

DRAFT



TOWN OF MOUNT DESERT

CLIMATE ACTION PLAN

PART 2: IMPLEMENTATION GUIDE

FEBRUARY, 2022

ACKNOWLEDGEMENTS

This climate action plan would not have been possible without the dedication of town residents, selectboard, and staff.

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THANK YOU!

PART TWO ACTION ITEMS

HOW TO READ ACTIONS

Each action includes many of the following components*:

- **Title** - provides a brief overview of the action.
- **Description** - further details regarding action implementation.
- **FY** - indicates the financial year when the action will be initiated. Some actions will be completed in one financial year and some will be ongoing moving forward.
- **Responsible Parties** - lead staff, departments or committees responsible for implementation.
- **Budget implication** - provides a rough high-level assessment of potential budget implications. In many cases further information is needed for detailed estimates.
- **Potential Funding** - provides examples of funding opportunities with an emphasis on available grants. This is NOT an exhaustive list, many other funding avenues exist.
- **Scope** - indicates whether the action is limited to town operation or would be implemented town-wide (in the community).
- **Resources** - provides examples of resources available to support implementation. This is NOT an exhaustive list; many other resources are available to support most actions.
- **Examples** - examples of similar actions from other communities.

*Some actions do not include all of these components where clear examples or information was not identified in one or more section(s).

FUNDING ACTIONS

Most actions in the plan include potential funding resources. The funding resources included with each action is preliminary. Many other funding opportunities likely exist for each action. The report [Funding and Financing Climate Action Plans](#), developed by the Urban Sustainability Directors Network, provides more resources and examples for funding climate action.

Generally, financial mechanisms for implementing climate actions include:

- **Grants** - provide capital that does not need to be repaid.
- **Partnerships** - spread the financial risk and cost of projects between partners. However, partnerships require sharing project cost savings and revenue between partners.
- **Loans** - a mechanism for accessing the initial capital to implement a project to be repaid with interest over time.
- **Bonds** - debt securities issued by governments to finance public projects.
- **Budget** - allocating money from the annual town budget for projects.

ACTION ITEMS SUMMARY TABLE

ACTION AREA	ACTION	FINANCIAL YEAR
Greenhouse Gas Inventory	Conduct a community-wide greenhouse gas inventory to refine future climate action strategies and monitor progress over time	2022-23
Energy	Site and construct new Town buildings to enable and include solar arrays (or at least be solar-ready) and consider installing solar whenever roof replacements occur for existing buildings.	2022-2023 onwards
Energy	Identify and prioritize near-term solar sites, conduct feasibility study for solar array(s), and develop RFP to be released in FY 2023-2024.	2022-2023
Energy	Adopt one or more clean energy ordinance(s) that allow, enable, and encourage community-appropriate renewable energy, energy storage, microgrid, and related installations.	2022-2023
Energy	Support the development of locally generated solar and energy storage that is accessible to all Mount Desert residents, including small businesses, nonprofits, and low-to-moderate income homeowners.	2022-2023 onwards
Energy	Advocate for state policies and regional actions needed to support a transition to 100% renewable energy on Mount Desert Island.	2023-2030
Energy	Determine total capacity for locally generated, town-owned clean energy production and develop a plan for installations, with the goal of providing 100% of the Town's needs through clean energy.	2024-2025
Energy	Explore opportunities to pilot an electricity demand flexibility program.	2024-2025

ACTION AREA	ACTION	FINANCIAL YEAR
Buildings	Construct new municipal buildings and major renovations to be net zero and EV ready.	2022-2023 onwards
Buildings	Adopt energy efficient "stretch" building code (currently IECC 2021).	2022-2023
Buildings	Transition heating and cooling in Town buildings to electric technologies including heat pumps, VFR systems, geothermal, and heat pump water heaters. All new purchases should be electric, with the goal of fully transitioning town buildings by 2030.	2022-2023
Buildings	Explore low carbon alternatives for backup power.	2022-2023
Buildings	Support existing residential homes and businesses in their transition from fossil fuel heating, cooling, and appliances.	2022-2023
Buildings	Enable PACE and C-PACE programs to support clean energy and efficiency projects.	2022-2023
Buildings	Conduct energy audits, and evaluate opportunities for deep energy efficiency retrofits, efficiency measures, electrification, and building envelope weatherization improvements, with the goal of transitioning existing town buildings towards all electric and net zero energy over time. Collaborate with the local school district for school building improvements as well.	2022-2023 onwards
Buildings	Encourage and incentivize fossil fuel free new construction and use of zero and low-carbon heating, cooling, and appliances.	2022-2023 onwards
Buildings	Help renters, homeowners, and businesses understand and reduce their energy use.	2023-2024

ACTION AREA	ACTION	FINANCIAL YEAR
Transportation	All new Town vehicles (including boats) will be battery electric, unless no feasible electric option is available. Vehicle replacements will reflect the goal of a fully electrified fleet by 2030.	2022-2023 onwards
Transportation	Develop an electric vehicle charging plan to accommodate the town-wide community and visitor electric vehicle charging needs that will emerge in the next 10 years.	2022-2023
Transportation	Strategically plan and install charging stations to accommodate the electric vehicles that will be added to the town fleet in the next 10 years.	2022-2023
Transportation	Develop a permanent post-pandemic remote work policy and support employee carpooling.	2022-2023
Transportation	Adopt ordinances and simplify permitting to encourage EV charging infrastructure.	2022-2023
Transportation	Support a community-wide transition to electric vehicles.	2022-2023 onwards
Transportation	Begin tracking fuel consumption, miles traveled, and maintenance costs for Town vehicles.	2022-2023 onwards
Transportation	Evaluate the feasibility of a local incentive for electric vehicles.	2023-2024
Transportation	Collaborate with other island towns and Acadia National Park to develop strategies to engage visitors in MDI sustainability efforts and reduce emissions from tourism to the island.	2023-2024

ACTION AREA	ACTION	FINANCIAL YEAR
Water and Waste	Pilot a composting program.	2022-2023 onwards
Water and Waste	Evaluate opportunities for enhanced energy efficiency at wastewater and water facilities.	2022-2024
Water and Waste	Encourage and support food waste diversion by local restaurants and grocery stores.	2023-2024
Water and Waste	Evaluate the feasibility of offering curbside recycling pick-up.	2023-2024
Water and Waste	Evaluate the feasibility of implementing a Pay-as-you-throw (PAYT) program.	2023-2024
Water and Waste	Assess wastewater treatment facilities for clean energy potential such as an anaerobic digester or solar. Consider opportunities to increase resilience through onsite power.	2023-2024
Water and Waste	Improve community recycling rates and proper disposal of refrigerants, such as air conditioners, refrigerators, freezers, etc.	2023-2024
Sequestration, Natural Carbon Solutions, & Offsets	Map local potential for carbon sequestration and natural carbon solutions. Support realization of solutions through pilot programs.	2024-2030
Sequestration, Natural Carbon Solutions, & Offsets	Develop a set of meaningful offsets should the Town be unable to reach a goal of zero emissions by 2030. Integrate local sequestration and natural carbon solution initiatives into these offsets if possible.	2023-2024

ACTION AREA	ACTION	FINANCIAL YEAR
Adaptation & Resilience	Assess town-wide climate change vulnerabilities and identify actions to improve resilience, for integration into the Town's Comprehensive Plan.	2022-2023
Adaptation & Resilience	Integrate future climate risk into consideration of all new capital improvement projects and the development of the annual budget.	2022-2023 onwards
Governance	Incorporate the cost of carbon emissions in financial decision-making and planning regarding new Town purchases and projects.	2022-2023
Governance	Integrate emissions reduction and resilience goals into the town's budgeting and capital improvement planning process.	2022-2023
Governance	Integrate community resilience and greenhouse gas emission reduction as pillars of future comprehensive plan updates.	2022-2023

1

GREENHOUSE GAS INVENTORY

A greenhouse gas inventory shows the quantity and sources of greenhouse gasses produced in a community or organization. While we have data on statewide trends, a greenhouse gas inventory will allow the Town to understand what local activities are emitting the most greenhouse gases and choose the most effective strategies to reduce emissions over time. If for example, the inventory shows that most emissions are coming from transportation, the community could focus their efforts on transportation. An inventory also provides a baseline or starting point, from which the Town can set specific emissions reduction goals and monitor progress over time. This allows for a clearer understanding of how the Town is progressing towards its goals and greater transparency.

