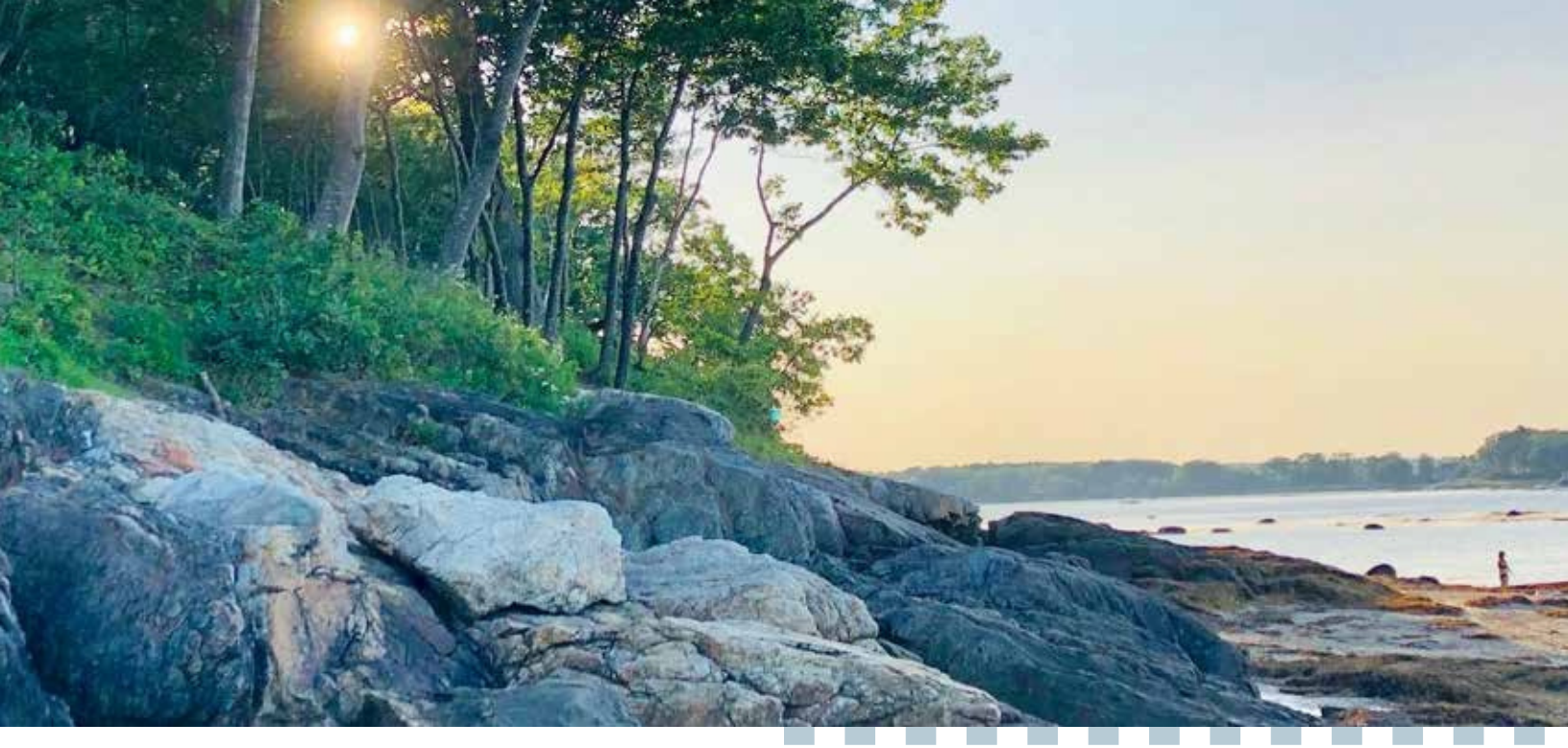
Yarmouth

Climate Action Plan

March 2024

EXECUTIVE SUMMARY



In order to ensure that the community's values and critical assets are sustained for future generations, Yarmouth must strengthen itself in the face of growing threats related to climate change. The climate crisis presents an opportunity for individuals, businesses, and community leadership to shape our collective future. Local governments can lead the way in addressing the impacts of climate change such as rising seas, severe storms, and intensifying public health hazards. Municipalities are uniquely positioned to empower residents and businesses to reduce emissions while adapting policies and services to prepare the community for a healthy future.

