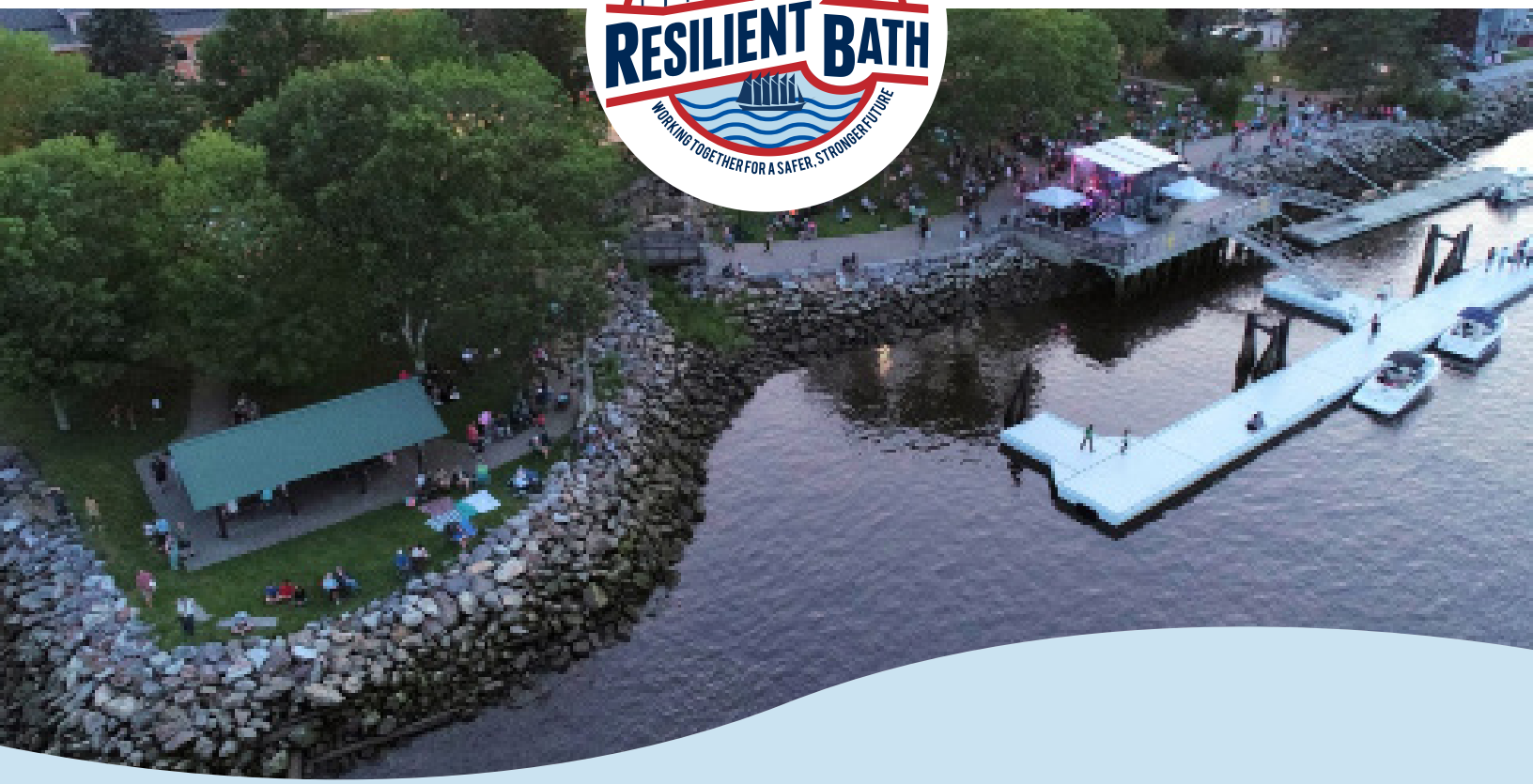

OCTOBER 2024

Resilient Bath

Climate Action & Resiliency Plan


HUFFY

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Letter from the City Manager

As the City Manager of Bath, I am pleased to present *Resilient Bath*, the City's Climate Action & Resiliency Plan, a vital step toward ensuring a sustainable future for our community. It is imperative that we take proactive measures to safeguard our environment and enhance the quality of life for all Bath residents.

Our community has become remarkably familiar with the consequences of an intensifying climate. The recent consecutive flooding events in 2023 and 2024 serve a reminder that climate impacts come at significant cost and with opportunities to learn, adapt and improve. *Resilient Bath* brings focus to these changing realities. This plan also builds upon our community's strengths.

Resilient Bath outlines specific strategies to reduce greenhouse gas emissions, improve energy efficiency, and promote sustainable practices throughout our city. Extensive efforts were made to ensure voices from all our community members are heard in this plan. You will find these voices reflected in each of the plan's objectives.

Key initiatives include:

- **Renewable Energy Transition:** Advancing the use of renewable energy sources, such as solar and wind, for municipal facilities and our community.
- **Energy Efficiency Programs:** Aiming to implement energy-saving measures in municipal buildings and provide resources to help residents and businesses improve the performance of their buildings.
- **Transportation Initiatives:** Enhancing public transit options, promoting electric vehicles, and developing safe pedestrian and cycling infrastructure.
- **Community Engagement:** Encouraging the involvement of all residents by hosting workshops, provide resources, and calling for participation in sustainability initiatives.
- **Resilience Planning:** Assessing and enhancing our infrastructure to withstand the effects of rising sea levels and increasing storm intensity.

Resilient Bath charts a future rich in community, passion and dedication to the greater good. We are proud of this plan and look forward to working alongside everyone willing to help our community achieve the important goals set out in the plan. This city's strengths and momentum, evidenced throughout the development of the plan, give us confidence we can and will move the plan forward.

Marc Meyers
City Manager

Letter from the Climate Action Commission

Climate change threatens our way of life. If humanity does not act to counter this threat over the coming decades, sea level rise could turn Bath's downtown into an island by the end of this century, make low lying roads impassable, and put coastal properties at risk. Summer heat and storm events may become more frequent and intense, mosquito- and tick-borne diseases more prevalent, and our fishing, agricultural, and tourism industries greatly stressed. It is not a future any of us want. To prepare to meet these challenges, and thanks to expert support from team members at Kim Lundgren Associates and Siler Climate Consulting, we are proud to present an updated climate action plan: *Resilient Bath*.

Resilient Bath charts a course to a safe and sustainable future for Bath. The result of extensive research, community engagement, and collaboration with stakeholders throughout our City, it specifies actions to make our community more resilient to climate impacts, to lower the collective carbon emissions which are the root cause of climate change, to enhance the overall quality of life in Bath, and to preserve a robust and thriving economy. *Resilient Bath* emphasizes the role that each of us has to play by offering productive actions for every segment of our community, including residential, commercial, industrial, government, and non-profit sectors.

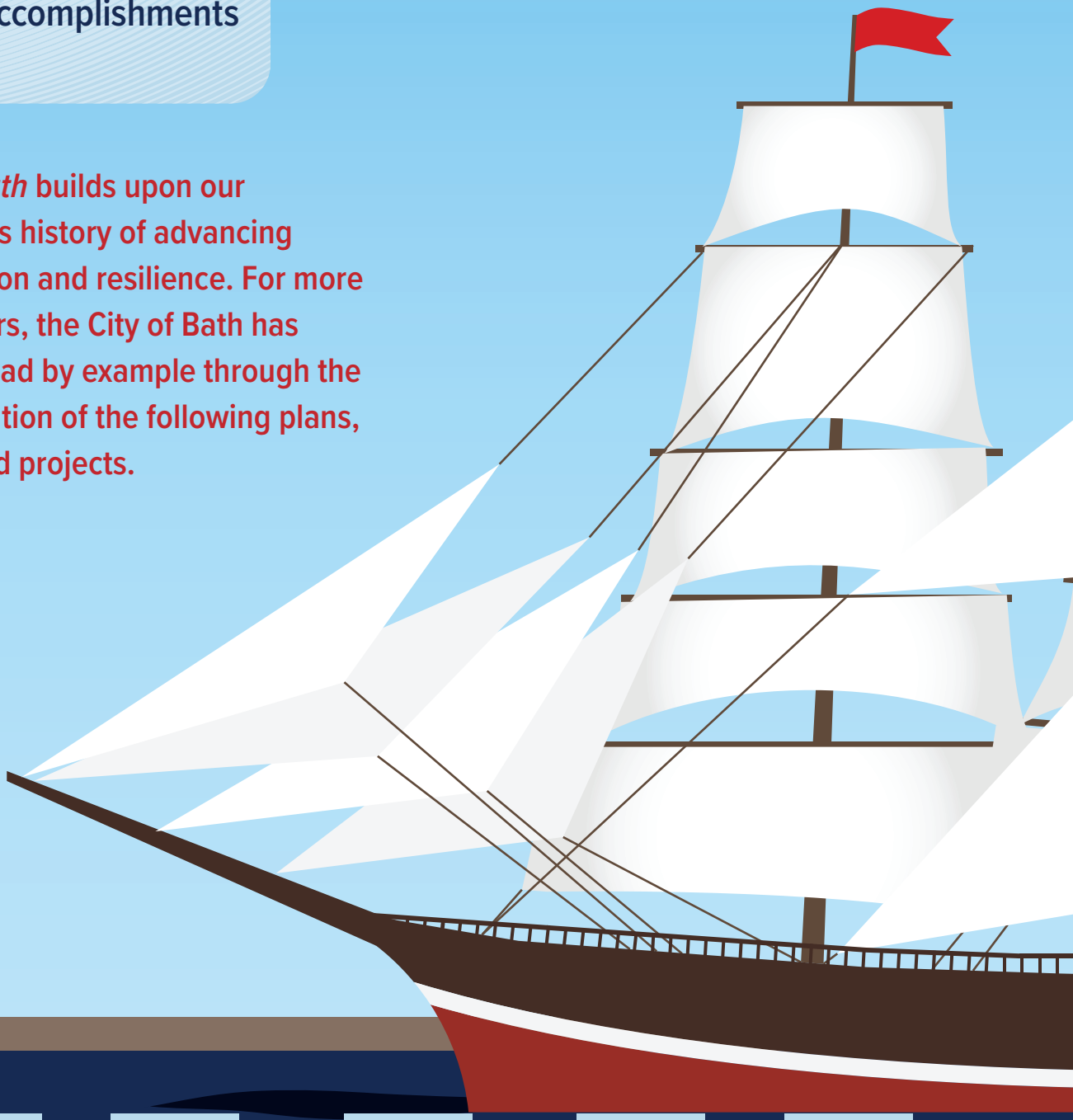
We extend our thanks to the many contributors to *Resilient Bath*. Your dedication to the well-being of our City has culminated in a plan based in science and guided by a wish to leave a lasting legacy for future generations.