ACTION GG.1

Conduct a community-wide greenhouse gas inventory to refine future climate action strategies and monitor progress over time.

DESCRIPTION: Conduct a community-wide greenhouse gas inventory for a detailed understanding of local emissions sources. This will include collecting the data needed to conduct a community-wide greenhouse gas inventory, including vehicle miles traveled, fuel use, electricity use, volume of waste disposed, etc. A community-scale greenhouse gas inventory would report all of the greenhouse gasses emitted from the town boundaries, including emissions from residents, businesses, and town operations. The inventory should also account for the impact of tourists and visitors. Once the greenhouse gas inventory is conducted, set a schedule for updates to monitor changes in emissions over time.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Town will designate a lead staff person to manage the project.

BUDGET IMPACT: The greenhouse gas inventory can be conducted with ClearPath software, available through an ICLEI membership. An ICLEI membership would cost the Town \$833 if shared with Bar Harbor and Tremont. An individual town membership costs \$1,200. The cost of labor for data entry would cost the Town an additional \$900-1,500 (if shared between the 3 towns, and \$1,800-\$3,600 (if conducted individually). This labor estimate assumes an hourly rate of \$30/hour for 30-50 hours (if completed with the other island towns and 60-120 hours (if completed individually). It's important to note that some consultants may charge a higher hourly rate and that this figure is a rough estimate.

SCOPE: Town-wide

RESOURCES:

- [ClearPath](#) Online Software for developing Greenhouse Gas Inventories (provided by ICLEI for members)
- [Global Protocol for Community Scale Greenhouse Gas Inventories](#)
- [Global Covenant of Mayors Online Training Course](#) (includes guidance on conducting greenhouse gas inventories and setting reduction targets).
- [Greenhouse Gas Protocols](#)

EXAMPLES:

- [Town of Kennebunk Maine greenhouse gas inventory](#)
- [City of Cambridge, MA greenhouse gas inventory](#)
- [Portland and South Portland greenhouse gas inventory](#)

2 ENERGY



Addressing climate change will require transitioning the two highest emitting sectors, vehicles and buildings, from fossil fuels to electricity.

Beneficial electrification will significantly increase electricity use; estimates indicate that electrification could double or triple Maine's electricity load.¹ As we shift energy use from fossil fuels to electricity, however, it is critical to ensure that electricity is generated through 100% clean, renewable resources like solar and wind power.. The technology trends enabling decentralization, digitalization, and decarbonization will simultaneously transform the way the electricity grid operates. Managing these transitions will require a careful, multi-faceted approach.

Unlike most commodities, electricity cannot yet be stored in any great amount. So, historically, the electricity grid has been managed by a centralized utility balancing instantaneous demand (or "load") by adjusting supply – throttling power plants up or down moment-by-moment. Because, clean energy resources like solar and wind are inherently variable, managing the grid in the future will require balancing instantaneous renewable supply by adjusting demand. Fortunately, trends that are already well underway will enable us to accomplish this transformation. They include distributed energy resources, demand flexibility, energy storage, and digitalization.

What's Beneficial Electrification?

"Beneficial Electrification" refers to replacing fossil fueled end-uses (such as propane and fuel oil furnaces or gasoline and diesel vehicles) with electric alternatives (such as heat pumps and electric vehicles) in a way that accomplishes one or more of the following without adversely affecting the other two:

- (1) saves consumers money over the long run,
- (2) enables better grid management; and
- (3) reduces negative environmental impacts.

Distributed Energy Resources (DERs) provide electricity at or near where it is used. Examples include small-scale solar, wind, or battery storage. DERs reduce the need for and cost of transmission and avoid line losses over long transmission distances; 5% of electricity is lost during transmission and distribution nationally.² Local energy resources can also improve electric reliability, especially within microgrid systems that are capable of sustaining some or all electricity supply during grid outages. Clean, local DERs will be key in supplying 100% clean energy for the Town by 2030.

Demand Flexibility, the ability to shift the time of electricity use, is an important tool to reduce peak electricity demand and shift electricity use to times of day when clean electricity from solar and wind is abundant. In essence, demand flexibility helps keep electricity demand and supply in balance. Electric vehicle chargers, water heaters, and heat pumps are just some examples of devices

Electric vehicle chargers, water heaters, and heat pumps are just some examples of devices that can be managed to meet customer needs using cheap, clean electricity from solar and wind. Demand flexibility is expected to reduce costs to the electricity system and increase clean energy supply.³ Demand flexibility can also reduce electricity prices for individual consumers, by shifting energy use to low-price times.

“Demand flexibility uses communication and control technology to shift electricity use across hours of the day while delivering end-use services (e.g., air conditioning, domestic hot water, electric vehicle charging) at the same or better quality but lower cost.” - Rocky Mountain Institute

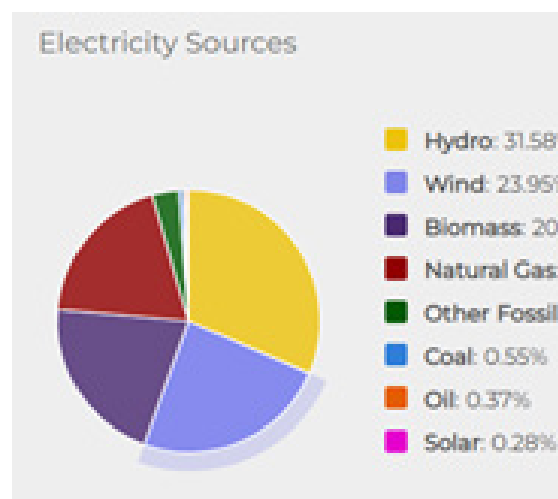
Demand flexibility will play a pivotal role in managing increased electricity demand and variable electricity production from clean sources.

Energy Storage supports the transition to clean electricity by facilitating the integration of solar and wind resources into the grid, reducing electricity costs, and improving reliability.⁴ Energy storage, typically batteries, can store electricity for later use. For example, a home with battery storage paired with a solar array can store excess electricity for use after sunset. At the grid level, energy storage can help mitigate peak energy demand by supplying electricity back to the grid during peak times. By reducing peak demand, energy storage can reduce the need to invest in costly additional electricity generation and transmission facilities as more energy end-uses are electrified. As a result, energy storage can lower costs for ratepayers, improve grid reliability, and boost the grid's ability to accept more clean, renewable electric generation..

Digitalization of grid sensors, management, and control systems enables the above three trends to integrate into a reliable, resilient electricity system. One of the best examples of this, being implemented today, is microgrids. Microgrids are self-sufficient electricity systems that operate cleanly and cost-effectively day-to-day, and can continue to operate locally even when disconnected from the grid by extreme weather or other events. Modern microgrids are typically at the campus or community scale, and include clean renewable electric generation and battery storage.

These capabilities are possible due to advancements in digital communications and control of the electricity grid. As the grid becomes “smarter” – even at a local community level – it can coordinate distributed energy resources and demand flexibility to provide clean, affordable, reliable, and resilient energy for its customers.

Currently, 79% of Maine's net electricity generation comes from renewable energy.⁵ The combustion of fossil fuels for electricity generation accounted for 7% of the state's CO₂ emissions in 2017.⁶ The State's goal is to produce 80% of its electricity through renewable generation by 2030 and 100% by renewables by 2050.⁷ To reach local goals, the Town of Mount Desert will move more quickly than the State and continue to push Maine to set more ambitious targets.



Together, distributed energy resources, demand flexibility, energy storage, and digitalization will enable Mount Desert to successfully transition to 100% clean electricity sources.