If we choose not to make critical investments in climate solutions, the social, capital, and environmental costs will be extensive. Both the federal government and the state of Maine are guiding and incentivizing municipalities to play a role in achieving state-wide and national climate goals. We created this plan through a collaborative public process based on data and climate solutions available today, in order to meet bold targets set for 2030 and 2050. The Plan is intended to evolve as a framework for our community to take strategic actions while pursuing a resilient tomorrow.

Now is the time to act, and Yarmouth is charting a course.

CONNECTED EFFORTS

PLAN → YARMOUTH

Over the course of 2023, the Town was developing two related, but distinct plans: the Comprehensive Plan Update and the Climate Action Plan. Working in harmony, these two plans will guide the actions we take in many different parts of our community, from ensuring the strength of our economy to protecting our natural resources for future generations.

"While mitigating the causes of climate change and better preparing Maine for its impacts will require significant public and private investment, **inaction will cost Maine substantially more**, and those costs will accelerate over time."

Maine Won't Wait,
State Climate Action Plan (2020)

Bold Targets

In 2022, following a groundswell of rigorous and inspiring advocacy by local youth activists, Yarmouth Town Council endorsed a Climate Emergency Resolution. The Resolution established bold targets to reduce emissions and prepare for climate impacts while requiring a plan to guide progress. The Yarmouth Climate Action Task Force presents this Plan, based on community engagement and technical analysis, as an actionable roadmap to reduce our contribution to climate change and lay the foundation for a healthy and sustainable future.

The Climate Resolution set bold commitments for reducing emissions from municipal and school operations and from the broader community. While emissions from municipal operations are a small percentage of our total community impact, the net zero by 2030 target for town and school operations accelerates actions that are in the Town's direct control and are important to lead the community forward. This Climate Action Plan lays out the first steps toward reaching these targets.

"Be it further resolved, that the Town of Yarmouth, commits to take prompt actions, while recognizing that significant commitment, including regulatory, fiscal and time, is needed to slow and eventually halt the local contribution to global climate change and the associated negative ecological, economic, social, and public health crises."

Climate Emergency Resolution, February (2022)

The Climate Resolution also highlights the need for sustained and meaningful community engagement and accelerating local adaptation and resilience strategies in preparation for intensifying climate impacts. As this Plan is implemented, the Town will strive to bring in many voices to develop solutions that keep us safe, protect our environment, advance affordability and accessibility, and reduce emissions.

KEY TERMS

Net Zero refers to cutting our total greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere through natural processes. In Yarmouth's Climate Resolution, the intention is to prioritize the elimination of greenhouse gas emissions through a variety of direct interventions rather than relying on market-based carbon offsets.

Resilience refers to the capacity of communities, systems, or individuals to adapt and recover swiftly from stressful circumstances or disasters. Being 'resilient' requires **adaptation** which is the process of adjusting to, or preparing for, the changing climate and its impacts.

CLIMATE CHANGE IN YARMOUTH

Greenhouse gasses (GHGs) create the conditions for life on earth by trapping heat in the atmosphere and regulating Earth's temperature. However, since the 1800s, human activities (such as cutting down forests and burning coal, oil, and gas) have increased the amount of GHGs in the atmosphere, trapping excess energy and disrupting the Earth's climate. This changing climate brings a range of hazards throughout the world such as extreme heat, intense storms, and rising sea levels.