No plan is successful until it is actually implemented. We invite you to review *Resilient Bath* for detailed strategies and implementation steps. Our task now is to work together to act on these strategies, drawing on our collective ingenuity, vision, strength, and determination to ensure a resilient and bright future for our community.

Paul Perkins and John Zittel
Bath Climate Action Commission, Co-Chairs

Action & Accomplishments to Date

Resilient Bath **builds upon our community's history of advancing climate action and resilience. For more than 15 years, the City of Bath has sought to lead by example through the implementation of the following plans, policies, and projects.**



2008

Bath completes its first greenhouse gas (GHG) inventory and action plan.

2011

Bath conducts energy audits at municipal facilities to identify opportunities to improve building efficiency.

2013

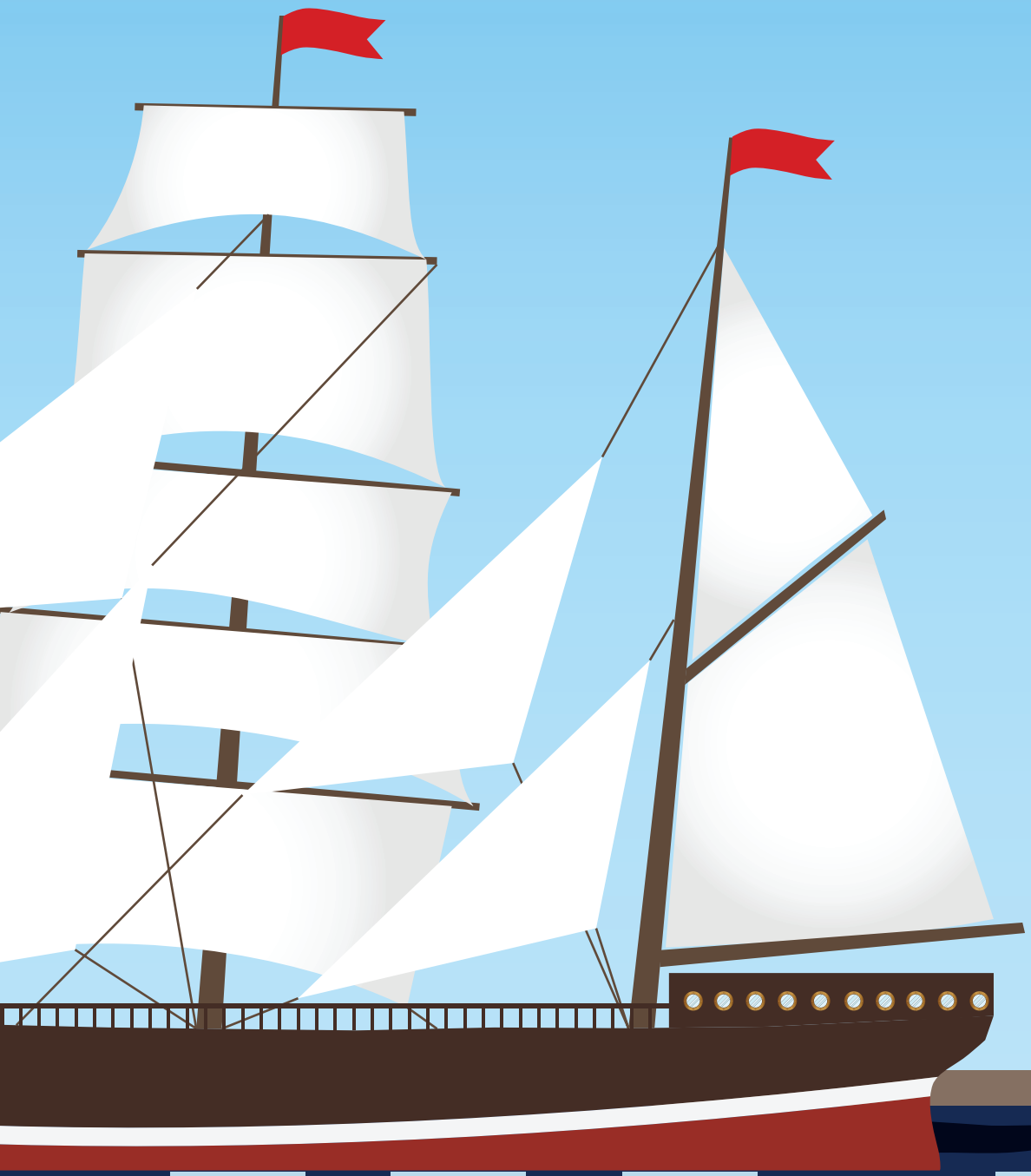
Bath engages in a regional sea level rise study and delivers a report to the State showing potential impacts to the community.

2014

Design and Resiliency Team (DART) strategy is created for the downtown and waterfront to address sea level rise and inform future development projects.

2019

City Adopts its first climate resolution and establishes the Climate Action Commission



2021

First public electric vehicle (EV) charging station is installed in Bath.

2022

Bath update Climate Resolution to align with the State's *Maine Wont Wait* Plan

2022

Bath's Office of Sustainability & Environment is created. Bath City Council updates Bath's Climate Resolution. Climate Action Commission initiates the Window Dresser Community Build Program to provide a low-cost home insulation method to reduce energy use and heating costs.

2023

City initiates projects to: convert streetlights to LEDs; install four EV charging stations at the Patten Free Library; report on Bath's vulnerability to flooding and sea level rise; conduct facilities planning to ultimately remove fossil fuel HVAC systems in City facilities; permit the capped landfill solar project.

2024

RESILIENT BATH

Bath launches *Resilient Bath*, its first comprehensive Climate Action & Resiliency Plan.

Creating a Resilient Bath

When faced with challenges, our community remains strong: this is Bath. As a city that still builds ships on the same river as we did 200 years ago, resilience has always been a part of our community. With the *Resilient Bath Climate Action & Resiliency Plan*, we chart our course towards a safer, stronger future for everyone.

The impacts of climate change are nothing new to Bath residents; we have all experienced more intense storms, increased flooding, and unprecedented seasonal temperature changes in our community. By implementing the *Resilient Bath Plan*, we have a collective opportunity to build resilience to these impacts while continuing to reduce our climate pollution and invest in clean energy.

Our city never backs down from a challenge—let's move forward, together.

Working Together for a Safer, Stronger Future

Bath has already set a high bar for climate action in Maine, and now is our opportunity to strengthen our community and build on our legacy of climate leadership. The *Resilient Bath Plan* includes smart, practical strategies and actions to continue our path towards a more sustainable and resilient future. Our approach and methods of implementing those strategies and actions will be guided by the core values of our community.

Five Guiding Principles were selected to shape the planning process and establish priorities for implementing the *Resilient Bath Plan*:

1 GREENHOUSE GAS EMISSIONS REDUCTION

Minimizing Bath's contribution to climate change by reducing GHG emissions, the primary type of pollution causing climate change.

2 EQUITY AND INCLUSION

Addressing challenges that disproportionately affect underrepresented communities and prioritizing opportunities that benefit them.

3 ECONOMIC VITALITY

Proactively reducing current and future economic impacts due to climate shocks and stressors.

4 GOOD GOVERNANCE

Ensuring honesty and transparency around the allocation of the City's resources and promoting ongoing communication and collaboration between City departments.

5 SOCIAL, ECONOMIC, & ENVIRONMENTAL RESILIENCE

Increasing the capacity of social, economic, and natural systems to thrive in the face of climate impacts.

Climate Impacts in Bath

Climate change is real and we are already seeing the impacts. The good news, however, is that there is so much our community can do to collectively take action and prepare for both extreme weather events and long-term climate impacts, such as sea level rise.

In the State of Maine, we know that:

Our climate is getting warmer.

As global temperatures rise, summers are getting longer and winters are getting shorter. In Maine, the last four years were among the ten warmest years on record.[3]

Our climate is getting wetter.

When compared to historic averages, Maine now receives 1–2 additional days per year with 2+ inches of precipitation, and 2–3 more days per year with 1 inch of precipitation.[5]

Sea levels are rising and flooding is occurring more frequently.

For present-day sea levels, approximately 1.1 miles of roadways, 44 residential buildings, 4 pump stations, and 146.2 acres of wetland will likely be inundated during combined 1% annual chance ("100-year") coastal storms and riverine events.[4]

We will experience more intense and extreme weather on both ends of the spectrum.

Precipitation variability is increasing and has recently produced impactful seasonal extremes; for example, the 2020 growing season was the driest on record while the summer of 2023 was the wettest.[6]

Responding to the Challenge

These climate impacts will affect all areas of our lives, from our health and the stability of our coastline to the cost of energy and home insurance and our tourism industry. In *Maine Won't Wait*, the State's four-year climate action plan, the State outlines numerous recommendations for how communities can mitigate and manage these impacts. In alignment with that plan, the City of Bath affirmed and committed to the following goals through its 2022 Climate Action Resolution.

1. **ACHIEVE CARBON NEUTRALITY BY 2045,** which means that the City will make no net contribution to GHG emissions by reducing emissions and enhancing tree coverage within Bath and beyond.
2. Reduce GHG emissions **80%** by 2050.
3. Commit to manage sea level rise of **1.5 FEET BY 2050 AND 3.9 FEET BY 2100,** as aligned with the "Intermediate-Low Scenario" projected for sea level rise along Maine's coastline.[1]
4. Prepare to manage sea level rise of **3.0 FEET BY 2050 AND 8.8 FEET BY 2100,** as aligned with the "High Scenario" projected for sea level rise along Maine's coastline.[2]

Our Pathway to Achieve Carbon Neutrality

Climate change is happening due to increases in greenhouse gas (GHG) emissions, such as carbon dioxide and methane, which trap heat in our atmosphere. These emissions are created through everyday activities such as burning fossil fuels, like gasoline and natural gas, to power our cars and homes and sending waste to decompose in landfills. Reducing Bath's contribution to climate change means reducing our GHG emissions. As a first step, Bath conducted an updated community-wide GHG inventory to identify the sources of these emissions and our greatest opportunities to reduce them. This inventory provided the foundation for many of the high-impact strategies and actions in the *Resilient Bath Plan*.