PATH TO ZERO

Greenhouse gas emissions reduction in energy will take place through:

- Development of local renewable energy supply resources and storage
- Demand flexibility
- Procurement of renewable energy for any demand that cannot be supplied locally

GOALS

- Achieve 100% clean energy for Town operations, with preference for locally generated, municipally owned clean energy, by 2030.
- Support interested residents in procuring 100% clean energy by 2030.
- Support the development of and accessibility of locally generated clean energy with ownership options for local citizens.
- Improve demand flexibility.

ACTION E.1

Site and construct new Town buildings to enable and include solar arrays (or at least be solar-ready) and consider installing solar whenever roof replacements occur for existing buildings.

DESCRIPTION: Whenever possible, incorporate solar installation in the siting design, construction, completion, and initial and operating costs of new town buildings. If solar cannot be installed at the time of construction, construct new town buildings to be solar-ready. Consider solar suitability in roof replacements on existing buildings.

Installing solar at the time of new construction can significantly reduce costs. A major barrier to solar installation is traditional building design that can make future solar installations more costly and challenging. Solar-ready buildings are designed and constructed to allow for solar to be easily installed in the future, avoiding expensive retrofits. Constructing new buildings to be solar-ready is typically much more cost effective than modifying existing structures.

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: Finance Director, Planning, Public Works

BUDGET IMPACT: An overview of municipal financial modeling for different solar ownership options is included in Appendix A. Initial costs and ongoing operating financial benefits will vary depending on the building.

POTENTIAL FUNDING:

- [Efficiency Maine Trust](#)
 - Offers financial incentives for distributed energy generation. As of 2022, "Awards range from a minimum of \$10,000 to a maximum of \$1 million per customer per year, or up to 50% of the total project cost. Customers may also be eligible for free scoping audits and technical assistance incentives."
- [Funding from the U.S. Department of Energy Solar Energy Technologies Office](#)
 - This office supports funding for photovoltaics, concentrating solar-thermal power, etc. [Subscribing](#) to the Office's newsletter will help the town receive updates on new funding opportunities.
- [Energy Transitions Initiative Partnership Project](#)
 - This US Department of Energy Program supplies technical assistance to remote, island, or islanded communities. Support includes project scoping and energy planning and analysis. Communities must apply to be selected for the program. The 2022 application deadline is April 15, 2022.
- [Federal Financial Assistance Programs](#) that may apply to solar (list provided by the US Department of Energy)
- [Community Resilience Partnership \(CRP\)](#)
 - Includes an action to "require EV charging readiness and solar energy readiness for all new construction."
- [Database of State Incentives for Renewables & Efficiency \(DSIRE\)](#)
 - This is a database for searching for available renewable energy incentives by state.

SCOPE: Town Operations**RESOURCES:**

- [Solar Project Development Pathway & Resources, from the Environmental Protection Agency \(EPA\)](#)
 - Provides local governments step-by-step guidance on developing solar projects including assessing potential sites, developing and issuing a Request for Proposals (RFP), reviewing and evaluating proposals, and selecting a final proposal and signing a contract.
- [Solar Energy Resources for Government Officials, from the Department of Energy Solar Energy Technologies Office](#)
 - This website includes resources for solar technical assistance, federal financial assistance programs, and a local government guide for solar procurement.
- [Solar trainings, webinars, and workshops for local governments](#)
 - Trainings developed by the EPA to help local governments through all steps of a solar project.
- [Solar Power in your Community, US Department of Energy](#)
 - A guidebook for local governments to increase local deployment and access to solar. Discusses approaches to reduce market barriers to solar development and draws on examples from communities across the country.
- [8 Factors to Consider When Designing Solar-Ready Roofs](#), from the American Institute of Architects
- [Solar-Ready Buildings Planning Guide](#), National Renewable Energy Laboratory
- [Solar-Ready Building Design: A Summary of Technical Considerations](#), National Renewable Energy Lab

EXAMPLES:

- [Bar Harbor, ME](#)
 - Has solar panels on the public works building.
- [Municipally-owned solar Maine](#)
 - This list, developed by Maine Natural Resource Council, provides examples of municipally-owned solar projects throughout Maine.
- [Town of Brookline, MA](#)
 - The Town passed a warrant article requiring that all new municipal buildings be solar ready.
- [Bedford, NY Climate Action Plan](#)
 - Two solar ready municipal buildings to be constructed in 2020.

ACTION E.2

Identify and prioritize near-term solar sites, conduct feasibility study for solar array(s), and develop RFP to be released in FY 2023-2024.

DESCRIPTION: In 2022-2023, identify and prioritize near term solar sites and conduct feasibility studies for a 2023-2024 RFP. If an energy audit has been conducted, audit data can be used to inform site assessments and RFP development. Release an RFP to receive multiple proposals and evaluate the best option to achieve town goals. Consider sites that provide critical services during emergencies as opportunities to pair solar development with energy storage for added resilience. Evaluate creative financing scenarios for solar developments.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Coordinator, Public Works

BUDGET IMPACT: We recommend allocating \$3,000 for the cost of solar feasibility studies in the 22-23 budget. The cost of solar feasibility studies varies depending on the project. We estimate that a rooftop solar feasibility study would cost approximately \$500 while a free standing site feasibility study would cost approximately \$3,000 (depending on the size of the site). Prices would be lower for a highly preliminary assessment.

POTENTIAL FUNDING:

- [Efficiency Maine Trust](#)
 - Offers financial incentives for distributed energy generation. "Awards range from a minimum of \$10,000 to a maximum of \$1 million per customer per year, or up to 50% of the total project cost. Customers may also be eligible for free scoping audits and technical assistance incentives."
- [Funding from the U.S. Department of Energy Solar Energy Technologies Office](#)
 - This office supports funding for photovoltaics, concentrating solar-thermal power, etc. [Subscribing](#) to the Office's newsletter will help the town receive updates on new funding opportunities.
- [Energy Transitions Initiative Partnership Project](#)
 - This US Department of Energy Program supplies technical assistance to remote, island, or islanded communities. Support includes project scoping and energy planning and analysis. Communities must apply to be selected for the program. The 2022 application deadline is April 15, 2022.
- [Federal Financial Assistance Programs](#) that may apply to solar (list provided by the US Department of Energy)
- [Community Resilience Partnership \(CRP\)](#)
 - The CRP includes actions to develop or purchase renewable energy supply.

SCOPE: Town operations

RESOURCES:

- [Solar Project Development Pathway & Resources, from the Environmental Protection Agency \(EPA\)](#)
 - Provides local governments step-by-step guidance on developing solar projects including assessing potential sites, developing and issuing a Request for Proposals (RFP), reviewing and evaluating proposals, and selecting a final proposal and signing a contract.
- [Solar trainings, webinars, and workshops for local governments](#)
 - Trainings developed by the EPA to help local governments through all steps of a solar project.
- [Solar Power in your Community, US Department of Energy](#)
 - A guidebook for local governments to increase local deployment and access to solar. Discusses approaches to reduce market barriers to solar development and draws on examples from communities across the country.
- [Solar plus storage 101](#) - an overview of solar and energy storage systems.

EXAMPLES

- [Bar Harbor, ME](#)
 - Has solar panels on the public works building.
- [Municipally-owned solar Maine](#)
 - This list, developed by Maine Natural Resource Council, provides examples of municipally-owned solar projects throughout Maine.

ACTION E.3

Adopt one or more clean energy ordinance(s) that allow, enable, and encourage community-appropriate renewable energy, energy storage, microgrid, and related installations.

DESCRIPTION: Explore and adopt ordinances to encourage and facilitate local energy supply and management. Locally-owned clean energy and storage can reduce energy prices for community members, improve grid resilience, and make the town more energy independent, reducing energy-associated risks. Evaluate and update zoning ordinances and permitting practices to ensure that they follow best practices for solar and energy storage. Consider programs, such as SolSmart, that assist local governments in making their communities "solar-ready."

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Coordinator, Land Use Zoning Ordinance (LUZO) Group, Planning Board, Climate Action Taskforce

BUDGET IMPACT: Staff and committee time.