TOP FOUR CLIMATE HAZARDS FOR YARMOUTH

- Heat Waves
- Intensifying Storms
- Sea Level Rise
- Changing Ocean Conditions

Water levels in Casco Bay have risen by 7.5 inches since 1912. Maine will likely experience at least a **1-foot rise in sea levels by 2050** and three feet of sea level rise by 2100.

We are experiencing more precipitation—but it's coming in **shorter, more extreme events**.

The Gulf of Maine warmed **faster than 99% of the global oceans**, and Casco Bay water temperature has increased 2.5°F (1.4°C) in the last decade.

Continued warming will **impact the ranges of plant and animal species** in our region; with health and economic impacts expected due to tick and mosquito borne disease and changes in fisheries.

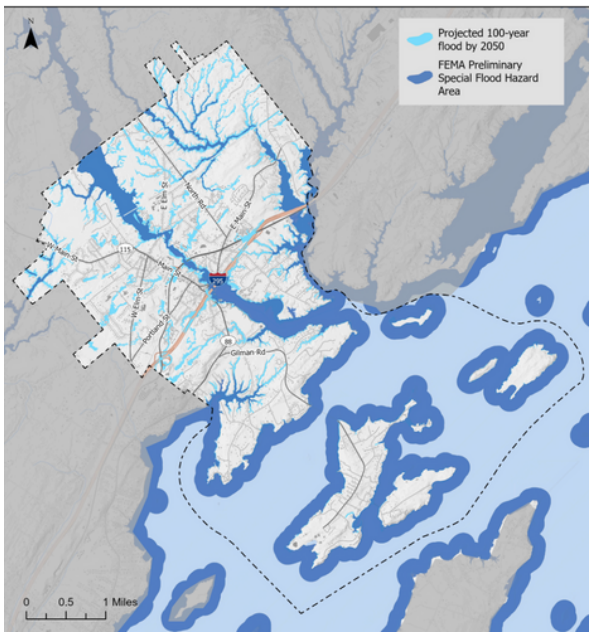
Yarmouth can expect **20 to 30 more high heat days each year** by 2050.

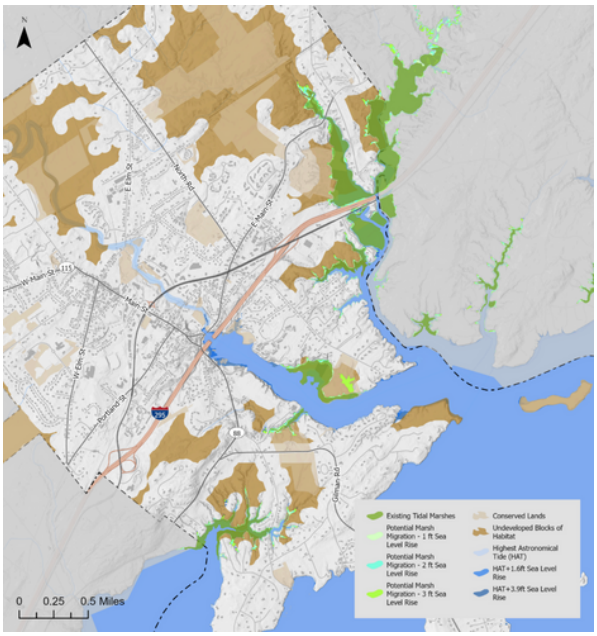
By 2050 we could see a **50% decrease** in snowpack and the winter season will shrink by one to two weeks.

THE FUTURE DEPENDS ON OUR ACTIONS TODAY

Today's efforts to avoid the worst impacts of climate disruption will result in a brighter future for all members of the Yarmouth community. By taking immediate action to lower emissions that contribute to climate change and preparing our community for changes to come, we can help protect our future.

Future Impacts





See more data in the Vulnerability Assessment in the Appendix of the Plan.

