengers, personal conveyance, and micromobility users. Requires the development of a Safety Action Plan.

Website: <https://www.transportation.gov/grants/SS4A>

Program Name	Administering Entity	Eligible Entities and Sectors
Transportation Alternatives Program	NH Department of Transportation	City of Portsmouth, Rockingham Planning Commission, COAST, Schools, Nonprofit

Summary: Provides choices for non-motorized users that are safe, reliable, and convenient.

Website: <https://www.dot.nh.gov/projects-plans-and-programs/programs/transportation-alternatives-program>

Program Name	Administering Entity	Eligible Entities and Sectors
Active Transportation Infrastructure Investment Program (ATIIP)	U.S. Department of Transportation	City of Portsmouth, Rockingham Planning Commission, COAST, Schools, Nonprofit

Summary: Enables projects that provide safe and connected active transportation facilities in active transportation networks or active transportation spines.

Website: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/atiip/

Program Name	Administering Entity	Eligible Entities and Sectors
Congestion Mitigation and Air Quality Improvement Program	NH Department of Transportation	City of Portsmouth, Rockingham Planning Commission, COAST, Nonprofit

Summary: Enables projects that provide safe and connected active transportation facilities in active transportation networks or active transportation spines.

Website: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/atiip/

Also Applicable: CDBG (see **Section 5.3.5**)

5.3.3 Renewable Energy Production and Procurement

Program Name	Administering Entity	Eligible Entities and Sectors
Municipal Solar Grant Program	NH Department of Energy	City of Portsmouth

Summary: Supports municipalities in installing new renewable energy systems, including ground-mounted, canopy-mounted, or rooftop solar photovoltaic systems, to meet the electrical demands of municipally-owned buildings.

Website: <https://www.energy.nh.gov/rules-and-regulatory/requests-proposals>

Program Name	Administering Entity	Eligible Entities and Sectors
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Commercial & Industrial Renewable Energy Grants	NH Department of Energy	City of Portsmouth, Schools, Commercial, Industrial, Local Government, Nonprofit, Multifamily Residential, Institutional
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Summary: Provides funding for renewable energy projects at various facilities in New Hampshire, covering multiple renewable technologies.

Website: <https://www.energy.nh.gov/renewable-energy/renewable-energy-rebates/non-residential-sector-competitive-grants-program>

Program Name	Administering Entity	Eligible Entities and Sectors
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Low-Moderate Income Solar Renewable Energy Grant	NH Department of Energy	Low Income Residential
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Summary: Provides grant funding for community solar projects targeting low- to moderate-income households in manufactured housing communities or multifamily rental properties.

Website: <https://www.energy.nh.gov/renewable-energy/renewable-energy-rebates/low-moderate-income-solar-grant-program>

Program Name	Administering Entity	Eligible Entities and Sectors
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Commercial & Industrial Solar Rebate Program	NH Department of Energy	City of Portsmouth, Schools, Commercial, Industrial, Nonprofit, Agricultural, Multifamily Residential, Institutional
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Summary: This program, financed by alternative compliance payments from the state’s renewable portfolio standard (RPS), provides financial support for the installation of solar photovoltaic (PV) and solar-thermal systems.

Website: <https://www.energy.nh.gov/renewable-energy/renewable-energy-rebates/low-moderate-income-solar-grant-program>

Program Name	Administering Entity	Eligible Entities and Sectors
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U.S. Department of Energy - Loan Guarantee Program	U.S. Department of Energy	City of Portsmouth, Schools, Commercial, Industrial, Nonprofit, Agricultural, Institutional
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Summary: Provides financial backing to support the development and commercialization of innovative clean energy projects, reducing their financial risks.

Website: <https://www.energy.gov/lpo/loan-programs-office>

Also Applicable: Eversource - Commercial New Construction Energy Efficiency Rebate Program and Clean Energy Fund (see **Section 5.3.1**); Granite State Clean Fleets (GSCF) (see **Section 5.3.2**); and CDBG (see **Section 5.3.5**)

5.3.4 Sustainable Waste Management

Program Name	Administering Entity	Eligible Entities and Sectors
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Municipal Recycling & Storage Equipment Grants	New Hampshire the Beautiful	City of Portsmouth, Schools, Nonprofit
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Summary: Supports local recycling and litter prevention programs.

Website: <https://nhthebeautiful.org/municipal-recycling-and-storage-equipment-grants/>

Program Name	Administering Entity	Eligible Entities and Sectors
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Solid Waste Infrastructure for Recycling (SWIFR) Grants	U.S. Environmental Protection Agency (U.S. EPA)	City of Portsmouth, Institutional, Nonprofit
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Summary: Supports the development of solid waste reduction and recycling infrastructure and projects that enhance waste management systems.