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - This policy language is taken directly from the CRP.
 - Actions on CRP's list are eligible for grant funding without a local match requirement.
- [Funding from the U.S. Department of Energy Solar Energy Technologies Office](#)
 - This office supports funding for photovoltaics, concentrating solar-thermal power, etc. [Subscribing](#) to the Office's newsletter will help the town receive updates on new funding opportunities.

SCOPE: Town operations

RESOURCES:

- [Model Solar Ordinance](#), Maine provides Model Site Plan Regulations
- and Conditional Use Permits for Maine municipalities.
- [SolSmart](#)
- [International Energy Conservation Code, Solar Readiness Provisions](#)
- [International Energy Conservation Code, Solar Ready Zones](#)
- [SolarAPP+](#) Automated plan review, permit approval, and project tracking for solar projects.

EXAMPLES:

- [Bar Harbor](#) - Solar ordinance (2021).
- [City of St. Louis](#) - Requires that new residential, multifamily or commercial construction is solar ready.
- [City of Seattle](#) - Solar energy and solar ready requirements for new commercial development and additions.

ACTION E.4

Support the development of locally generated solar and energy storage that is accessible to all Mount Desert residents, including small businesses, nonprofits, and low-to-moderate income homeowners.

DESCRIPTION: Identify opportunities to support solar development. Potential avenues include:

- **Bulk-Buy/Solarize Programs** – Bulk buy (also known as Solarize) programs make solar more affordable by offering group discounts. Interested residents sign up for solar during a designated period. When enough residents sign up, the contractor installs solar on all the homes for a discounted price. Bulk buy programs also increase community awareness of the benefits and cost savings of solar and connect residents to available rebates and incentives. A bulk buy program could be for solar alone, or offer additional low carbon technologies, such as heat pumps and electric vehicle chargers.
- **Education** – The Town can support community interest in solar by connecting interested residents with contractors and resources (such as State and Federal incentives, information, etc.). This information could be provided to new building applicants, made available through a solar resource page on the Town website, pamphlets at the Town offices, etc. The Town can also conduct outreach about the benefits of solar to residents, businesses, and organizations through social media and other avenues. All new building applicants should be provided with information regarding solar, applicable tax incentives, value-added for resale, and opportunities to save money over building lifespan.
- **Outreach** – Increase public awareness of solar and energy storage. This can be accomplished through:
 - Events (such as an annual energy fair) and public information sessions to increase public awareness of current and emerging opportunities in energy, including microgrids, resiliency, load-shaping, etc.
 - Conduct outreach and sponsor the outreach efforts of community partners, with special focus on low to moderate income households.
- **Leading by Example** – Encourage community-wide adoption by publicizing town and community successes. Include metrics on renewable energy and energy storage adoption in the Annual Town Report, for both town and community owned systems.
- **Explore opportunities for partnership** – Explore opportunities to partner with schools, organizations, and local businesses to increase local solar supply.
- **Community solar** – Community solar is a mechanism to provide renewable energy for those that cannot feasibly own their own rooftop solar arrays. Community solar installations provide renewable energy access to renters, those without suitable roofs for solar, and low to moderate income households who are unable to install solar because of high upfront costs. Rather than individual installations, community solar is a medium to large array that delivers power to separately metered individual buildings.

The Town will explore community solar opportunities with a focus on models that expand ownership (not just subscription, which provides much lower economic benefits) to low and moderate income homeowners. A Climate to Thrive is developing co-operative solar ownership models, a model that might be ideal for the goal of expanding accessibility of ownership.

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: Climate Action Coordinator, Climate Action Taskforce

POTENTIAL PARTNERS: A Climate to Thrive (ACTT) has run several successful bulk-buy solarize campaigns on the island.

BUDGET IMPACT: This action does not have a direct budget implication. Grant funding can be pursued to fund actions related to community engagement. This action can be completed through staff time, Climate Action Taskforce, and potential collaboration with neighboring towns and local groups.

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - The CRP includes actions to develop or purchase renewable energy supply.
- [NOAA Environmental Literacy Program](#)
 - This program provides grants for local governments, school districts, and non-profits, for efforts to build the community literacy needed to take action on extreme weather and climate change. The 2022 deadlines have passed. This program can be monitored for future funding

SCOPE: Town-wide

RESOURCES: Resources for community members include:

- [Renewable Energy Investment Exemption](#) – exempts solar panels and other renewable energy equipment from property tax.
- [Renewable Energy Tax Credits](#) – Systems installed before January 2023 are eligible for a 26% tax credit. Existing homes and new construction are eligible. Applies to geothermal heat pumps and solar water heaters in addition to renewable energy projects.
- [Business Energy Investment Tax Credit](#) – available for commercial or industrial installation of renewable energy or heat pumps.
- [Project Sunroof, Google](#)
 - This tool uses Google Earth Imagery to provide a high level estimate of rooftop solar potential.

EXAMPLES

- [Electrify Everything](#) – Portland, ME's Electrify Everything Campaign will provide bulk buy options for solar installation, heat pumps, heat pump water heaters, and community solar subscriptions. The program will also connect community members with available rebates and tax credits.
- [Bar Harbor Community Solar Farm](#)
- [Long Pond Community Solar Farm](#)
- [Co-op Power Community Energy Co-ops](#)

ACTION E.5

Advocate for state policies and regional actions needed to support a transition to 100% renewable energy on Mount Desert Island.

DESCRIPTION: Advocate for the state policy and the regional action needed to support a transition to 100% renewable energy on Mount Desert Island. These actions include, among others:

- Grid modernization to support integration of renewables and demand-side management.
- Grid technology to support renewable energy access for all Mainers.
- Funding to help low-to-moderate income homeowners purchase solar and battery storage
- Smart grid development on Mount Desert Island and efforts towards island energy independence.
- Funding and support for demand flexibility programs
- Legislation to support microgrid and battery storage development
- Funding and support for beneficial electrification

FINANCIAL YEAR: 2023-2030

RESPONSIBLE PARTIES: Board of Selectmen, Climate Action Coordinator

BUDGET IMPACT: No budget implication.

ACTION E.6

Determine total capacity for locally generated, town-owned clean energy production and develop a plan for installations, with the goal of providing 100% of the Town's needs through clean energy.

DESCRIPTION: Build upon the analysis conducted in Action E.2 to assess the total capacity for town-owned town-owned clean energy production (including solar and wind) and develop a plan for installations between now and 2030. Continue to revisit this analysis and update assumptions as technology improves and town electricity demand changes. Integrate necessary feasibility studies and project costs into the Capital Improvement Plan. This action focuses on the supply side of the clean electricity equation, action E.7 focuses on demand management.

FINANCIAL YEAR: 2024-2025

RESPONSIBLE PARTIES: Climate Action Coordinator

BUDGET IMPACT: Initial analysis could be completed through staff, or committee time, hiring a consultant, or possibly through a college student project. Once solar is installed the town will begin realizing financial benefits through reduced utility bills.

POTENTIAL FUNDING:

- [Energy Transitions Initiative Partnership Project](#)
 - This US Department of Energy Program supplies technical assistance to remote, island, or islanded communities. Support includes project scoping and energy planning and analysis. Communities must apply to be selected for the program. The 2022 application deadline is April 15, 2022.
- [Community Resilience Partnership \(CRP\)](#)
 - The CRP includes actions to develop or purchase renewable energy supply.

SCOPE: Town operations

RESOURCES:

- [Solar Rooftop Potential](#)
 - Information and resources from the US Department of Energy Solar Energy Technologies Office.
- [EnergySage](#)
 - A tool that allows building owners to estimate their energy savings with solar and connect to pre-screened installers.
- [Sun Number](#)
 - Sun number uses aerial imagery to give rooftops a score for solar suitability. Note that this is a general tool for rough estimates, tool assumptions should be checked prior to making important inferences.