Downtown

Infrastructure: Key roads, including Route 1 and Main Street, will be flooded during storm events by 2050. This area contains the highest concentration of buildings and infrastructure vulnerable to flooding during a storm event.
Community: The downtown area contains a high number of community resources and a higher degree of the population with existing social vulnerabilities. Flooding of surrounding roads during storm events could limit access.
Natural Environment: The Royal River provides a critical habitat for fish species. Warming temperatures threaten to lower dissolved oxygen levels and put stress on aquatic species.

Maintaining access to critical infrastructure and community services during storms.

Flooding of key roadways, such as Route 1 and Littlejohn Causeway, will limit access to vital resources. The Town should ensure that key travel roads are designed to withstand increased precipitation and that culverts and drainage are maintained and upgraded if necessary.

Ecosystem Conservation

Many of the town's natural resources are at risk due to climate change, such as tidal marshes and native species. Conserving land and protecting natural systems will help Yarmouth adapt to a changing climate.

Challenges to Public Health

Yarmouth has a significant population who are vulnerable to climate change such as elderly and young residents, and households who are cost burdened. Increasing services to help those impacted is a priority for reducing vulnerability to climate change.

Cousins Island and Littlejohn Island

Infrastructure: The causeway to Littlejohn Island and the wharf for the ferry to Chebeague Island are vulnerable to flooding.
Natural Environment: These islands contain several parks that are at risk. The surrounding waters contain habitat for several key marine species that provide economic and recreational value.

There are several priority actions Yarmouth can take to prepare for climate hazards:

- Maintaining access to critical infrastructure and community services during storms
- Expanding health services for vulnerable populations, especially for extreme heat
- Conserving land and protecting natural systems
- Preparing our coastal infrastructure, open spaces, businesses, and neighborhoods for the impacts of sea level rise

HOW WE ARE CONTRIBUTING TO CLIMATE CHANGE

When residents, visitors, and workers engage in daily activities such as driving to work or school and heating our homes and business, we typically burn fossil fuels that add to the already high levels of GHGs in the atmosphere. The faster we reduce our emissions, the better chance we have at slowing the pace of climate change.

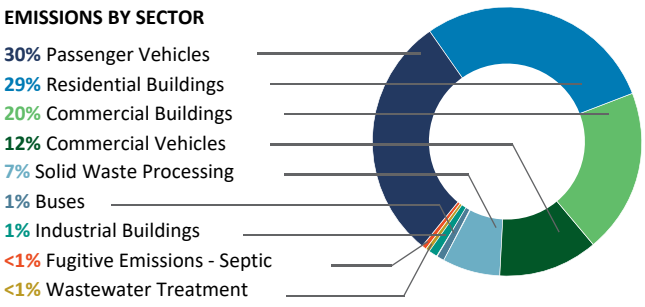
For this Plan, the Town conducted an inventory of greenhouse gas emissions for 2019. This inventory data estimates emissions in Yarmouth and helps identify our biggest opportunities to reduce emissions.

EMISSIONS BY SECTOR

In Yarmouth, the majority of emissions (50%) come from the use of electricity and heating fuels for residential and commercial buildings. Transportation is the second- largest source of emissions (43%).

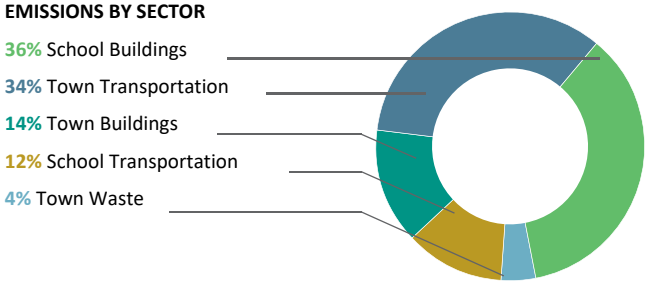
Our window for action is closing according to the top 2,000 climate scientists in the world. The most recent UN Climate Summit agreement signed by nearly 200 countries calls on parties to transition "away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero in keeping with the science" by 2050. It includes a new specific target to triple renewable energy generation and double energy efficiency by 2030.