In 2022, Bath generated 87,658 metric tons of GHG emissions, measured as metric tons of carbon dioxide equivalent ($MTCO_2e$), across both public and private sectors (11% below 2018 emissions levels, mostly as a result of cleaner electricity).[7] The largest single source of GHGs is attributable to energy used in Bath Iron Works industrial facilities in the city limits (40%). Energy used in residential and commercial buildings for lighting, heating, cooling, and powering appliances and devices accounts for the next largest share (39%). Transportation, primarily from private gasoline-powered vehicle trips, accounts for the third largest source of emissions (19%). Solid waste sent to the landfill accounts for most of the remaining emissions (2%), with small contributions from composted organic waste, water and wastewater treatment processes, and upstream losses from grid electricity.

Bath's 2022 Community GHG Emissions by Sector[8]

27% / 23,416 $MTCO_2e$
RESIDENTIAL BUILDINGS

12% / 10,201 $MTCO_2e$
COMMERCIAL BUILDINGS

40% / 34,990 $MTCO_2e$
INDUSTRIAL ENERGY

19% / 16,775 $MTCO_2e$
TRANSPORTATION

2% / 1,727 $MTCO_2e$
SOLID WASTE

1% / 584 $MTCO_2e$
WATER AND WASTEWATER

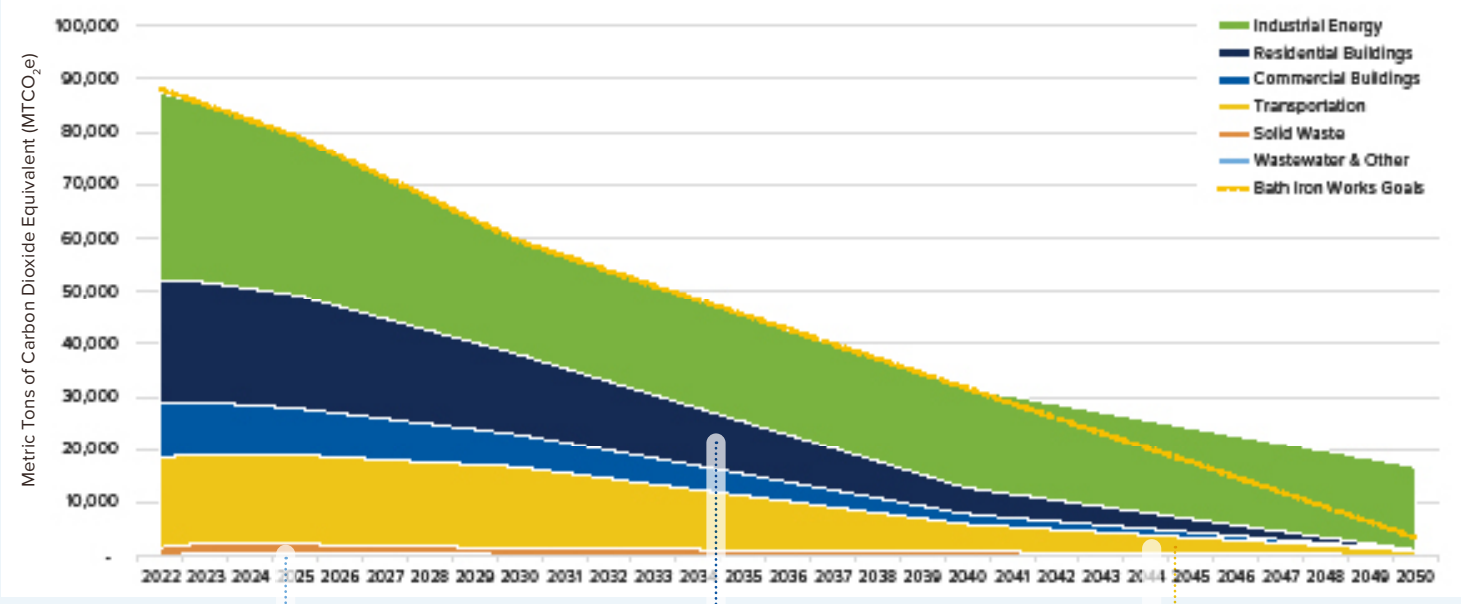
TOTAL
87,658 $MTCO_2e$

Note: Percentages do not add up to 100% due to rounding.

We can rapidly and aggressively reduce GHG emissions in Bath by transforming our buildings, transportation, and industrial systems to be as clean and efficient as possible. The strategies outlined in the *Resilient Bath Plan* are designed to put Bath on a path to achieving an 80% reduction by 2050 and carbon neutrality by 2045, as aligned with the State's reduction goals.

Bath's Pathways Analysis[9] models these opportunities; the wedges in the graph below illustrate the reductions in GHG emissions that can be realized over time as high-impact strategies and actions are implemented. Industrial energy is a major contributor and General Dynamics, the parent company of Bath Iron Works, has corporate targets to reduce GHG emissions 40% by 2034 from a 2019 baseline.[10] It is expected that the transition to cleaner renewable electricity will help meet those targets in the short term. The yellow dashed line illustrates the trajectory that Bath Iron Works could take to reduce emissions, though new technologies and other mechanisms may be needed to realize it.

Pathways to Zero[11]



REDUCE & DIVERT SOLID WASTE

Between now and 2050, we need to steadily increase diversion rates to ultimately reach 90%, the threshold for "zero waste." This means composting organic waste (e.g., food waste), reducing our use of plastics and other non-recyclables, and preventing as much waste as possible from being landfilled by reducing our overall consumption.

ELECTRIFY BUILDINGS & PURSUE EFFICIENCY

To rapidly reduce emissions, we must eliminate the direct use of fossil fuels for heating, cooking, and other uses in both residential and commercial buildings. All electrification efforts should be accompanied by high efficiency retrofits to minimize the demand for new renewable energy.

ELECTRIFY TRANSPORTATION & SHIFT TO ALTERNATIVE MODES

To tackle emissions from the transportation sector, we will need to shift to alternative modes of transportation including biking, walking, public transit, and EVs. Vehicle electrification must be accompanied by the shift from private vehicle trips to increased transit use and alternative mobility options to minimize future electricity demands.

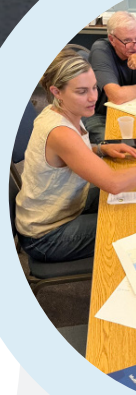
Eliminating the emissions that are currently projected to remain in 2050 will need to come from innovative technologies, improvements, and efficiencies in heavy-duty vehicles and large industry and equipment—primarily within the operations of Bath Iron Works.

Community Priorities & Perspectives

In Bath and around the world, the impacts of climate change are not evenly distributed. Climate hazards disproportionately affect marginalized and vulnerable people—including low-income communities, communities of color, older adults, children, and persons with disabilities—who often lack resources to prepare for and recover from climate-related disasters. The City of Bath is committed to conducting inclusive engagement across planning initiatives. *Resilient Bath* was no exception. Participation and input from community members, residents, and City staff were critical to shaping this plan.

The approach to engagement was unique and had three core goals.

1. Engage a wide and diverse audience across the community and City staff. The team identified and intentionally engaged populations in Bath who will likely be disproportionally impacted by climate change, including youth, low-income residents, renters, and residents living along the coast.
2. Build capacity for community members and staff to act on climate change in their own lives and support *Resilient Bath* implementation efforts.
3. Grow literacy about climate change.



Resilient Bath Advisory Group

25 Members

Understanding the needs of the people most impacted by climate change is vital to ensure the health and safety of everyone in our community. Equity considerations were identified by the *Resilient Bath* Advisory Group as they developed the plan's goals, strategies, and actions, and Implementation Blueprints.

Climate Action Commission/ Communications Training

5 Participants

The *Resilient Bath* team hosted a training with the Climate Action Commission to build skills and capacity to translate complex climate materials into accessible terms for their colleagues, friends, family, and neighbors.

Upper Washington Coastal Resilience Workshop

35 Participants

The City hosted a neighborhood-scale coastal resilience meeting in the Upper Washington neighborhood.

Climate Action Plan Tabling

The City tabled about the climate action plan at several events including Winterfest 2024, July 4th Heritage Days, and Saturday Farmers Markets.

Downtown Coastal Resilience Workshop

40 Participants

The City hosted a coastal resilience workshop focused on downtown geographies to discuss the results of the City's vulnerability assessment and discuss strategies and opportunities for adapting to these future scenarios.

Resilient Bath Workshop

40 Participants

In collaboration with Bath Public Schools, the Climate Action commission hosted a community-wide workshop to share the goals, strategies, and actions with residents and gather feedback.

Climate Action Survey

150 Responses

The City conducted a community-wide survey to identify barriers to climate action and opportunities for impact that helped shape the final plan. For example, residents cited "receiving emergency information and alerts" and "safely evacuating" as top concerns during extreme weather events, which informed several emergency preparedness actions under Goal 2 of the Resilient & Healthy Community section of the plan.

Renter and Landlord Targeted Surveys

5 responses from renters
5 responses from landlords

In partnership with Midcoast Maine Community Action and Bath Housing, the City engaged in targeted outreach to both renters and landlords to understand the unique opportunities and challenges that both of these groups will face in taking climate action.