Website: <https://www.epa.gov/infrastructure/solid-waste-infrastructure-recycling-grant-program>

5.3.5 Climate Smart Land Use

Program Name	Administering Entity	Eligible Entities and Sectors
Community Development Block Grant (CDBG) Program	NH CDFA	City of Portsmouth
<p>Summary: Covering projects aimed at generating economic opportunities and community revitalization, CDBG funds can also be used for energy efficiency improvements (e.g., building upgrades), renewable energy projects (e.g., solar PV installations), sustainable transportation (bike and pedestrian paths and public transit improvements), green infrastructure (e.g., stormwater management), resilient and adaptive building design (e.g., floodproofing and heat mitigation), water conservation projects (e.g., rainwater harvesting), and community education and outreach.</p> <p>Website: https://resources.nhcdfa.org/programs/community-development-block-grant/</p>		

Program Name	Administering Entity	Eligible Entities and Sectors
Watershed Assistance Grants	NH Department of Environmental Services	City of Portsmouth, Schools, Rockingham Planning Commission, Nonprofit, Watershed Associations
<p>Summary: Provides funding and technical support for projects that aim to protect and restore watersheds, improve water quality, and enhance the resilience of aquatic ecosystems.</p> <p>Website: https://www.des.nh.gov/business-and-community/loans-and-grants/watershed-assistance</p>		

5.3.6 Enhancing Climate Resilience

Program Name	Administering Entity	Eligible Entities and Sectors
NH Coastal Resilience Grant Program	NH Department of Environmental Services	City of Portsmouth, Schools, Rockingham Planning Commission, Nonprofit, Private Companies

Summary: Provides funding to support projects that enhance coastal communities' ability to prepare for, respond to, and recover from coastal hazards and climate change impacts, including sea-level rise, storm surges, and extreme weather events.

Website: <https://www.des.nh.gov/business-and-community/loans-and-grants/coastal-resilience-grants>

Program Name	Administering Entity	Eligible Entities and Sectors
Local Source Water Protection Grants	NH Department of Environmental Services	City of Portsmouth, Conservation Commission, Schools, Rockingham Planning Commission, Watershed Associations, Nonprofit

Summary: Support activities that protect drinking water sources, including projects that address climate resilience such as stormwater infrastructure improvements and floodplain restoration.

Website: <https://www.des.nh.gov/business-and-community/loans-and-grants/drinking-water>

Program Name	Administering Entity	Eligible Entities and Sectors
Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grants	FEMA and NH Department of Safety	City of Portsmouth, Public Authorities, Schools, Nonprofit

Summary: Programs such as the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC), support projects that reduce risk or eliminate long-term risk to people and property from natural hazards and their effects. Example projects include flood mitigation, stormwater management, and infrastructure retrofits.

Website: <https://www.nh.gov/safety/divisions/hsem/HazardMitigation/hmgp.html>

Program Name	Administering Entity	Eligible Entities and Sectors
Grid Resilience and Innovation Partnerships (GRIP) Program	U.S. Department of Energy	Eversource, City of Portsmouth, ISO New England, Research Institutions, Nonprofit, Private Companies

Summary: Provides funding to enhance the resilience, reliability, and flexibility of the electric grid by supporting innovative grid modernization and infrastructure projects. Local microgrids, solar plus storage, undergrounding power lines, and demand response programs for residential and commercial consumers are example projects eligible for this program.

Website: <https://www.energy.gov/gdo/grid-resilience-and-innovation-partnerships-grip-program>

Also Applicable: GSCF (see **Section 5.3.2**) and CDBG (see **Section 5.3.5**)

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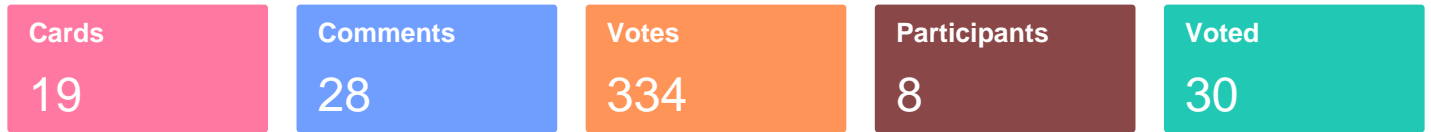
EasyRetro Results



Portsmouth Climate Future Draft Strategies

Provide your feedback on the high impact strategies listed below. A complete list is also available at <https://portsnh.co/climatefuture>.

Summary



Cards

Glossary

For your reference, a glossary of key terms has been created for all to use as they navigate through these actions.

Glossary:

Net Zero: Avoiding or reducing greenhouse gas emissions as much as possible, using carbon offsets or other credits to account for the remainder.