COMMUNITY-WIDE EMISSIONS



99,828 MTCO2e
of greenhouse gasses emitted in 2019

MUNICIPAL AND SCHOOL EMISSIONS



2,414 MTCO2e
of greenhouse gasses emitted in 2019

KEY TERMS

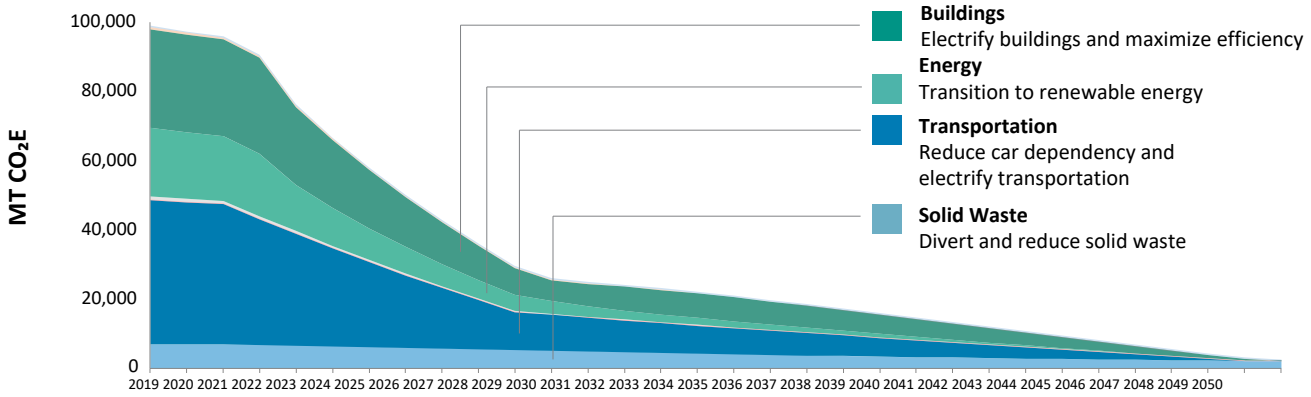
GHG emissions are measured in **metric tons of carbon dioxide equivalent (MTCO2e)**. The tonnage of other greenhouse gasses (e.g. methane, nitrous oxide) is adjusted to the equivalent tonnage of carbon dioxide necessary to produce the same warming effect so everything is reported in the same units.

Emissions from Town and School operations contribute 2% of the community-wide total.

PATHWAY TO REDUCING EMISSIONS

Yarmouth is joining neighboring communities and the State to set emissions reductions goals, take strategic action, and track progress. Maine has recently surpassed medium-term goals for reducing emissions 10% from 1990 levels by 2020 (they achieved 25% reduction by the target year of 2020)*. While Yarmouth has not consistently measured community greenhouse gas emissions before 2019, the town has taken significant steps to reduce emissions. These include sourcing nearly all town and school electricity from solar through a Power Purchase Agreement, piloting electric vehicles in the municipal fleet, replacing streetlights with energy efficient LEDs, and pursuing a community solar farm with the intention of making affordable renewable energy available to town residents.

Continuing to reduce reliance on fossil fuels across all sectors will be vital to reaching our net zero emission targets. The graph below models how we could reduce community-wide emissions by implementing key strategies between now and 2050.



Attaining this level of emissions reduction—nearly to zero by 2050—will require a range of actions including improving energy efficiency, transitioning transportation and heating to run on clean energy, and reducing single-occupancy vehicle travel. An overarching strategy that will be required is to transition our sources of electricity to 100% renewable energy—which will be supported by State efforts to green the grid^.