- [PVWatts Calculator](#)
 - This tool from the National Renewable Energy Laboratory (NREL) provides a rough estimate of solar energy production potential by general geographic area. Note that this is a general tool for rough estimates, tool assumptions should be checked prior to making important inferences.
- [Project Sunroof, Google](#)
 - This tool uses Google Earth Imagery to provide a high level estimate of rooftop solar potential.

EXAMPLES:

- [Solar PV Potential Assessment, City of Pasadena, CA](#)
 - This study analyzes the technical potential for distributed solar on rooftops and parking lots in the city.
- [Solar Energy Implementation Plan, City of San Diego](#)
 - This includes an inventory of the solar potential of all city facilities.

ACTION E.7

Explore opportunities to pilot an electricity demand flexibility program.

DESCRIPTION: Historically the electricity grid has been managed by adjusting supply to meet demand. With cheap, clean solar and wind, however, demand will have to be managed to match available generation and storage. Explore opportunities to partner with the utility and/or other organizations to pilot a demand flexibility program to accomplish this matching. Demand flexibility helps lower peak electricity demand and reduce electricity cost by decreasing system needs. Demand flexibility will become increasingly important as electricity demand increases due to the statewide transition to electric appliances and vehicles, and extreme weather events threaten grid stability and resiliency. Community members would voluntarily participate in the program and receive a reduced utility bill or other incentive(s). Residential appliances that could be used in a pilot program include:

- Smart thermostats
- Electric water heating
- Heat pumps
- Heat pump water heaters
- Electric vehicles
- Residential battery storage systems

FINANCIAL YEAR: 2024-2025 onwards

RESPONSIBLE PARTIES: Climate Action Taskforce, Board of Selectmen, Climate Action Coordinator, Versant Power

BUDGET IMPACT: This initial exploratory action can be pursued through staff time and the Climate Action Taskforce.

SCOPE: Town-wide

RESOURCES:

- [Demand Flexibility Brief](#) - this brief provides an overview of demand flexibility and examples of demand flexibility programs from across the country. From the Rocky Mountain Institute, 2018.

EXAMPLES:

- [Concord MA, controlled water heating program](#) – Through this voluntary program, the Concord utility installs a switch on participants' water heaters, which enables the utility to turn the heater off during the peak 4 hours of the day. In exchange, participants earn a credit on their monthly utility bill. The program is for hot water heaters that are large enough (50 gallons or greater) to store sufficient hot water to cover household needs during the times it is shut off.

2 | BUILDINGS



THE FUTURE OF OUR BUILDINGS

It is clear that rapidly reducing greenhouse gas emissions will require transitioning existing buildings to high efficiency heating and cooling, and building net zero energy new buildings. Essential to achieving the town's emissions goal is building electrification - transitioning building energy use from fossil fuels to electricity.

Currently, buildings are a significant contributor to climate change, accounting for 30% of greenhouse gas emissions in Maine.¹²

This is largely due to petroleum consumption, which accounts for 95% of the carbon dioxide emissions from the residential sector.⁸ Fuel oil is the primary source of home heating in 60% of Maine households, followed by propane. Only about 8% of homes use electricity for heating.⁹

As more and more of the State's electricity is generated by renewables, it becomes increasingly important to switch home energy use to electric.

In addition to reducing greenhouse gas emissions, transitioning to high efficiency electric heat pump technologies reduce operating costs and increase comfort. Electrification of space and water heating is generally cost effective, *even in cold climates*, for existing homes that are switching from propane and heating oil (the primary fuels used in Maine households).¹⁰ For new construction, electrification of space and water heating is generally expected to reduce homeowner costs over the lifetime of the appliances, as compared to fossil fuel heat sources.¹¹

What's Beneficial Electrification?

"Beneficial Electrification" refers to replacing fossil fueled end-uses (such as propane and fuel oil furnaces or gasoline and diesel vehicles) with electric alternatives (such as heat pumps and electric vehicles) in a way that accomplishes one or more of the following without adversely affecting the other two:

- (1) saves consumers money over the long run,
- (2) enables better grid management; and
- (3) reduces negative environmental impacts

Currently, heat pumps provide the greatest potential for electric space and water heating. Heat pumps, which can be used for both heating and cooling, are extremely efficient. Heat pump water heaters, for instance, are 2-3 times more efficient than traditional electric resistance water heaters. In fact, the average Maine home would save \$280 a year by using a heat pump water heater as compared to a propane boiler.¹³ Heat pumps are typically the lowest cost option for new construction homes, because they can be used for both heat heating and air conditioning.¹⁴

There are various types of heat pumps, used for both space and water heating. Variable Refrigerant Flow (VFR) systems are specifically designed for larger loads, and can simultaneously heat and cool different zones within the same building.

HEAT PUMP WATER HEATERS



2-3X

More efficient than traditional electric resistance water heaters.

\$3,500

Can save over \$3,500 over the lifetime of the unit compared to older resistance electric water heaters.

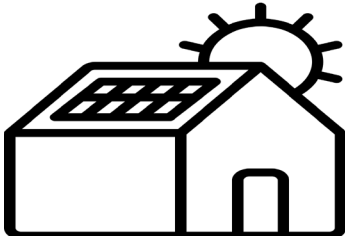
Heat Pump Water Heaters: Heat pump water heaters can be 2-3 times more efficient than traditional electric resistance water heaters. In fact, a heat pump water heater can save over \$3,500 over the life of the unit compared to older resistance electric water heaters.¹⁵ When comparing operating costs, heat pump water heaters are generally the cheapest method to heat household hot water.¹⁶ As of 2021, annual operating costs for natural gas, oil, or propane boilers are all higher than a heat pump water heater.¹⁷ However, the upfront installation cost can be high. Even so, frugal Mainers are responding to the long-term pay off; 60% of new electric water heaters sold in Maine are heat pumps.

NEW BUILDINGS

New construction is the most cost-effective opportunity to reduce building carbon emissions. It is a lost opportunity when high-efficiency best practices are not employed at the time of new construction, because retrofits are much more difficult and expensive.

18

NET ZERO HOME



**10,523 less pounds
of CO₂ per year**

Net Zero Energy Homes

Net zero energy homes are highly efficient and meet their energy use through on or off site power generation.

New net zero single family homes have been found to be cost effective for this climate zone in Maine.¹⁹ As compared to the 2009 energy code, a net zero energy home in Bangor would reduce about 10,523 pounds of CO₂ per year.²⁰

EXISTING BUILDINGS

Educating community members about the benefits of weatherizing and electrifying existing buildings, and providing support and resources to do so, will be essential in reaching the town's climate goals. Education will be critical in preparing community members to take advantage of opportunities to weatherize their homes and replace old furnaces, gas stoves, and appliances with more efficient electric alternatives.

Weatherization can save home owners money while reducing energy use. Even for existing homes in cold climates, electrification of space and water heating is generally cost effective, when switching from propane and heating oil (the primary fuels used in Maine households).²¹ In addition to energy costs and greenhouse gas emissions, transitioning from fossil fuel appliances like gas stoves, also make homes healthier. Studies have shown that gas stoves can emit pollutants, like nitrogen dioxide, to levels that exceed air quality standards.²²





DIRECTION FROM THE STATE

The Maine Climate Action Council's Buildings, Infrastructure, and Housing Working Group identified 6 core strategies to reduce carbon emissions from buildings.²³

1. Improved design and construction of new buildings. The group recommends that Maine develop a timeline to phase in net zero building codes.
2. Transition to cleaner heating and cooling systems, such as heat pumps.
Improve efficiency and resiliency of existing buildings.
3. Lead by example through public buildings,
4. Accelerate decarbonization of industrial processes.
5. Modernize and optimize the electric grid.

Path to Zero

Greenhouse gas emissions reduction in buildings will take place through:

- Electrification of heating, cooling, hot water, and appliances in existing buildings
- Development of highly efficient net zero new buildings
- Clean energy supply
- Energy efficiency upgrades and weatherization
- Leading by example through town buildings

Goals

- Construct new town buildings to be net zero, starting in 2022-23
- Install electric heat pumps or variable refrigerant systems, and heat pump water heaters, in all town buildings by 2030
- Encourage and support highly efficient or net zero new construction for businesses and residences
- Support and encourage electrification, weatherization, and efficiency upgrades for existing homes and businesses



ACTION B.1

Construct new municipal buildings and major renovations to be net zero and EV ready.