Carbon Offsets: Investments in a company, policy, or initiative that removes emissions from the atmosphere or prevents those emissions from being emitted in the first place.

Renewable Energy Credits (RECs): Purchasing the rights to the environmental, social, and other non-power attributes of renewable electricity generation.

Anaerobic Digester: A facility that treats organic waste (e.g., sewage, food scraps) in the absence of oxygen. The process of breaking down organic matter produces biogas (primarily methane and carbon dioxide) that can be captured and used for heating, electricity generation, or as a vehicle fuel.

Microtransit: A type of flexible, on-demand public transportation service that typically uses small vehicles (e.g., vans and mini-buses).

Urban Heat: Elevated temperatures experienced in urban areas as compared to non-urban areas, primarily caused by the concentration of buildings, concrete, and asphalt that absorb and retain heat.

Greenhouse Gas Sequestration: The process of capturing and storing greenhouse gas emissions (primarily carbon dioxide) from the atmosphere.

Blue Carbon: Carbon stored in coastal and marine ecosystems.

 3  2

Positive effort.

Stop wasting time and energy on this nonsense.

Built Environment

"Like" an action to indicate your support and/or add a comment if you have suggestions, thoughts, or questions.

Ensure all new municipal construction (new or major renovations) are net zero ready. To support performance verification and reporting, adopt a requirement that these projects meet the U.S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) Zero Energy.

 23  2

I like the way this one is formulated - it contains a clear goal, it is measurable and specific.

Nonsense. What if the power grid goes down?

Eliminate building systems that utilize fossil fuel sources (i.e., oil, natural gas, propane) for space heating and hot water and replace these systems with electric alternatives in all municipal and School Department buildings.

 12  3

Does this jump to the solution (electrical) too quickly? For instance, hot water from a geothermal installation might be an economical and scalable alternative that might require less building retrofit.

What is the plan for all of the waste this would create?

Update building codes to eliminate systems that utilize fossil fuels in any new construction both residential and commercial.

We need to ensure that any proposed radical changes to policies, codes, regulations etc, are evaluated using reasonable cost benefit analysis. The premature shift to unproven energy sources to prevent theoretical man made climate change is the height of irresponsible. Climate has always changed on this planet and it always will regardless of these efforts, while radically reducing our standards of living and probably bankrupting us.

 1  0

Energy

"Like" an action to indicate your support and/or add a comment if you have suggestions, thoughts, or questions.

Plan, design, and build solar arrays with battery storage of sufficient generating capacity to power municipal buildings. Solar panels could be distributed across building roofs and parking lots, or aggregated into one site. The Public Undeveloped Land Assessment lists several sites that may be suitable. Loans and grants are available to support municipal renewable energy development (e.g., NH CDEFA Clean Energy Fund), as are ownership and financing options (e.g., power purchase agreements [PPAs]).

 32  2

All new municipal buildings should require roofs that are adequate to host solar array systems, especially systems that meet the required demands of that building if possible.

I like the idea of more solar + batteries, but feel this strategy could be better framed. To me it makes more sense to start with a goal ("acquire renewable energy source to power all municipal buildings with renewable power by 20xx"), then have a strategy that doesn't narrow down to solar solutions too quickly - for instance, "create plan to provide renewable power taking into account all opportunities" - for instance, wind power, building out of town, etc.

Building off of the University of New Hampshire's Living Bridge Project, explore opportunities to install tidal turbines at the Sarah Mildred Long Bridge, Memorial Bridge, and the bridge at Interstate 95.

 7  1

Not sure if this is a stand-alone strategy: it's a potential candidate for sourcing renewable power for the city, but I wonder if it would be better bundled into something like "research all possible means of generating renewable power (solar, wind, river) and do a cost benefit analysis" or similar. Also, it seems odd to apply impact/cost to this measure when we don't know if it is feasible or what it would cost. This item is listed as a 4/4 in impact/cost, but analysis might show that it is really a 1/5. Whereas a comparison study (wind solar river geo etc) might cost 2, but ultimately have a 5 impact.

Invest in community-scale energy and storage projects. Consider having commercial scale renewable energy distributed generation facility applications ready as New Hampshire Renewable Energy Funds become available.

 32  2

This has a ton of potential. Does it tie directly to some of the "change the permitting / zoning" actions also listed? I'd love to better understand the barriers to this idea so we can be sure that they are targeted by the plan. Another thought: money for community scale renewable does not necessarily have to come from the Energy Fund - the community itself could invest in a shared coop scheme.

Solar panes - Made in China; making our enemy wealthy at US citizen expense. Horrible to look at . Are not as productive as old technology.

Solid Waste

"Like" an action to indicate your support and/or add a comment if you have suggestions, thoughts, or questions.