This plan aims to move our community as close as possible to zero emissions by 2050, without accounting for carbon sequestration and storage. Although our natural ecosystems are vital for absorbing carbon from the atmosphere, this modeling and the actions in the Plan do not depend on carbon absorption through natural areas to offset the emissions we generate. This approach underscores our focus on transitioning to zero emissions from fossil fuels. However, the Plan does recommend future actions to measure the carbon absorbed and stored by our lands and waters, primarily for the purpose of prioritizing land conservation and restoring the health of natural systems.

KEY TERMS

Carbon sequestration is a natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form, which serves to help slow the pace of global warming. In Yarmouth, this function is performed naturally by both living and felled trees, as well as marshes and eelgrass beds.

If Yarmouth successfully implements all objectives and actions in the Climate Action Plan, we are on a good course to reach our net zero emission reduction target by 2050.

*. Maine DEP, Ninth Biennial Report on Progress Toward Greenhouse Gas Reduction Goals, 2022.
^. The State has a goal to source 80% of grid-supplied electricity from renewable sources by 2030 and 100% by 2050.

Efficient Transportation and Land Use

VISION

Yarmouth's infrastructure and land use patterns prioritize natural and social connections, facilitate biking and walking, and make it easy for people to use public transportation and electric vehicles.

Nearly half of our emissions come from cars. How we plan for neighborhoods, businesses, and services to connect with each other has a big role in shaping how we get around. We can reduce emissions from vehicles while supporting a thriving, connected community by shifting towards emissions-free transportation and fostering land use practices that aren't car-dependent.

BY THE NUMBERS

43%
of our total emissions are from transportation

30%
of total emissions from passenger vehicles, 12% from commercial vehicles, and 1% from buses

85%
of Yarmouth workers commute out of town for employment, and the same percentage of workers in town are not residents

Goals and Strategies

Goal 1: Reduce emissions from transportation.

Strategy 1.1: Expand infrastructure for accessible and safe walking, biking, and other active transportation.

Strategy 1.2: Increase public transit use.

Strategy 1.3: Accelerate electric vehicle adoption.

Strategy 1.4: Expand public EV charging network.

Goal 2: Plan for future land use that reduces emissions and is resilient to climate impacts.

Strategy 2.1: Strengthen policies and enforcement to promote sustainable, resilient, and accessible land use practices in coordination with Comprehensive Plan implementation.

Strategy 2.2: Increase tree canopy.

Strategy 2.3: Support restoration of riverine and coastal ecosystems.

Healthy Buildings and Renewable Energy

VISION

Yarmouth's buildings are efficient, healthy, preserved, and powered by renewable energy. We maximize the use of local renewable energy while investing in—and advocating for—a renewable energy grid that is resilient and affordable for all.

The way we generate and consume energy is at the core of climate change. Today, the majority of our energy consumption relies on fossil fuels, such as oil or gas for heating buildings, and electricity generated by fossil-fuel based power plants. Using less energy in our buildings and transitioning to renewable sources is key to addressing climate change.

BY THE NUMBERS

29%

of total emissions comes from operating homes and 20% comes from businesses. Most of these emissions are from fossil fuels used for heat.

61%

of homes use fuel oil or kerosene for heat, 13% use propane, and 14% use natural gas

314

heat pump rebates from Efficiency Maine and 79 weatherization rebates were used by Yarmouth residents in 2022

Goals and Strategies

Goal 3: Reduce emissions from buildings while making homes and businesses resilient to climate change.

Strategy 3.1: Actively promote weatherization, efficiency, electrification, and other emission-reducing upgrades in existing buildings

Strategy 3.2: Require new construction and major renovations to meet the highest standards for efficiency, carbon neutrality, and climate resilience

Strategy 3.3: Adapt municipal and school buildings to climate resilient, zero emission facilities.

Goal 4: Meet 100% of electricity needs with renewable energy.

Strategy 4.1: Foster development of reliable local renewable energy systems.

Strategy 4.2: Reduce barriers to implementing renewable energy.

Strategy 4.3: Pursue 100% renewable energy reliance for government operations.