Our Action Plan

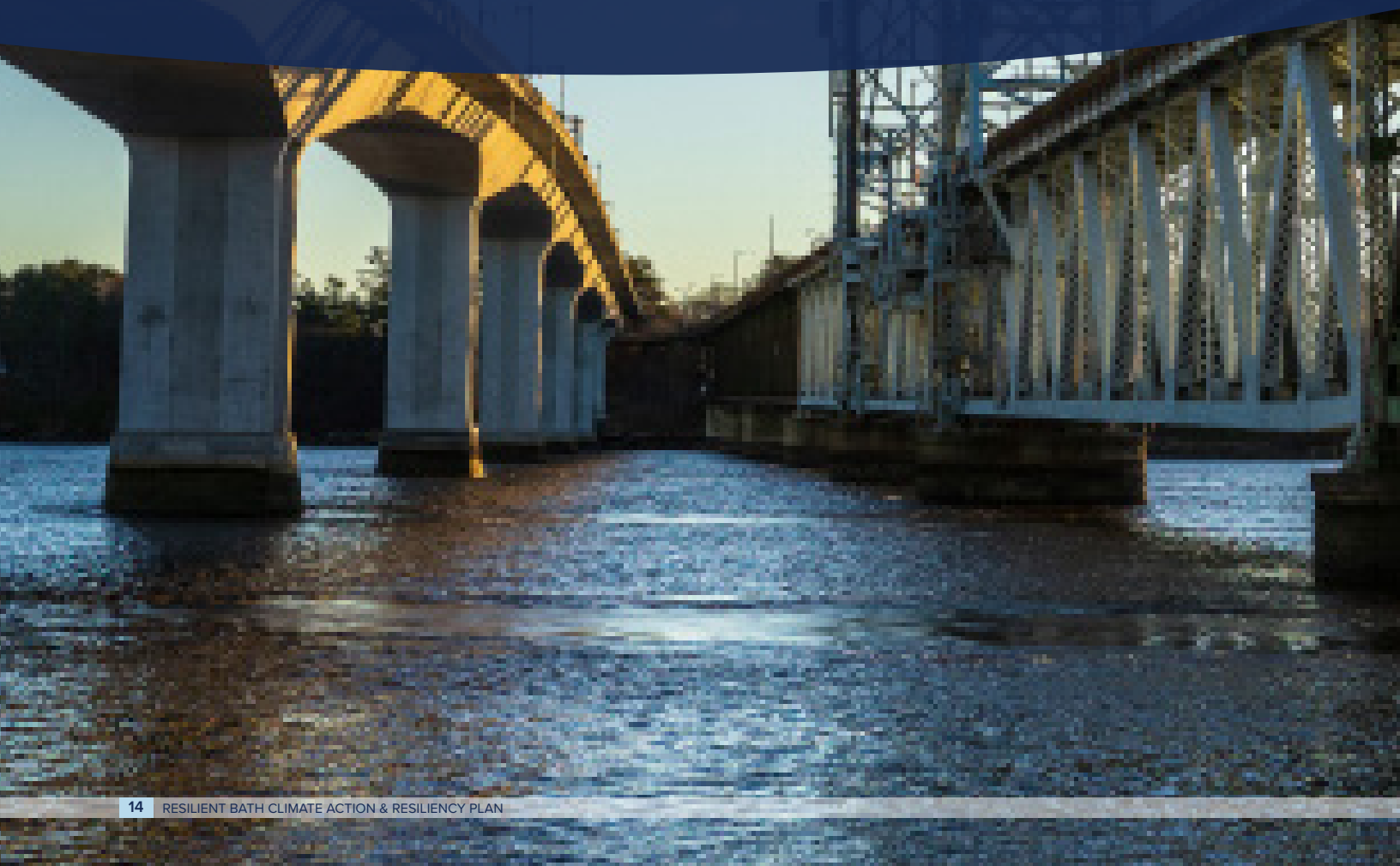
Achieving our climate action goals will ultimately require active engagement from all levels of City government and our community. There are two main ways we can address climate change in Bath:

1

REDUCE OUR GREENHOUSE GAS (GHG) EMISSIONS, the primary pollutants disrupting our climate.

2

ADAPT TO THE IMPACTS OF CLIMATE CHANGE, that we are already seeing and feeling and will continue to experience in the future.



Focus Areas

The goals, strategies, and actions in the *Resilient Bath Plan* are organized into five key focus areas that represent the greatest areas of opportunity for addressing climate change:

CLEAN ENERGY AND EFFICIENT BUILDINGS

RESILIENT AND HEALTHY COMMUNITY

CONNECTED TRANSPORTATION AND MOBILITY

VIBRANT NATURAL RESOURCES

SMART WASTE AND WATER MANAGEMENT

Implementation Approach & Timeline

The actions identified for each focus area are intended to be implemented within the next five to 10 years and will put Bath on the path to achieving its 2045, 2050, and 2100 climate actions goals.

To streamline and facilitate the execution of the plan, implementation blueprints were developed for 10 priority actions. These blueprints were developed with the identified champions during the advisory group process, and are intended to serve as a template for action, and their ability to be easily duplicated for other action items within the plan.

Considering how quickly technology and our climate are changing, action items within this plan should be reviewed and prioritized based upon the availability of resources to conduct thorough implementation. This includes staff and community capacity, availability of funding opportunities, and complexity of the action item.Since the community-wide GHG inventory will not be updated more than every five years (and does not indicate progress on resilience-related goals), tracking the performance metrics identified for each focus area can help the City to measure progress on its goals more frequently. The City will report progress to the community on an annual basis.

RESILIENT BATH

WHAT'S INCLUDED

- ☑ Electrification
- ☑ Energy efficiency
- ☑ Renewable energy
- ☑ Energy resilience

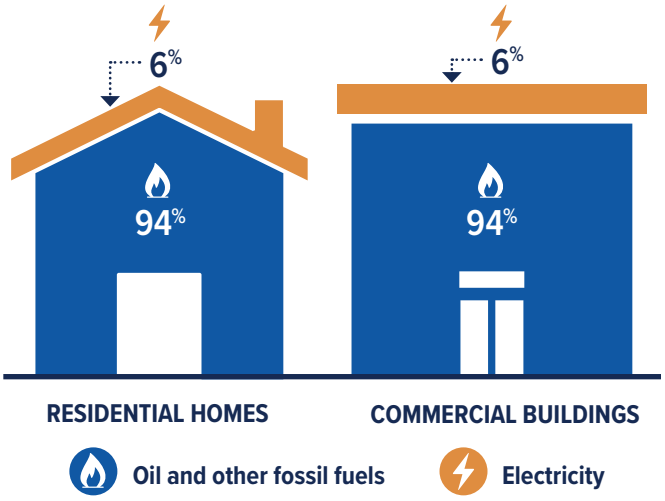
Clean Energy & Efficient Buildings

Vision: Bath minimizes greenhouse gas emissions through improved building energy performance and expanding renewable energy capacity.

BY THE NUMBERS

Energy use in residential and commercial buildings is a substantial share of our emissions at 39%. Scaling up local renewable energy production, pursuing high-efficiency retrofits, and electrifying our homes, businesses, and municipal buildings are Bath's greatest opportunities to reduce GHG emissions. Bath Iron Works accounts for an additional 40% of community GHG emissions through industrial energy use; its parent company, General Dynamics, has plans to reduce emissions through high-efficiency energy retrofits and investments in renewable energy.

Heating Fuels Used in Bath's Buildings[14]



TRACKING PROGRESS

The following metrics will help Bath to track and measure progress toward its goals for Clean Energy & Efficient Buildings. Additional metrics should be identified and reported to provide a more complete picture of progress.

PERFORMANCE METRIC	BASELINE YEAR	2030 TARGET	2040 TARGET	2050 TARGET
Share of Electrified and Energy Efficient Residential Buildings	6% (2023)[12]	60%	80%	100%
Share of Electrified and Energy Efficient Commercial Buildings	6% (2023)[13]	60%	80%	100%
Installed Solar Capacity (MW)	New Metric	15	16	20
Share of Electrified and Energy Efficient Industrial Buildings	New Metric	60%	80%	100%

TAKE ACTION

Enroll in the Maine Green Power electricity program or join a community solar farm to reduce your carbon footprint and support clean energy projects.

ENROLL TODAY

Action Table

The *Resilient Bath* planning process identified the following goals, strategies, and actions for Clean Energy & Efficient Buildings.

GOAL 1	**Buildings in Bath are energy efficient and minimize greenhouse gas emissions.**
STRATEGY 1.1	**Electrify and retrofit existing residential and commercial buildings.**
EB 1.1.A	Continue outreach and education campaigns to support residents and businesses with navigating electrification and efficiency resources and incentives.
EB 1.1.B	Create additional incentive bonus for residents who pursue electrification and weatherization projects.
EB 1.1.C	Create a voluntary rental energy labeling program to spur efficiency investments by landlords, integrating with State Renter Disclosure Request Process.
EB 1.1.D	Establish dedicated resources for low-cost/low-barrier programs like window inserts for homes and rental properties that are difficult to electrify.
EB 1.1.E	Update permitting processes to record comprehensive energy system information (e.g., battery capacity, heating system) with property records.
STRATEGY 1.2	**Create efficiency and electrification standards for new buildings and major renovations.**
EB 1.2.A	Establish expedited zoning and permitting processes for new construction and major renovations incorporating on-site renewable energy and storage.
EB 1.2.B	Adopt the MUBEC Stretch Code aligning with 2021 IECC design standards.

GOAL 2	**Bath achieves enhanced renewable energy capacity and energy resilience.**
STRATEGY 2.1	**Increase energy productivity and integrate innovative renewable energy solutions.**
EB 2.1.A	Determine feasibility of transitioning downtown district heating to networked geothermal.
EB 2.1.B	Pursue backup batteries at critical facilities and large solar projects and leverage peak demand cost savings.
EB 2.1.C	Collaborate with Bath Iron Works to identify opportunities for clean energy use.
STRATEGY 2.2	**Expand renewable energy capacity across the community.**
EB 2.2.A	Develop zoning allowances for large solar and storage developments, prioritizing underutilized sites such as large surface parking areas and brownfields.
EB 2.2.B	Develop model projects for shared ownership of renewable energy systems across property lines.

WHAT'S INCLUDED

- ☑ Electric vehicles (EVs) and charging infrastructure
- ☑ Public transportation
- ☑ Active mobility (e.g., walking, biking)
- ☑ Alternative low-carbon fuels

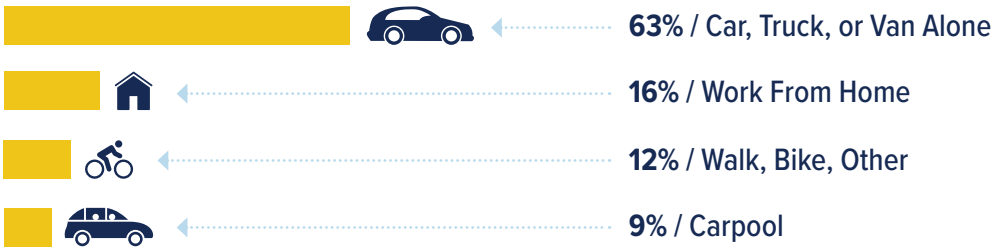
Connected Transportation & Mobility

Vision: Bath accelerates the transition to electric vehicles and connected, sustainable mobility options.