Reconsider the feasibility of a regional anaerobic digester at the Pease WWTF. This strategy is also important for food waste diversion since composting facilities may be difficult to permit in the state.

 19  1

Reasonable area to continue in.

Prepare and implement a Zero Waste Plan, which would see the Portsmouth community reduce, reuse, recycle, and compost at least 90 percent of its solid waste.

 18  0

Assess the effectiveness of the current recycling program. Evaluate the feasibility of developing an expanded recycling center, as well as reverting back to multi-stream collection.

 12  0

Transportation

"Like" an action to indicate your support and/or add a comment if you have suggestions, thoughts, or questions.

Develop and implement a fleet electrification plan. Ensure that this plan adequately assesses future charging needs by department and vehicle use types. Install additional Level 1 (120V), Level 2 (240V), and DC Fast (480V) charging stations, as appropriate. Concurrently, assess opportunities to right-size the municipal fleet to ensure the fleet inventory does not exceed operating requirements. The cost of this strategy may be offset through funds available through the Granite State Clean Fleets program.

 16  1

Negative on "Green Energy Plan" - esp. for electric vehicles. Batteries made in China, rare earth metal exploitation (by China et al) in the 3rd world. Puts US workers out of work. Vehicles do not go far. We have a plethora of fossil fuels here in the US to use. Electrics do not go far, can have trouble finding charging stations, and too expensive.

Work with the School Department to electrify the school bus fleet.

 18  3

Related, I didn't see an anti-idling strat. The roads around LHS and PMS are full of idling cars at pickup time - bad for air quality as well as wasted CO2

Does the city own the busses?

This would also make them a WHOLE LOT quieter! They're as loud as dump trucks :(

Expand public transportation within as well as into and out of Portsmouth to attract more "choice" riders (i.e., those that can utilize other modes of transportation) on a regular basis and more efficiently serve "captive" riders (i.e., those that must take public transportation). This includes making bus connections to regional transportation hubs, such as the rail stations in Dover and Exeter, as well as exploring new forms of public transit (e.g., passenger rail). To maximize the sustainability benefits of public transportation, plan to electrify the fleet and prioritize City investment in options benefiting lower income communities.

 18  2

Shuttle bus within Portsmouth from outlying areas to city center .

I support the equity co-benefits of better transit both within Portsmouth and regionally.

Complete and implement an electric vehicle charging plan to identify feasible and strategic locations for the installation of publicly available Level 1 (120V), Level 2 (240V), and DC Fast (480V) Chargers.

 21  1

I am against the city spending \$100,000's for electric chargers in the downtown area. Keep them on the outskirts and put more attention into a walkable, bikeable city with public transportation.

Update the City's Bicycle and Pedestrian Plan (2014) with a focus on creating a viable alternative transportation network that reduces the community's dependency on motor vehicles as well as provides recreational opportunities. Projects should be prioritized based on their ability to reduce overall vehicle miles traveled.

 57  2

This is the most low hanging fruit to prevent GHG emissions. It's also much more inclusive and equitable.

Co-benefits beyond GHG reduction include greater safety, community health, and equity.

Work with local and regional transportation partners in conducting a microtransit feasibility study to identify projects that would augment and/or replace fixed-route public transit service.

 11  2

TR-21, Adjusting zoning ordinances to eliminate parking minimums and introduce parking maximums should also be a high priority.

not sure what this would entail or its benefits.,,,

Land Management

"Like" an action to indicate your support and/or add a comment if you have suggestions, thoughts, or questions.

Identify publicly-owned land areas - or privately-owned lands for acquisition - that are suitable for new or enhanced greenhouse gas emissions sequestration and storage, for example reforestation/afforestation, forest management, and wetland restoration. Work with private landowners to develop and manage similar projects, where appropriate. This could include improved forest management plans.

 11  1

It would be nice if this was attached to a specific goal, such as "sequester enough carbon to offset the city's carbon footprint".

Implement blue carbon strategies (i.e., carbon sequestration through coastal resource conservation).

 9  0

Expand the City's tree cover to combat urban heat, enhance public health, and reduce the energy need for cooling. For example, plant a shade way at locations such as State Street in downtown and Parrot Ave from the Library to Junkins.

 14  3

This strat may not rank highly for reducing GHG, but that is not its purpose - it's for reducing the urban heat island effect. NH summers are going to get hotter. I assume that "climate action plan" means "adapting to the reality of climate change" as well as the laudable goal of reducing GHGs.

Change zoning to eliminate development bonuses for any paved public areas. Add bonuses for creating green spaces in development proposals. Add trees and other shade systems to reduce heat island effects. Cover parking lots with solar carports.

The city should carry on with its excellent tree planting and forestry practices, but this ranks low in potential to reduce GHGs. New money can be better spent in other initiatives.