Circular Economy

VISION

Yarmouth manages resources sustainably through an efficient circular economy that reduces waste by maximizing the lifecycle of material goods, reducing consumption, and driving local innovation.

The way we buy, use, and dispose of materials has impacts beyond the trash or recycling bin. Every time something is thrown away, we end the life cycle of the natural resources and energy used to create that product, whether those are trees, oil, water or metal. By transforming how we consume products and manage waste we can reduce emissions, save families money, keep our environment clean, and empower our local economy.

BY THE NUMBERS

33.7%
was Yarmouth's recycling rate in 2019, similar to Maine's statewide recycling rate of 33.9%

The total tons of trash decreased
34%
in the 6 months after the Pay-As-You-Throw (PAYT) program was introduced, compared with the previous year

50%
of glass produced, 10% of wood harvested, 20% of aluminum mined, 40% of plastic created goes primarily to make single-use packaging

Goals and Strategies

Goal 5: Reduce community waste.

Strategy 5.1: Minimize waste and prioritize sustainable consumption.

Strategy 5.2: Promote a circular resource sharing economy.

Strategy 5.3: Expand reuse, recycling and composting infrastructure, services, and education.

The **circular economy** is a series of interconnected processes which keep materials and products in circulation and out of landfills, through techniques such as reuse, refurbishment, maintenance, remanufacture, and composting.

Thriving Natural Environment

VISION

Yarmouth ensures a resilient future by protecting and stewarding our valuable lands and waters to preserve essential ecosystems and absorb carbon dioxide from the atmosphere.

We seek refuge and recreation in forests, fields and coastal areas, and many of us have livelihoods that depend upon their continued health. Undeveloped areas house essential species of native plants and animals which rely upon each other in complex ways. Forests, grasslands, salt marshes, estuaries, and kelp beds are all important allies in the work to decrease the amount of carbon dioxide in the atmosphere. We must take steps to conserve, restore, and steward these essential ecosystems.

BY THE NUMBERS

12%

of land (1,030 acres) in Yarmouth is designated as open space, and only 4% (354 acres) is permanently protected by a third party easement.

450

additional acres are a top priority to protect, according to the 2019 Yarmouth Open Space Plan.

100+

acres of eelgrass around Yarmouth was lost between 2013 and 2021. Eelgrass is a native seagrass that provides habitat, supports water quality, and sequesters carbon.

Goals and Strategies

Goal 6: Permanently conserve 30% of Yarmouth land by 2050.

Strategy 6.1: Identify resources and build a clear process for local land conservation.

Strategy 6.2: Protect properties through purchase or easement with willing landowners, or through partnerships.

Goal 7: Adopt stewardship practices that increase carbon storage and enhance the ecosystem's resilience to climate change.

Strategy 7.1: Manage all town-owned Open Space for climate resilience and to maximize carbon sequestration.

Strategy 7.2: Manage invasive plant species.

Strategy 7.3: Support sustainable landscaping by private landowners.

Connected and Safe Community

VISION

Yarmouth residents and businesses are empowered with understanding health and safety risks from climate change, and the Town is proactively planning to minimize hazards from climate- exacerbated disasters.

Hazards from a changing climate - such as sea level rise and more frequent and intense storms - will bring a cascade of impacts across our community. We have an opportunity to protect the people and places of Yarmouth while fostering a connected, empowered, and just community for all.

BY THE NUMBERS

25%
of Yarmouth adults over 65 live alone

38%
of total households are cost burdened (spend more than 30% of income on housing)

We can expect
20-30
more days each year of high heat (over 90 degrees) by 2050

Goals and Strategies

Goal 8: Protect public safety by integrating climate projections into emergency preparedness protocols.

Strategy 8.1: Enhance the community's preparedness for heat waves and intensifying storms.

Strategy 8.2: Plan for the impact of sea level rise and flooding.

Strategy 8.3: Prepare for long-term viability of town drinking water supply.

Goal 9: Enhance public health to improve community resilience to climate change.