BY THE NUMBERS

Transportation accounts for close to 20% of Bath's GHG emissions, most of which (92%) are generated from personal gas-powered vehicles. Reducing our vehicle miles traveled (VMT) and transforming how we get around are crucial steps to protecting our climate. By electrifying our vehicles and expanding access to walking, biking, and public transit, Bath can reduce emissions, improve local air quality, and create a well-connected, sustainable community.

How the Bath Community Commutes[19]



Almost 20%
of Bath's GHG emissions comes from transportation.

TRACKING PROGRESS

The following metrics will help Bath to track and measure progress toward its goals for Connected Transportation & Mobility. Additional metrics should be identified and reported to provide a more complete picture of progress.

PERFORMANCE METRIC	BASELINE YEAR	2030 TARGET	2040 TARGET	2050 TARGET
Share of Light-Duty Vehicles Electrified	New Metric	20%	80%	100%
Share of Heavy-Duty Vehicles Electrified	New Metric	10%	45%	80%
Public EV Charging Ports	10 (2024)[15]	87	229	290
Average Daily Vehicle Miles Traveled per Household	33 (2017)[16]	26	20	20[17]
Annual Bath CityBus Ridership	17,153 (2024)[18]	Monitor and set targets to increase		

TAKE ACTION

Efficiency Maine offers rebates to residents who purchase electric vehicles. See if you qualify and learn how to stack these rebates with federal tax credits.

MAKE YOUR NEXT VEHICLE AN EV

Action Table

The *Resilient Bath* planning process identified the following goals, strategies, and actions for Connected Transportation & Mobility.

GOAL 1	**Bath is a model for clean transportation options.**
STRATEGY 1.1	**Accelerate the transition to alternative fuel vehicles.**
TM 1.1.A	Develop an electric vehicle transition plan for the City's fleet that considers operational requirements of vehicles and availability of suitable models.
TM 1.1.B	Partner with Bath CityBus to identify and apply for state and federal grant programs to transition the Bath CityBus system to an alternative fuel option, as available and feasible.
TM 1.1.C	Partner with Maine Clean Communities to conduct a public education campaign to encourage community members to purchase an electric or hybrid vehicle as their next vehicle.
STRATEGY 1.2	**Increase charging infrastructure for EVs.**
TM 1.2.A	Identify priority locations and install metered EV charging stations for public lots and street parking.
TM 1.2.B	Work with commercial property owners to educate them about available incentives to install EV charging stations for local and tourism benefits.

GOAL 2	**Bath community members have more options for sustainable and safe travel.**
STRATEGY 2.1	**Increase the use of active mobility options.**
TM 2.1.A	Conduct a robust Complete Streets/Active Transportation planning effort to identify community needs, feasible locations, and funding opportunities to develop corridors that support pedestrians and bicyclists.
TM 2.1.B	Collaborate regionally and with state agencies to connect Bath bicycle and pedestrian trails to other community trails, such as the A2K Trail.
TM 2.1.C	Create an e-bike rebate and/or lending program.
TM 2.1.D	Create an incentive program to encourage City employees to walk, bike, carpool, or use more forms of public transportation for their daily commute.
STRATEGY 2.2	**Enhance and promote transit services.**
TM 2.2.A	Partner with CityBus to expand service to regional destinations, such as the Brunswick Metro BREEZ station.
TM 2.2.B	Promote existing on-demand Bath CityBus service and communicate upcoming service changes and expansions with the public.

WHAT'S INCLUDED

- ☑ Resilient infrastructure
- ☑ Emergency preparedness, management, and communications
- ☑ Access to resources and services
- ☑ Affordable and sustainable housing

Resilient & Healthy Community

Vision: Bath is prepared for climate impacts with resilient neighborhoods, accessible resources, and affordable housing.

BY THE NUMBERS

Climate impacts like severe flooding, intense storms, and extreme heat all present serious threats to the Bath community. The City seeks to build resilience to these impacts through enhancing emergency preparedness, communications and education, and improving the local network of emergency resources and services for community members. Building climate resilience ensures that the Bath community's health and wellbeing are safeguarded for years to come.

15 flood scenarios
were evaluated for the City's Flood Vulnerability Assessment to determine locations and infrastructure most at risk.[24]

2-4˚ F increase
in temperature has been projected for Maine by 2050.[25]

TRACKING PROGRESS

The following metrics will help Bath to track and measure progress toward its goals for Resilient & Health Community. Additional metrics should be identified and reported to provide a more complete picture of progress.

PERFORMANCE METRIC	BASELINE YEAR	2030 TARGET	2040 TARGET	2050 TARGET
Energy Cost Burden of Low-Income Households	10% (2022)[20]	5%[21]	0%	0%
Households with Central AC	9% (2023)[22]	30%	80%	100%
Heat-Related ER Visits in Sagadahoc County	4 (2019)[23]	Monitor and Set Targets to increase		
Miles of Inundated Roads Due to Flooding	2.8 (2022)[4]	Monitor and Set Targets to increase		

TAKE ACTION

The General Assistance Program offers financial assistance for Bath residents unable to access their basic needs (e.g., food, shelter, fuel, electricity).

LEARN MORE

Action Table

The *Resilient Bath* planning process identified the following goals, strategies, and actions for Resilient & Healthy Community.

GOAL 1	**The City leverages climate data and hazard mitigation best practices for infrastructure and neighborhood planning.**
STRATEGY 1.1	**Ensure community infrastructure and households are resilient to climate hazards.**
CO 1.1.A	Develop resilience requirements for new structures within flood zones and/or predicted areas of sea level rise.
CO 1.1.B	Launch a "cool block" pilot program to install features such as white and green roofs, lighter pavement, and/or shade trees in neighborhoods and new developments.
CO 1.1.C	Through additional planning, identify design scenarios for protecting prioritized critical infrastructure identified in the vulnerability assessment.
CO 1.1.D	Conduct an outreach campaign targeting residents and businesses to improve understanding of flood risk and flood prevention measures.

GOAL 2	**The Bath community understands climate change and has tools and resources to stay safe during climate events.**
STRATEGY 2.1	**Ensure community members have resources to prepare for and respond to climate hazards.**
CO 2.1.A	Launch an inclusive climate preparedness campaign that provides information, resources, and sign-ups for emergency alerts for residents, businesses, and visitors.
CO 2.1.B	Establish neighborhood emergency response teams to prioritize preparedness and wellbeing of vulnerable residents.
CO 2.1.C	Support a resilience hub that can serve for tactical response during and after climate events.

GOAL 3	**Housing in Bath is affordable and climate-ready.**
STRATEGY 3.1	**Facilitate the development and maintenance of affordable and climate-ready housing.**
CO 3.1.A	Develop an incentive program for landlords to improve the quality and sustainability of rental units in exchange for deeded income restriction.
CO 3.1.B	Promote affordable housing through zoning changes such as an inclusionary zoning ordinance or density bonus.
CO 3.1.C	Create a local Housing Fund to acquire, rehabilitate, and construct housing, while also providing support services to help residents.

WHAT'S INCLUDED

- ☑ Reducing waste generation
- ☑ Recycling and composting
- ☑ Sustainable municipal operations
- ☑ Stormwater management and green infrastructure

Smart Waste & Water Management

Vision: Bath reduces waste and maintains safe and reliable water infrastructure and services.

BY THE NUMBERS

Landfilled waste not only emits methane, a potent greenhouse gas, but it can also pose a risk to public and environmental health. Reducing our consumption of goods and materials, increasing how much food waste we compost, and keeping recycling free of contamination are a few ways to keep as much waste as possible from the landfill. The City can also lead by example in reducing stormwater runoff and pollution through sustainable, green infrastructure.

52% decrease
in landfilled waste, from 10,073 tons in 2018 to 4,840 tons in 2022.[29]

39 miles
of collection sewers and interceptors owned and operated by the City.[30]

92% decrease
in annual volume of combined sewer overflows (CSOs) from greater than 36 million gallons in 2006 to 2.9 million gallons in 2020.[31]

TRACKING PROGRESS

The following metrics will help Bath to track and measure progress toward its goals for Smart Waste & Water Management. Additional metrics should be identified and reported to provide a more complete picture of progress.

PERFORMANCE METRIC	BASELINE YEAR	2030 TARGET	2040 TARGET	2050 TARGET
Residential Waste Diversion Rate	New Metric	30%	60%	90%
Share of Residential Food Waste Composted	New Metric	50%	75%	100%
Share of Households Enrolled in Garbage to Garden Composting Program	4% (2018)[26]	Monitor and set targets to increase		
Businesses Enrolled in Garbage to Garden Composting Program	13 (2018)[27]	Monitor and set targets to increase		
Combined Sewer Overflows (million gallons)	2.9 (2020)[28]	Monitor and set targets to decrease		

TAKE ACTION

Reduce food waste and emissions by joining the Garbage to Garden curbside composting program.

COMPOST AT HOME

Action Table

The *Resilient Bath* planning process identified the following goals, strategies, and actions for Smart Waste & Water Management.

GOAL 1	**The Bath community reduces its carbon footprint by minimizing waste; reducing the consumption of disposal goods; sharing, fixing, and upcycling materials; and recycling and composting.**
STRATEGY 1.1	**Reduce waste generated from municipal operations.**
WW 1.1.A	Adopt a municipal sustainable purchasing screening process and criteria.
WW 1.1.B	Eliminate single-use items from municipal facilities and replace them with reusable options where feasible.
WW 1.1.C	Pilot a zero-waste program at City Hall with the goal of expanding to all municipal facilities.
WW 1.1.D	Prepare to participate in the State's Extended Producer Responsibility Program for Packaging when launched.
STRATEGY 1.2	**Reduce waste generated by businesses, households, and individuals.**
WW 1.2.A	Create and launch a public education campaign to increase the number of residents who compost and participate in reuse and repair programs.
WW 1.2.B	Pilot the Green Restaurant Association's certification program.
WW 1.2.C	Support the creation of a public "lending library" to encourage community members to share household tools and equipment.
WW 1.2.D	Create a citywide compost program.