DESCRIPTION:

Construct new town buildings and major renovations to be net zero and include EV charging or be "EV Ready." A net zero building is highly efficient and meets 100% of its energy use through renewable energy generated on or off the site.

Some Maine communities, like Portland, are taking a performance-based procurement approach as a strategy to obtain a high level of building performance at a reasonable cost. Under a performance-based procurement approach, the Town releases a request for proposals (RFP), specifying environmental performance goals and maximum budget. Through the RFP the town can outline three levels of environmental performance targets: minimum or "mission critical", "highly desirable", and "if possible" targets. This approach guarantees that minimum goals will be met, while striving for as near to net zero as possible and staying under a maximum budget. In determining the maximum budget, consideration should be given to the operation cost savings that net zero buildings can realize over their lifetimes and the cost of lifetime greenhouse gas emissions from a conventional building.

Other approaches exist for developing net zero buildings, performance-based procurement is just one example.

Other best practices, such as the use of water efficient appliances should also be considered at the time of new construction.

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: Climate Action Coordinator, Public Works

BUDGET IMPACT:

Costs to be determined based on the budget of each new building constructed. Costs will consider full lifetime savings through reduced energy use. Costs for new buildings will be requested through annual CIP.

SCOPE: Town Operations

RESOURCES:

- [How-To Guide for Energy-Performance-Based Procurement. Department of Energy](#) – provides guidance on best practices for using energy-performance-based procurement for buildings.

ENERGY ACTIONS

- [Using an Energy Performance Based Design-Build Process to Procure a Large-Scale Low Energy Building](#), National Renewable Energy Laboratory
- [Building Technologies Office, US Department of Energy](#)
 - [Publishes resources and funding opportunities on their website.](#)
- [The New Buildings Institute \(NBI\)](#)
 - [NBI is a non-profit that provides resources and research around highly efficient, carbon neutral buildings.](#)
- [Architecture 2030](#)
 - [An organization oriented towards reducing emissions from buildings. Their website includes resources regarding net zero buildings.](#)
- [Clean Building Compass, Building Decarbonization Coalition](#)
 - [A database of example policies, ordinances, codes, and projects from other local governments.](#)

EXAMPLES:

- [Amherst, MA](#)
 - Zero energy bylaw for all new municipal buildings to meet net zero requirements.
- [Cumberland, ME Climate Action Plan](#)
 - "Design and build new public buildings to a zero-carbon standard."
- [Bedford, NY Climate Action Plan](#)
 - "Consider adopting policy to adhere to Net Zero and/or Passive House building standards for all new or substantially renovated municipal buildings."
- [Portland, ME Climate Action Plan](#)
 - "Pursue net-zero energy (NZE) buildings for new city government buildings through performance-based procurement."
- [Boston, MA](#)
 - New municipal buildings must be fossil fuel free and low-energy.
- [Pittsburgh, PA](#)
 - All new or renovated municipal buildings must be net zero energy ready.
- Biddeford, ME
 - [York Judicial Center to be zero net energy.](#)
- [Flagstaff, AZ Climate Action Plan](#)
 - "Update the City of Flagstaff Sustainable Building Resolution, requiring that newly constructed municipal buildings be built to net zero energy standards."
 - "Develop and implement a Municipal Building Electrification Plan, to achieve net zero energy in occupied City facilities."
- [Town of Wayland, MA](#)
 - "Be it resolved that Wayland shall seek cost-effective design and construction of all new municipal building construction and substantial renovation projects to minimize carbon-based energy use through cost-effective energy efficient design, building system controls, and on-site renewable energy generation and energy storage."

ACTION B.2

Adopt energy efficient “stretch” building code (currently IECC 2021).

DESCRIPTION: Communities in Maine can choose to adopt the energy efficiency stretch code (currently IECC 2021). The stretch code is cost effective for residential buildings in Maine and would save the average Maine household \$978 in utility bills each year compared to the base code.²⁴ Over a 30-year period, the stretch code would generate an average life-cycle cost saving of 23,772 per dwelling unit, as compared to the base code. In addition to saving money for homeowners, the stretch code would significantly reduce greenhouse gas emissions. A net zero energy home in Bangor would reduce about 10,523 pounds of CO₂ per year, compared to the 2009 energy code.²⁵ By adopting the stretch code, the Town would ensure that new construction is built to the most recent standards for energy efficiency, safety, and greenhouse gas emissions.

To maximize local renewable energy production, it is recommended that the Town adopt the Zero Energy and Solar Ready appendices. These appendices are an optional add-on for adopting IECC 2021.

Zero Energy Appendix - this optional add-on to IECC 2021, would result in new buildings with net zero energy consumption over the course of a year. These buildings would be highly efficient and meet their energy use through on or off site power generation.

Solar-Ready Appendices - this optional add-on to IECC 2021, would ensure that new buildings are capable of future solar installations.

Provide training on stretch codes for code enforcement officers. Evaluate whether additional staff capacity should be added to implement new codes.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Land Use and Zoning Ordinance Advisory Group, Code Enforcement, Climate Action Coordinator

BUDGET IMPACT: Staff time for code enforcement.

POTENTIAL FUNDING RESOURCES:

- [Community Resilience Partnership \(CRP\)](#) - This action is on the CRP's list of community actions.

SCOPE: Town-wide

RESOURCES:

- [International Energy Conservation Code](#)
- [Cost effectiveness of the 2021 IECC for Residential Buildings in Maine](#) – the analysis in this report, prepared for the US Department of Energy, shows that the IECC 2021 is cost effective in Maine.
- [Net Zero Energy Appendix Factsheet](#)
- [The New Buildings Institute \(NBI\)](#)
 - NBI is a non-profit that provides resources and research around highly efficient, carbon neutral buildings.
- [Architecture 2030](#)
 - An organization oriented towards reducing emissions from buildings. Their website includes resources regarding net zero buildings.

EXAMPLES:

- [Portland Maine](#) has adopted the 2021 International Energy Conservation Code (IECC) and the Net Zero energy appendix.
- [Louisville, CO](#) has adopted IECC 2021 with Solar Ready appendices and the Zero Energy appendix for residential new construction.
- [City of St. Louis, MO](#) requires that new residential, multifamily or commercial construction is solar ready.
- [City of Seattle, WA](#) has solar energy and solar ready requirements for new commercial development and additions.

ACTION B.3

Transition heating and cooling in Town buildings to electric technologies including heat pumps, VFR systems, geothermal, and heat pump water heaters. All new purchases should be electric, with the goal of fully transitioning town buildings by 2030. 2021).

DESCRIPTION: Install heat pumps and/or VRF systems for heating/cooling and heat pump water heaters in Town buildings. Assess where existing fossil fuel heaters and air conditioning systems can be replaced by or serve as back-ups to these technologies, with a goal of fully transitioning Town buildings by 2030. All new purchases should be electric. In the rare circumstance where no appropriate electric option exists, purchases should reflect the lowest-carbon option possible. When a new fossil-fuel appliance is requested for purchase, the budget request should clearly list the electric alternatives that were considered, including total cost of ownership comparisons, and provide clear justification for why the electric/low carbon option was not deemed feasible.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Coordinator, Finance Director, Town Manager, Public Works

BUDGET IMPACT: Initial costs and lifetime cost savings will depend on the specific building and unit being replaced. Costs will be reflected in annual budget requests.

POTENTIAL FUNDING RESOURCES:

- [Community Resilience Partnership \(CRP\)](#)
 - This strategy is on CRP's Action List. Actions on CRP's list are eligible for grant funding without a local match requirement.
- [Efficiency Maine](#)
 - Efficiency Maine provides incentives to municipalities for Variable refrigerant flow systems (VRFs) and High-performance heat pumps.