Strategy 9.1: Pursue equitable access to resources on climate-related health risks.

Strategy 9.2: Promote local food production and consumption.

Strategy 9.3: Improve access for Yarmouth residents to open space.

Goal 10: Protect critical infrastructure.

Strategy 10.1 Evaluate and improve at-risk public infrastructure.

Supporting State and Federal Commitments

Yarmouth is not alone in addressing climate change. Tackling climate change requires decisive action across federal, state, regional, and local governments. In 2020, Maine's Climate Council released the State's first Climate Action Plan—Maine Won't Wait. The State committed to reducing GHG emissions by at least 80% by 2050 from 1990 base levels and reaching carbon neutrality by 2045. In 2021, the federal government pledged to reduce GHG emissions 50% by 2030 from 2005 levels and to reach net-zero emissions by 2050 at the latest.

By successfully implementing this Plan, we can contribute to meeting state and national-level climate commitments. At the same time, state and federal government action can enable Yarmouth to make progress by creating funding opportunities, fostering regional partnerships, and developing emerging technologies. Yarmouth is well positioned to take advantage of opportunities as they become available by leveraging associated grants and technical support.

By achieving the goals set in Yarmouth's Climate Action Plan we will support state and federal climate commitments.

FEDERAL FUNDING

Bipartisan Infrastructure Law (BIL)

Provides grants to help municipalities establish programs to reduce emissions from transportation and buildings and technical assistance to help communities become more resilient to climate hazards. The BIL also requires other funded entities (states, non-profits, and companies) to consult with relevant communities and develop Community Benefit Plans (CBP). This Climate Action Plan positions Yarmouth to leverage additional resources through CBPs.

Inflation Reduction Act (IRA)

Provides tax credits and direct payments to tax exempt entities to reduce the costs of investing in EVs and clean energy. Like the BIL, the IRA also requires CBPs.

FEMA BRIC and Hazard Mitigation Grants

Grants to support communities to undertake hazard mitigation projects to reduce the risks from disasters and natural hazards.

STATE FUNDING

Maine Community Resilience Partnership

Provides grants for municipalities to upgrade facilities, invest in resilient public infrastructure, encourage community climate action, and more.

Maine Infrastructure Adaptation Fund

Funding for municipalities to adapt critical infrastructure to reduce vulnerability to climate change resulting from extreme weather, sea level rise, inland and coastal flooding and severe heat.

Coastal Community Grants

Provides grants for municipalities to improve water quality, increase adaptation to erosion and flooding, restore coastal habitat, promote sustainable development, and enhance the coastal-dependent economy.

Shore and Harbor Planning Grants

Provide grants for shoreline access planning, waterfront and harbor planning, and efforts for resilient waterfront infrastructure.

Be Part of the Solution

There are steps YOU can take for a sustainable future. Below are some example actions that can save your household money, shrink your carbon footprint, and support a vibrant community.

Getting Around

- Swap one local driving trip each week to walking or biking
- Commute by public transportation or carpool
- Switch your next car to electric—see rebates and resources

Greening your Home

- Get Electrification and efficiency rebates for homeowners, businesses, and renters
- Learn about installing solar
- Get tips on saving energy and money at home - and tips on making your *older* home more sustainable

Becoming Resilient

- Donate or get involved with Yarmouth Cares about Neighbors (YCAN)
- Learn more about how climate change impacts health and wellbeing
- Sign up to receive CodeRED town alerts during a local emergency

Restoring our Land

- Consider enrolling your natural or working lands in Maine's current use tax program and/ or establishing a conservation easement
- Learn about sustainable landscaping with Maine Audubon or Wild Seed Project
- Experiment with ideas for rewilding your lawn, in favor of biodiversity and native plants

Reducing Waste

- Learn more about what a Circular Economy looks like
- Read Reuse 101 from Upstream
- Get the Zero Waste Purchasing Guide from YHS Environmental Action Club