GOAL 2	**The City efficiently and sustainably manages wastewater, stormwater, and the combined sewage overflow (CSO) system.**
STRATEGY 2.1	**Reduce pollution and overflow risks of wastewater and CSO systems.**
WW 2.1.A	Incorporate climate data and projections into design of capital wastewater and CSO projects and system upgrades.
WW 2.1.B	Develop a stormwater utility to fund storm drain upgrades and expansions.
WW 2.1.C	Continue implementing the CSO Master Plan to separate sewage from stormwater flow, prioritizing upgrades with the highest impact and those that can be done alongside other roadway and maintenance projects.
WW 2.1.D	Work with code inspection and enforcement to educate local businesses about Bath's CSO system and how to minimize fats, oils, and grease (FOG) in sewer lines.
STRATEGY 2.2	**Utilize green infrastructure to manage stormwater and flood risk.**
WW 2.2.A	Conduct a stormwater study to identify and prioritize locations to implement green infrastructure and other stormwater controls, prioritizing areas without existing stormwater infrastructure.
WW 2.2.B	Align local standards with the State's chapter 500 regulations and set local thresholds for applicability.
WW 2.2.C	Offer reduced permit fees for new development projects that incorporate green infrastructure into their site designs.

WHAT'S INCLUDED

- ☑ Urban tree canopy
- ☑ Forested and open spaces
- ☑ Coastal resources and blue economy
- ☑ Carbon sequestration

Thriving Natural Resources

Vision: Bath protects natural resources and public lands and ensures they are resilient in the face of climate change.

BY THE NUMBERS

Achieving carbon neutrality, in alignment with the State's climate goals, will require proactive stewardship of natural resources to maximize how much carbon dioxide they remove from the atmosphere. Trees are an essential resource in many ways: they reduce heat, absorb and filter stormwater, sequester carbon emissions, and act as vital parts of local ecosystems. Tree preservation, planting, and maintenance are key to reducing our contribution to climate change and minimizing the impacts of climate hazards. As a coastal city, protecting and enhancing our coastal resources is also vital to economic and recreational activity, as well as climate resilience.

89

Bath's Tree Equity Score, indicating a good distribution of trees across the community.[36]

$8 million

worth of ecosystem services and co-benefits provided by the 20,000 City-owned trees.[37]

16,000 gallons

of annual stormwater runoff prevented by Bath's tree canopy.[38]

TRACKING PROGRESS

The following metrics will help Bath to track and measure progress toward its goals for Thriving Natural Resources. Additional metrics should be identified and reported to provide a more complete picture of progress.

PERFORMANCE METRIC	BASELINE YEAR	2030 TARGET	2040 TARGET	2050 TARGET
Tree Canopy Coverage	44% (2024)[32]	50%	55%	59%
Residents Living Within a 10-Minute Walk of a Park	41% (2024)[33]	Monitor and set targets to increase		
City Owned Trees	20,000 (2022)[34]	Monitor and set targets to increase		
Acres of Conservation Land	3,672 (2024)[35]	Monitor and set targets to increase		

TAKE ACTION

Try your hand at sustainable landscaping by replacing grass with native plants and avoiding harmful pesticides. Check out local resources like the Bath Garden Club.

JOIN THE CLUB

Action Table

The *Resilient Bath* planning process identified the following goals, strategies, and actions for Thriving Natural Resources.

GOAL 1	**Bath's existing and future natural resources are healthy and sustainable.**
STRATEGY 1.1	**Protect and enhance trees and open space.**
NR 1.1.A	Increase the urban tree canopy by 15% above current canopy coverage, prioritizing vulnerable areas and maintain the health of the existing canopy.
NR 1.1.B	Incorporate an Open Space/Landscape Surface Ratio requirement into the Land Use Code update, including design standards for street trees.
NR 1.1.C	Collaborate with KELT and Forestry Committee on forestry management plans and identify large tracts of forested landscapes and coastal ecosystems for conservation and restoration.
NR 1.1.D	Prioritize infill development over low-density expansion, particularly in critical rural areas.

GOAL 2	**Bath's coastal resources are resilient to climate change.**
STRATEGY 2.1	**Protect and enhance coastal natural resources.**
NR 2.1.A	Develop a Waterfront Plan that combines climate resilience strategies with connected public access.
NR 2.1.B	Identify near-term nature-based solutions and pilot projects based on 2050 coastal flood pathways identified in the vulnerability assessment.
NR 2.1.C	Identify current blue and green economy assets in Bath.
NR 2.1.D	Promote skills training and workforce development in emerging natural resources and Blue Economy sectors.

GOAL 3	**The City understands and promotes the potential of Bath's natural resources to sequester carbon from the atmosphere.**
STRATEGY 3.1	**Leverage nature to strategically remove carbon from the atmosphere.**
NR 3.1.A	Identify the carbon sequestration potential of City-owned land and ensure no net loss of high potential land.

Implementation Blueprints

Clean Energy & Efficient Buildings

ACTION EB 1.1.B

Create additional incentive bonus for residential building owners to pursue electrification and weatherization projects.

EXPECTED OUTCOME	Bath has a usable and useful program to financially support residents to pursue high-efficiency energy retrofits and electrification projects to reduce household energy use and greenhouse gas emissions while minimizing stress on the electricity grid.
OVERALL TIME FRAME	Medium (1-3 years)
CHAMPION	Office of Sustainability and Environment

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Research and assess the range of similar programs and applicable project types.	1 month	Climate Action Commission
2. Engage Efficiency Maine to align program design, payment mechanisms, and contractor vetting process.	2 months	Climate Action Commission
3. Engage contractors and potential applicants to learn what support would be most effective.	1 month	Economic and Community Development
4. Establish clear definitions of the types of retrofits eligible for incentives applicable buildings.	< 1 month	Climate Action Commission Codes Enforcement Housing Committee
5. Identify grant and other funding opportunities and secure resources to fund the initial program.	6-12 months	Finance Committee Economic Development Committee
6. Establish final program design, incentive levels and mechanisms as appropriate for the funding levels received.	2 months	Finance Committee Climate Action Commission Housing Committee
7. Present final program to relevant committees and City Council for adoption.	2 months	Climate Action Commission

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional staff capacity
- Additional funding
- Additional training
- Additional buy-in from leadership or community

FINANCIAL TOOLS

- Maine Community Foundation
- Community Resilience Partnership
- Community Development Block Grants
- Maine Economic and Community Development Home Repair Network

TECHNICAL RESOURCES

- ACEEE: Designing Home Energy Programs that Leverage Federal Climate Investments with Other Funding
- C40: Guidelines for creating community-driven building retrofit programs
- Elevate: Guidelines for Maximizing the Benefits of Federal Investments in Buildings

EQUITY CONSIDERATIONS

- Ensure mechanisms allow for improvements to small rental properties and consider ways to limit rent increases that could result from improvements made.
- Create clear and accessible materials for contractors to understand and participate in the process.
- Design rebates to minimize first costs and avoid complex loans and financing arrangements for low-capacity residents.

Clean Energy & Efficient Buildings

ACTION EB 2.2.A

Develop zoning allowances for large solar and storage developments, prioritizing underutilized sites such as large surface parking areas and brownfields.

EXPECTED OUTCOME	The Zoning Code is updated to allow development of large solar and storage projects is permitted where appropriate, driving significant progress towards local renewable energy, reducing greenhouse gas emissions related to energy use while reducing stress on the electricity grid, and enhancing energy resilience.
OVERALL TIME FRAME	Short (<1 year)
CHAMPION	Office of Sustainability and Environment

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Convene a working group to 1) assess known gaps in the City's energy resilience that could be enhanced with large solar and storage projects and 2) develop criteria for identifying potential project locations.	1 month	Planning Department Climate Action Commission Public Works
2. Create an inventory of underutilized sites, documenting known limitations.	2 months	Economic and Community Development Planning Department Code Enforcement
3. Review current and near-term technology options and cross reference for compatibility with documented site conditions.	1 month	Climate Action Commission External Contractor/ Technical Support
4. Convene property owners of identified sites and potential project developers to determine additional clarifications that might be needed in zoning update.	1 month	Economic and Community Development Planning Department
5. Draft updates to zoning code as needed based on findings in prior steps.	1 month	Planning Board Planning Department Codes Enforcement Climate Action Commission
6. Present proposed updates to City Council, Planning Board, and incorporate feedback as needed.	1 month	Planning Department City Council
7. Adopt updates to Land Use Code to explicitly allow development of renewable energy and storage projects. Incorporate provisions to reevaluate code updates at regular intervals.	1 month	Planning Department Planning Board

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional staff capacity
- Additional funding
- Additional training
- Additional buy-in from leadership

FINANCIAL TOOLS

- Maine Solar for All Program
- Community Resilience Partnership
- Property Assessed Clean Energy Programs, U.S. Department of Energy

TECHNICAL RESOURCES

- US DOE Community Solar Best Practices Guide: Developing Projects with Meaningful Benefits
- Clean Energy States Alliance: Consumer Protection for Community Solar
- SolSmart: Solar + Storage: A Guide for Local Governments
- SolSmart: Solar and Energy Storage System Permitting & Inspection Guidelines
- https://www.mainefarmlandtrust.org/future/policy-and-planning-resources-for-towns
- https://maineaudubon.org/advocacy/solar/

EQUITY CONSIDERATIONS

- Ensure a process for neighboring property owners to weigh in on site configuration.
- Utilize Solar for All to give residents access to project benefits while providing financing for projects in Bath.

Connected Transportation & Mobility

ACTION TM 1.1.A

Develop an electric vehicle transition plan for the City's fleet that considers operational requirements of vehicles and availability of suitable models.