SCOPE: Town Operations

RESOURCES:

- [Variable Refrigerant Flow Systems](#) - Overview from Efficiency Maine
- [Home Heating Cost Comparison Tool](#), Efficiency Maine - compares heating costs between different systems and fuel types.

EXAMPLES:

- Southwest Harbor Public Library VFR project (received Efficiency Maine incentives)
- [Cumberland Maine Climate Action Plan](#)
 - "Install industrial scale heat pumps to supplement natural gas heating and mitigate the GHG effects of natural gas heating."
- [Town of Bedford, NY Climate Action Plan](#)
 - "Replace fossil fuel systems with electric air source and geothermal (ground source) heat pumps and cooling as well as battery storage for municipal buildings."

ACTION B.4

Explore low carbon alternatives for backup power.

DESCRIPTION: Evaluate opportunities for renewable backup power in critical Town facilities, with the goal of replacing fossil fuel generators with low carbon alternatives by 2030. Develop a list of critical town facilities, evaluate their critical power loads, and identify options to meet critical power needs during grid outage scenarios. Explore available grants and alternative financing structures to fund a pilot project.

A solar and battery storage microgrid is one example of a system that can provide clean backup power. Battery storage technology has rapidly advanced in recent years and is expected to become increasingly cost effective as technology evolves.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Coordinator, Public Works, Climate Action Taskforce

BUDGET IMPACT: This action is explorative and does not have a direct cost. The town could consider evaluating opportunities through staff time, depending on staff expertise, or through hiring a consultant. The Town could also consider partnering with a local college or university to conduct research through a graduate student project.

POTENTIAL FUNDING:

- [Energy Transitions Initiative Partnership Project](#)
 - This US Department of Energy Program supplies technical assistance to remote, island, or islanded communities. Support includes project scoping and energy planning and analysis. Communities must apply to be selected for the program. The 2022 application deadline is April 15, 2022.

SCOPE: Town Operations

RESOURCES:

- [Solar PV and Energy Storage Sizing Tool](#) - estimates the rating and size of solar and battery storage systems needed to provide backup power during a power outage.
- [Solar plus storage 101](#) - an overview of solar and energy storage systems.

EXAMPLES:

- [Fremont, CA](#) - Solar and battery storage microgrids at three of the City's fire stations. Solar voltaic carports paired with battery storage enable the stations to generate their own energy and island off the grid during emergencies. The project will save the city an estimated quarter of a million dollars in energy costs over 10 years, while significantly decreasing their carbon footprint. The Microgrid will operate on a 10-year power purchase agreement between the city and a private developer.
- [Town of Fairfield, CT](#) - Developed a microgrid that provides power for critical services at the Police and Fire Headquarters, Emergency Communication Center, Cell Phone Tower, and homeless shelter.
- [Fairfield case study](#) from Schneider Electric.
- City of Chelsea, MA - Submitted a [request for information](#) (RFI) to develop a battery storage system for the city hall, central police station, and a community microgrid.
- Town of Southampton, NY - [Microgrid feasibility study](#), assesses the feasibility and cost-benefit of a microgrid.

- [Town Bedford, NY Climate Action Plan](#)
 - "Collaborate with utilities and others to promote replacement of gas powered generators with electric, battery systems."
 - "Consider installing solar panels and/ or generators/batteries as charging station back-up in the event of power outages"
- [Portland, ME Climate Action Plan](#)
 - "Identify a list of critical facilities that could most benefit from backup power; assess critical power loads for those facilities; and commission an engineering assessment to identify cost and technology options to meet those power needs. Align this assessment with the Strategic Energy Management Plan."
- [Flagstaff, AZ Carbon Neutrality Plan](#)
 - "Develop and implement a Municipal Building Electrification Plan, to achieve net zero energy in occupied City facilities."

ACTION B.5

Support existing residential homes and businesses in their transition from fossil fuel heating, cooling, and appliances.

DESCRIPTION: Encourage homes and businesses to transition to electric, heating, cooling and appliances and explore opportunities for island-wide home electrification programs. Evaluate opportunities to provide local incentives to encourage residents to electrify their existing homes.

"Electrification" refers to replacing fossil fuels (such as propane or fuel oil furnaces) with electric alternatives (such as heat pumps) to reduce greenhouse gas emissions and energy costs.

Examples from other communities include:

Bulk Buy Program - a bulk buy program would provide residents with reduced prices for items such as heat pumps, solar, electric vehicles, etc., through a group discount. In addition to providing lower prices for community members, this program would increase awareness of heat pumps and other low carbon technologies. A group buy program requires no government funding besides staff time.

Education and Promotion of Available Incentives - educate community members about the benefits of electrifying their homes and share incentives and resources to do so (such as the incentives available through Efficiency Maine Trust). Continue to research and explore available incentives.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Coordinator, Public Works, Climate Action Taskforce

BUDGET IMPACT: Some outreach can be accomplished through staff time, Climate Action Taskforce, and collaboration with other island towns and organizations. Pursue grants for additional funding for community engagement.

POTENTIAL FUNDING:

- [Efficiency Maine](#) Offers incentives for high efficiency residential appliances (many of which are electric) including heat pumps, heat pump water heaters, clothes washers, etc. Efficiency Maine also provides information about current federal tax credits for these items.
- [Community Resilience Partnership \(CRP\)](#)
 - Community engagement around climate action is on the CRP list of actions.

SCOPE: Town wide

RESOURCES:

- [Residential Energy Efficiency Tax Credit](#) – Federal tax credit for heat pumps and building insulation.
- [Energy-Efficient Commercial Buildings Tax Deduction](#) – corporate tax deduction for heat pumps, insulation, and other energy efficiency measures.
- [Home Heating Cost Comparison Tool, Efficiency Maine](#) - compares heating costs between different systems and fuel types.
- [Beneficial Electrification, Barriers and Benefits in Maine](#), Efficiency Maine Trust (2019)
- [The Economics of Electrifying Buildings](#), the Rocky Mountain Institute
- [All Electric New Homes - A Win for The Climate and Economy](#) - examines the economics and net cost savings of electrifying homes, including in cold climates.
- [Clean Building Compass, Building Decarbonization Coalition](#)
 - A database of example policies, ordinances, codes, and projects from other local governments.

EXAMPLES:

- Portland, ME [Electrify Everything Campaign](#)
 - This is a group buy program to bring residents price savings for solar panel installation, heat pumps, heat pump water heaters, and community solar subscriptions (for those unable to install solar on their homes).
- [Flagstaff, AZ Carbon Neutrality Plan](#)
 - "Provide monetary incentives to builders that construct or retrofit to achieve net zero energy prior to 2030. Provide incentives to builders to forego natural gas infrastructure in new sub-developments and new buildings."
- [Solar-HeatSmart, Massachusetts](#)
 - The Massachusetts Center for Clean Energy developed a toolkit to help communities start solar and heat pump group buy programs. The HeatSmart program has been implemented in 15 communities and has resulted in 345 systems contracted.
- [Town of Bedford, NY Climate Action Plan](#)
 - "Expand and promote adoption of electric air source and geothermal (ground source) heat pumps and cooling as well as battery storage for residential and commercial buildings."
 - "Create, market and support programs to make energy/lighting retrofits and conversion to heat pumps affordable for Low to Moderate Income (LMI) homeowners, renters (new programs or access to existing NYS programs)"
 - "modify and expand high performance building standards for new construction and renovations"
 - "phase out fossil fuel based heating, cooling, water heating and cooking"

ACTION B.6

Enable PACE and C-PACE programs to support clean energy and efficiency projects.

DESCRIPTION: Property-assessed clean energy (PACE) programs support clean energy and energy efficiency projects by helping building owners overcome the initial barrier of high upfront costs through financing.

In 2021, Maine passed legislation authorizing C-PACE (commercial property assessed clean energy) programs specific to commercial buildings. The Town could adopt a C-PACE ordinance to support renewable energy systems, energy efficiency measures, and EV charging infrastructure for commercial properties (pending state program launch).

In addition, the Town could adopt an ordinance establishing residential PACE. Maine has had a residential PACE program since 2010.