EXPECTED OUTCOME	The City leads by example in reducing emissions from the transportation sector by phasing out fossil fuels vehicles from the municipal fleet in accordance with the electric vehicle transition plan.
OVERALL TIME FRAME	Short (<1 year)
CHAMPION	Office of Sustainability and Environment

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Review sustainable vehicle transition plans and policies from other local government fleets by department (police, fire, public works, and parks and recreation).	2 months	Departments with Fleets Transportation Committee Police Fire & PW Unions Climate Action Commission
2. Identify common goals, progress metrics, allowable costs, enforcement mechanisms, and other plan design elements.		
3. Conduct a fleet baseline by reviewing the existing vehicles, identifying mileage, fuel use, duty cycle and age. Review any past projects in Bath involving vehicle electrification for best practices.	2 months	Department Heads City Manager Fleet Manager Mechanics
4. Identify electric vehicle options for fleet vehicle needs and categorize by: (1) has options, (2) has options, but doesn't meet needs, or (3) no options available.	3 months	Department Heads
5. Based on these categorizations, develop a prioritized list of vehicles for replacement.		
6. Identify opportunities for efficiencies by adjusting routes or operation practices. Identify procurement implications, including vehicle costs, procurement method, and infrastructure requirement. Identify repair, maintenance, and staff training requirements.	1 month	-
7. Conduct an electrical assessment of municipal sites to see if any infrastructure upgrades will be required to meet current and future charging demands, considering the addition of new fleet EVs. Consider adding generators for the departments.	1 month	Facilities Outside Electricians

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
8. Use the best practice research, fleet analysis, and EV charging infrastructure assessment to develop a vehicle transition plan.	2 months	-
9. Conduct yearly evaluations to track progress of the plan and assess any updates that should be made based on market conditions, new technologies, etc.	Ongoing	-

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional funding
- Additional training
- Additional buy-in from leadership or community

FINANCIAL TOOLS

- Community Resilience Partnership
- Inflation Reduction Act Rebates
- Public-Private Partnerships – Oregon Case Study
- Public Access and Workplace Charging Incentives
- Efficiency Maine – EV Tax Credits and Incentives

TECHNICAL RESOURCES

- U.S. Department of Energy Clean Cities Technical Assistance
- U.S. Department of Energy Alternative Fuels Data Center
- Climate Mayors Electric Vehicle Purchasing Collaborative

EQUITY CONSIDERATIONS

- Prioritize the replacement of vehicles that are used most heavily and have the highest potential for reducing local air pollution and emissions.
- For vehicles that are still in working condition when they are retired from the fleet and replaced, identify opportunities to repurpose parts or donate the vehicle.
- Utilize a phased approach and maximize grant funding to make best use of taxpayer funds.

Connected Transportation & Mobility

ACTION TM 1.2.A

Identify priority locations and install metered EV charging stations for public lots and street parking.

EXPECTED OUTCOME	The City of Bath offers additional public charging infrastructure to accommodate more residents and visitors in adopting electric vehicles.
OVERALL TIME FRAME	Medium (1-3 years)
CHAMPION	Office of Sustainability and Environment

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Conduct a baseline assessment of current EV infrastructure (public and private) including existing number and adoption rate of EVs.	Completed	-
2. Research best practices and upcoming developments in the industry.	12 months (currently underway)	Climate Action Commission Public Works Parking Enforcement Fire & Rescue Code Enforcement Electric Utility BPT
3. Define criteria for priority locations and set City targets for infrastructure expansion utilizing best practice research and baseline assessment.		
4. Identify barriers to EV adoption at all scales and engage the community for feedback.		
5. Analyze data and stakeholder feedback to identify priority locations for EV charging infrastructure.	6 months	Climate Action Commission Transportation Commission
6. Launch installations at priority locations with a public outreach campaign.	Ongoing	Climate Action Commission Vendor Utility Public Relations Constituents
7. Conduct yearly evaluations to track progress. Expand pilot activities to additional sites, as appropriate, with a focus on matching the demand from future EV adoption rates.	Ongoing	Climate Action Commission

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional staff capacity
- Additional funding
- Additional training
- Additional buy-in from community

FINANCIAL TOOLS

- Pay for Use Funding
- US Department of Transportation – Low or No Emission Vehicle Program
- US Department of Energy – Federal Tax Credits
- Efficiency Maine – EV Tax Credits and Incentives
- EMPOWER: New Workplace Charging Assistance Program

TECHNICAL RESOURCES

- Freeport Maine – EV Charging Stations
- Portland, Maine – EV Charging Stations
- USDN - Electric Vehicle Charging Access for Renters: A Guide to Questions, Strategies, and Possible Next Steps
- MJ B&A - Regional EV Charging Infrastructure Location Identification Toolkit (ILIT)
- US Department of Energy – Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite
- Tucson Electric Power - Electric Vehicle 5-Year Strategic Roadmap

EQUITY CONSIDERATIONS

- Ensure EV charging stations are physically, logistically, and financially accessible to all residents.
- Consider provisions to increase access to electric vehicles for low-income community members.

Resilient & Healthy Community

ACTION CO 1.1.A

Develop resilience requirements for new structures within flood zones and/or predicted areas of sea level rise.

EXPECTED OUTCOME	Developers are required to utilize design guidelines to manage 1.5 feet of sea level rise by 2050 and 3.9 by 2100. This may include measures such as elevating critical infrastructure and equipment in current and future flood-prone areas, right-sizing stormwater infrastructure, selecting more durable equipment and materials to withstand extreme storm events. The design guidelines will include measures for preparing to manage sea level rise for 3.0 feet by 2050 and 8.8 feet by 2100.
OVERALL TIME FRAME	Medium (1-3 years)
CHAMPION	Planning Department

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Based on the Bath Flood Vulnerability Assessment from 2023, determine the common key design issues for the identified infrastructure and facilities that frequently need repair or maintenance (i.e., culvert sizing, material selection, location, etc.)	3 months	Office of Sustainability and Environment Department of Public Works Code Enforcement Impacted Private Property Owners
2. Create unique Bath vulnerability typologies based on key design issues that can shape the process.	3 months	Neighboring Communities
3. Research best practices and case studies of resilient design measures being piloted or utilized for similar infrastructure types and based on similar climate change projections and considerations for Bath.	3 months	Office of Sustainability and Environment Climate Action Commission
4. Review ME State standards and any other standards (e.g., MA Resilience Design Standards) to align efforts.	3 months	Office of Sustainability and Environment Climate Action Commission
5. Review Bath's current Design Guidelines and identify specific opportunities for updating and/or making recommendations for new resilient design standards.	6 months	Office of Sustainability and Environment Code Enforcement Department of Public Works
6. Identify municipal project to pilot the newly incorporated resilient design standards.	Project dependent	Fire Department Housing Committee (Housing Trust Fund)
7. Incorporate lessons learned from the pilot project to modify and formalize the resilient design considerations in the City's guidelines.	2 months	Office of Sustainability and Environment City Council Climate Action Commission

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional funding
- Technical capacity

FINANCIAL TOOLS

- Maine Housing Trust Fund
- Hazard Mitigation Assistance Grants, Maine Emergency Management Agency
- Community Resilience Partnership
- The Onion Foundation
- Maine Economic and Community Development Home Repair Network

TECHNICAL RESOURCES

- City of Boston, Coastal Flood Resilience Design Guidelines
- Municipal Guidance for Coastal Resilience, Model Ordinance Language for Maine Municipalities
- NSW Coastal Design Guidelines 2023
- Portland ReCODE Resilience

EQUITY CONSIDERATIONS

- Consider how these guidelines could apply to single family residential and how lower income residents could afford to pay for building level adaptation.
- Assess how these requirements would shift developer proformas and how to ensure there is still substantial affordable housing.

Resilient & Healthy Community

ACTION CO 1.1.D

Conduct an outreach campaign targeting residents and businesses to improve understanding of flood risk and flood prevention measures.

EXPECTED OUTCOME	Private landowners, developers, and contractors understand flood management best practices including design, construction, operations, and long-term maintenance, helping to minimize property damage and pollution of waterways caused by harmful runoff.
OVERALL TIME FRAME	Medium (1-3 years)
CHAMPION	Office of Sustainability and Environment

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Review existing practices for public outreach campaigns. Meet with City staff who have led previous campaigns and determine best practices for the flood prevention campaign.	3 months	Public Works Department Sagadahoc County EMA City of Bath Marketing and Communications Fire Department
2. Review existing public outreach data to understand potential barriers, opportunities, and equity considerations for improving understanding of flood risk in the Bath community.	3 months	Public Works Department Sagadahoc County EMA City of Bath Marketing and Communications Fire Department Midcoast Maine Community Action Bath Housing, Climate Action Commission
3. Assess the community's flood risks and identify the opportunities, best practices, and technologies for prevention.	3 months	Planning Department Code Enforcement
4. Develop a framework to support funding and administration of the campaign. Identify potential nonprofits, businesses, universities, and other community partners that could aid in administering the campaign or have experience organizing similar campaigns.	9 months	City of Bath Marketing and Communications Planning Department
5. Informed by the feedback compiled in Steps 1-3, create an outreach strategy that identifies target audiences, key messages, channels, tactics, and a timeline for implementation.	1 month	City of Bath Marketing and Communications Chamber of Commerce Main Street Bath Morse High School Green Club

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
6. Develop and design coordinated outreach materials that can be deployed in different contexts, using in-house resources or outsourced consultants.	3 months	City of Bath Marketing and Communications Bath Housing Midcoast Maine Community Action
7. Identify metrics of success and mechanisms to track progress of the campaign throughout implementation.	1 month	City of Bath Marketing and Communications

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional staff capacity
- Additional funding
- Additional training
- Additional buy-in from community

FINANCIAL TOOLS

- Community Resilience Partnerships
- Maine Community Foundation
- The Onion Foundation
- Hazard Mitigation Assistance Grants, Maine Emergency Management Agency

TECHNICAL RESOURCES

- Frameworks Institute
- Maine Municipal Association Workshops and Training
- Yale Program on Climate Change Communications

EQUITY CONSIDERATIONS

- Translate outreach materials and communications into multiple languages.
- Partner with organizations like Midcoast Maine Community Action, Morse High School, Bath Housing, and more.
- Tailor messaging to different socially vulnerable populations and audiences.

Smart Waste & Water Management

ACTION WW 1.1.C

Pilot a zero-waste program at City Hall with the goal of expanding to all municipal facilities.

EXPECTED OUTCOME	A successful pilot will achieve a 90% diversion rate in City Hall and provide a blueprint for expanding the program to additional City facilities.
OVERALL TIME FRAME	Medium (1-3 years)
CHAMPION	Public Works

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Research appropriate waste reduction strategies and technologies and establish a definition of zero-waste (e.g., a diversion rate of 90% or higher).	6 months	Office of Sustainability and Environment City Manager Vendors Facilities Department Solid Waste Advisory Committee Casella Interns
2. Perform an audit of City Hall waste streams and sources.		
3. Based on waste audit, prioritize key opportunities for reduction of landfilled material and improved diversion for recycling, reuse, and composting. For example: • Identify changes to procurement policies to require minimal waste or non-landfill stream product purchasing. • Identify opportunities to avoid printing and reduce the use of paper. • Identify opportunities to eliminate single-use plastics.	6 months	Office of Sustainability and Environment City Manager Vendors Facilities Department Solid Waste Advisory Committee Casella Interns
4. Conduct a pilot for waste reduction practices, alongside an education campaign to ensure City Hall staff participation. This will include identifying incentives to support change (e.g., competitions or games) and providing reusable resources to encourage compliance.	6 months	Office of Sustainability and Environment City Manager Vendors Facilities Department Solid Waste Advisory Committee Casella Interns
5. Display waste status and goals publicly to track progress (e.g., backwards thermometer).		

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
6. Expand pilot activities to additional City facilities, as possible and appropriate, with a focus on creating permanent, ongoing systems.	6 months	Office of Sustainability and Environment City Manager Vendors Facilities Department Solid Waste Advisory Committee Casella Interns
7. Complete an evaluation to confirm success and workability and include documentation of processes and procedures.		

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional staff capacity or interns
- Additional funding for signage, bins, and incentives
- Additional training for City and custodial staff
- Continued buy-in from leadership

FINANCIAL TOOLS

- Corporate Sponsors
- Solid Waste Diversion Grant Program, Maine Department of Environmental Protection
- Consumer Recycling Education and Outreach Grant Program, U.S. EPA
- Solid Waste Infrastructure for Recycling Grants for Communities, U.S. EPA

TECHNICAL RESOURCES

- Recycle, Compost, Landfill Sign Maker, San Francisco Environment Department
- Reducing Waste: What You Can Do, U.S. EPA
- Paving the Way Toward a Zero Waste Philadelphia, City of Philadelphia
- Guide to Conducting Student Food Waste Audits, USDA, U.S. EPA, & University of Arkansas

EQUITY CONSIDERATIONS

- Ensure that educational materials are accessible to all (i.e., multilingual, multimedia, accommodates individuals with disabilities).

Smart Waste & Water Management

ACTION WW 2.1.B

Develop a stormwater utility to fund storm drain upgrades and expansions.

EXPECTED OUTCOME	City staff utilize funds from the stormwater utility to repair and replace stormwater infrastructure, ensure separation of storm and sewer systems, and establish water quality testing, and anticipate a future MS4 community designation and begin to develop standards/practices to align with designation.
OVERALL TIME FRAME	Long (3+ Years)
CHAMPION	Department of Public Works

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Conduct an inventory and assessment of current stormwater infrastructure, regulations, additional financial needs, cost estimates, and future needs.	2.5 years	Planning Department City Council Maine Department of Environmental Protection
2. Research stormwater regulation and best practices from progressive towns and cities and evaluate state recommendations.		
3. Update stormwater regulations based on assessment.	12 months	Planning Department Assessor's Office Finance Council Climate Action Commission City Solicitor
4. Conduct analysis of appropriate stormwater utility fee.		
5. Develop and distribute educational material created throughout the process to residents regarding residential stormwater runoff and solutions.	2 months	Communications City Council CMO MRWA MWEA Climate Action Commission Community Members
6. Hold public meetings regarding creation of stormwater enterprise to provide an opportunity for resident feedback.		
7. Rollout updated stormwater regulations and hold a hearing on stormwater utility fee.	1 month	Communications
8. Create and facilitate a City Stormwater Utility Committee.	Ongoing	City Staff City Council Community Members

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional staff capacity
- Additional funding
- Additional buy-in from the community

FINANCIAL TOOLS

- Clean Water State Revolving Fund (CWSRF), Maine Department of Environmental Protection
- Navigating the Federal Funding Landscape, New England Environmental Finance Center
- Nonpoint Source Water Pollution Control Grants, Maine Department of Environmental Protection
- EPA Urban Small Waters Grants Program

TECHNICAL RESOURCES

- Stormwater Utility Case Study, Lancaster, Pennsylvania
- Bangor Stormwater Utility Feasibility Study

EQUITY CONSIDERATIONS

- Provide education and resources to residents (e.g., rain barrels, guidance on replacing impervious surfaces, etc.) to help minimize fees for residents.

Thriving Natural Resources

ACTION NR 1.1.A

Increase the urban tree canopy by 15% above current canopy coverage, prioritizing vulnerable areas and maintaining the health of the existing canopy.

EXPECTED OUTCOME	City staff utilize a management plan that considers location, tree type, long-term growth, care and maintenance to ensure Bath's tree canopy is resilient to the projected impacts of climate change – ultimately expanding the urban tree canopy by 15%.
OVERALL TIME FRAME	Long (3+ Years)
CHAMPION	Parks & Recreation Department

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Complete GIS mapping of city trees with information on each tree, benefits of species, etc. Engage stakeholders to understand baseline data. This process can build on existing City data and incorporate a street tree equity survey of Bath neighborhoods to determine what areas lack trees, as suggested by the City's Comprehensive Plan.	6 months	Office of Sustainability and Environment Kennebec Estuary Land Trust Bath Community Forestry Committee Midcoast Council of Governments
2. Develop scope for tree canopy management plan and appropriate board, committee, or city department to charge with implementation. Plan should consider: • Annual public tree removal tracking and private tree census data. • Policies for equal replacement for public tree removals. • Incentives for public tree planting on private land.	12 months	Office of Sustainability and Environment Bath Community Forestry Committee
3. Formalize a tree canopy management plan and embed it within the Parks Department, committee, or board with authority to restore and expand Bath's tree canopy.	6 months	Central Maine Power Office of Sustainability and Environment Bath Community Forestry Committee Department of Public Works
4. Develop community awareness and educational materials on the benefits of urban tree health.	This can be ongoing throughout all steps.	City of Bath Marketing and Communications

TOOLS & RESOURCES

RESOURCES NEEDS

- Additional staff capacity
- Additional funding
- Additional training

FINANCIAL TOOLS

- Maine Project Canopy
- Tree City USA
- Urban & Community Forestry Inflation Reduction Act Grants
- The Onion Foundation

TECHNICAL RESOURCES

- Trust for Public Land
- Center for Regenerative Solutions
- US Forest Service
- C40 Knowledge Hub

EQUITY CONSIDERATIONS

- Consider tree placement and location based on which neighborhoods have less tree coverage and increased urban heat island effect.

Thriving Natural Resources

ACTION NR 2.1.D

Promote skills training and workforce development in emerging natural resources and Blue Economy sectors.

EXPECTED OUTCOME	Workforce development and training programs enhance businesses, industries, and institutions that contribute to environmental management fields – particularly in relation to coastal resources and the Blue Economy sector.
OVERALL TIME FRAME	Medium (1-3 years)
CHAMPION	Department of Community and Economic Development

IMPLEMENTATION STEPS	ESTIMATED TIME TO IMPLEMENT STEP	COLLABORATORS
1. Convene regional working group focused on green workforce development.	4 months	Midcoast Council of Governments (Campaign this step) Island Institute Gulf of Maine research Institute
2. Conduct interviews and focus groups with local and regional business, organizations, and educational institutions to identify workforce development and training opportunities and needs.	6 months	Midcoast Council of Governments (Campaign this step)
3. Identify businesses and industries that contribute to and capitalize on emerging environmental technologies.	3 months	Main Street Bath Chamber of Commerce National League of Cities Department of Labor Maine Municipal Association
4. Assess opportunities for the identified businesses and industries to collaborate, share resources, and use the by-products within and across fields.	2 months	Midcoast Council of Governments (Campaign this step)
5. Identify regional experts and best practice examples for the identified opportunities to guide workforce development and training programs.	3 months	Midcoast Council of Governments Main Street Bath Chamber of Commerce
6. Partner with local and regional organizations and schools to host workforce development and training programs.	Ongoing	Midcoast Maine Community Action Union & Co.
7. Advertise workforce development programs to a diverse group of existing and potential future employees.	Ongoing	Morse High School/Bath Tech

TOOLS & RESOURCES	
RESOURCES NEEDS	
• Additional staff capacity	• Additional funding
FINANCIAL TOOLS	
• Department of Labor Funding • Community Resilience Partnership Action Grants	• The Onion Foundation
TECHNICAL RESOURCES	
• Economic Opportunity & Workforce Development Resources from the National League of Cities	• Gulf of Maine Research Institute • National Oceanic and Atmospheric Administration

EQUITY CONSIDERATIONS	
• Wrap around social infrastructure and services to enable all people to participate. • Consider providing scholarships for low-income participants.	• Examine working culture to ensure that the workforce diversity could change over time.

Endnotes

1 Maine Won't Wait Climate Action Plan, Maine Climate Council (2020).

2 Maine Won't Wait Climate Action Plan, Maine Climate Council (2020).

3 Scientific Assessment of Climate Change and Its Effects in Maine, Maine Climate Council (2024).

4 Bath Flood Vulnerability Assessment, City of Bath (2023).

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7 City of Bath 2022 Community Greenhouse Gas Inventory, Kim Lundgren Associates (2024).

8 City of Bath 2022 Community Greenhouse Gas Inventory, Kim Lundgren Associates (2024).

9 City of Bath Pathways Analysis, Kim Lundgren Associates (2024).

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13 Assessor's Database, City of Bath (2024).

14 Assessor's Database, City of Bath (2024).

15 Electric Vehicle Charging Station Locations, U.S. DOE Alternative Fuels Data Center (2024).

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17 Aligns with Main Won't Wait 2030 target.

18 Fiscal Year 2024 Bath CityBus Ridership, Presented to Bath City Council on October 2, 2024, Western Maine Transportation Services (2024).

19 American Community Survey 5-Year Estimates Subject Table S0801, U.S. Census Bureau (2022).

20 Low-Income Energy Affordability Data (LEAD) Tool, U.S. Department of Energy (2024).

21 If 50% of home weatherizations reach this group, high energy cost burden could be eliminated before 2040.

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23 Heat-Related Illness Emergency Department Visits, Maine Tracking Network (2023).

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25 Scientific Assessment of Climate Change and Its Effects in Maine, Maine Climate Council (2024).

26 2018 Greenhouse Gas Emissions and Energy Use Inventory and Recommended Climate Action Plan, City of Bath (2019).

27 2018 Greenhouse Gas Emissions and Energy Use Inventory and Recommended Climate Action Plan, City of Bath (2019).

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31 CSO Master Plan Update, City of Bath (2022).

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33 ParkScore, Trust for Public Land (2024).

34 Annual Report, City of Bath (2022)

35 Conservation Areas, Bath Preservation Trust (2024).

36 National Explorer Locality Report, Tree Equity Score (2024).

37 Forestry Department, City of Bath (2024).

38 National Explorer Locality Report, Tree Equity Score (2024).

Acknowledgements

Climate Advisory Group

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Tim Blair – Bath Bicycle Pedestrian and Transportation Committee

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Laura Walters- At Large

Ruth Indrick-Kennebec Estuary Land Truct

Nancy Sferra- Bath Community Forestry Commission

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