Through PACE and C-PACE, property owners can obtain financing energy improvements over a long payback period. This long payback period allows the cost of the energy improvement to be paid over its useful lifetime, rather than upfront. Participation in both PACE and CPACE is entirely voluntary. Municipalities can opt-in to provide PACE and/or C-PACE for properties within their jurisdiction.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Board of Selectmen, Climate Action Coordinator, Finance Director

BUDGET IMPACT: This action would involve administrative costs from staff time. Action would make renewable energy and energy efficiency more financially viable for community members.

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#) - joining C-PACE is on the CRP list of community actions.

SCOPE: Town wide

RESOURCES:

- [Information about C-PACE from the Maine senate.](#)

EXAMPLES:

- [195 Maine Communities have already passed a PACE program.](#)

ACTION B.7

Conduct energy audits, and evaluate opportunities for deep energy efficiency retrofits, efficiency measures, electrification, and building envelope weatherization improvements, with the goal of transitioning existing town buildings towards all electric and net zero energy over time. Collaborate with the local school district for school building improvements as well.

DESCRIPTION: Conduct energy audits of town buildings to identify high impact energy efficiency improvements and weatherization projects.

Implement efficiency and weatherization measures based on the energy audit findings.

Efficiency measures will be dependent on audit findings. Examples include:

- Complete transition to LED lighting in all municipal buildings
- Insulation and air sealing
- Implement lighting sensors, smart appliances, and smart controls

Where possible, conduct deep energy retrofits, prioritizing high energy use buildings.

Deep energy retrofits can provide much greater energy savings than conventional energy retrofits. By using a whole building approach to identify high impact interventions, deep energy retrofits can save 50% or more of the energy used on site.²⁶ Deep energy retrofits consider all major improvements needed in the building over several years to plan cost effective interventions for high efficiency upgrades. Deep energy retrofits take advantage of cost-effective opportunities for upgrades including planned capital improvements, major system replacements, major projects on the building envelope, code upgrades, etc. Examples might include installing a high efficiency heat pump once an HVAC system reaches its scheduled replacement or installing efficiency measures during planned roof or siding replacement. For this reason, deep energy retrofits can take place incrementally over several years. Deep energy retrofits can have higher upfront costs but save money through avoided energy costs over time. Retrofits should also consider beneficial electrification to take advantage of locally sourced solar energy and reduce greenhouse gas emissions. Full lifetime cost savings should be considered in determining the cost effectiveness of potential projects.

Encourage local schools to explore energy efficiency improvements and share lessons learned, best practices, and resources.

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: Climate Action Coordinator, Public works

BUDGET IMPACT: Quotes will be needed to determine the full costs of audits, as costs vary depending on the building. One local contractor estimated that an energy audit would cost approximately \$1 per square foot. Costs for implementing specific energy efficiency improvements will depend on audit findings and will be reflected in annual budget requests. Financial savings associated with improvements will depend on the specific building.

ACTION B.7

Continued...

POTENTIAL FUNDING:

- [Efficiency Maine Trust](#)
 - Offers financial incentives for energy efficiency projects. As of 2022, "Awards range from a minimum of \$10,000 to a maximum of \$1 million per customer per year, or up to 50% of the total project cost. Customers may also be eligible for free scoping audits and technical assistance incentives.
- [Community Resilience Partnership \(CRP\)](#)
 - Energy efficiency retrofits and weatherization are included in the CRP list of community actions.
- [Efficiency Maine Trust](#)
 - [Energy Efficiency Opportunities for Local Governments](#) - Efficiency Maine

SCOPE: Town operations

RESOURCES:

- [Efficiency Maine](#) offers energy efficiency incentives for municipalities.
- [Deep Energy Retrofits](#) – Rocky Mountain Institute (RMI) provides an overview of Deep Energy Retrofits and resources.
- [Managing Deep Energy Retrofits](#) – guidebook from RMI
- [Identifying Design Opportunities for Deep Energy Retrofits](#) – guidebook from RMI
- [Building the Case for Deep Energy Retrofits](#) – guidebook from RMI
- [Deep Energy Retrofits Tools and Resources](#)
- [Heliotropic Technologies](#) -Energy Engineering Services is an example of a local company that might provide audit services.

EXAMPLES:

- [Town of Arlington, MA](#) – has a strategy to conduct deep energy retrofits on existing Town buildings to reduce energy use by 25%.
- [Portland, ME](#) – has a strategy to pursue deep energy retrofits and electrification for large existing city buildings.

ACTION B.8

Encourage and incentivize fossil fuel free new construction and use of zero and low-carbon heating, cooling, and appliances.

DESCRIPTION: Provide education to building permit applicants on benefits of fossil fuel free construction and available state and federal incentives for low carbon heating, cooling, and appliances (such as heat pump rebates through Efficiency Maine). Explore opportunities to encourage fossil-fuel free new construction through incentives, expedited permitting, education, and awards and recognition for fossil fuel free buildings.

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: Climate Action Coordinator, Climate Action Taskforce, Code enforcement, Land Use Zoning Ordinance Advisory Committee, Planning Board

BUDGET IMPACT: Some outreach can be accomplished through staff time, Climate Action Taskforce, and collaboration with other island towns and organizations. Pursue grants for additional funding for community engagement..

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - Community engagement around climate action is on the CRP list of action

SCOPE: Town wide

RESOURCES:

- Brookline, MA
 - [Fossil Fuel Free Incentives Study](#) a study of potential zoning incentives to encourage fossil fuel free buildings.

EXAMPLES:

- [Flagstaff, AZ Carbon Neutrality Plan](#)
 - "Provide monetary incentives to builders that construct or retrofit to achieve net zero energy prior to 2030. Provide incentives to builders to forego natural gas infrastructure in new sub-developments and new buildings."
- [Town of Bedford, NY Climate Action Plan](#)
 - "Explore opportunities to simplify and expedite permitting and other services for new construction of Passive House and/or Net Zero buildings."

ACTION B.9

Help renters, homeowners, and businesses understand and reduce their energy use.

DESCRIPTION: Help community members understand and reduce their energy consumption. Opportunities to increase community-wide conservation and awareness of energy use include:

- **Improve transparency of energy efficiency performance for renters:** On average rental properties have 30% higher energy costs than other homes.²⁷ The poor performance of rental units is largely due to a split incentive; renters pay the utility costs while landlords pay for property maintenance and upgrades. Because landlords do not typically pay utility bills, they are left with little incentive to improve the efficiency of the property. Under Maine law, prospective renters have the right to request data on energy costs and consumption for the past year. Landlords must also provide tenants with an energy efficiency disclosure statement upon request.²⁸ The Town can raise awareness of this disclosure requirement to ensure that tenants and landlords are aware of their rights to access and disclose efficiency data. Other cities, such as Portland and South Portland, are now requiring that an energy efficiency disclosure is submitted as part of their long-term rental registration.
- **Encourage participation in Efficiency Maine Weatherization program:** Efficiency Maine offers significant weatherization rebates to help cover the cost of air sealing, energy assessments, and insulation.
- **Encourage home energy assessments or HES ratings:** A home energy assessment is the first step in determining the highest impact opportunities for home energy savings. Efficiency Maine offers \$500 rebates for energy assessments for Maine homeowners and no cost assessments for low- and moderate-income households. Provide residents with information about low-cost opportunities for home energy assessments to encourage increased efficiency. Home Energy Scores (HES) is another program to understand and improve energy use. The program, developed by the Department of Energy, provides a home energy score to compare performance and cost-effective solutions to improve efficiency. Home Energy Scores are performed by certified assessors.
- **Strategies other communities have employed include:**
 - Time of sale disclosure:
 - Annual energy use reporting

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Code enforcement, Climate Action Coordinator, Climate Action Taskforce

BUDGET IMPACT: Some outreach can be accomplished through staff time, Climate Action Taskforce, and collaboration with other island towns and organizations. Pursue grants for additional funding for community engagement.

POTENTIAL FUNDING:

- [Community Resilience Partnership](#)
 - The CRP Community Action List includes community engagement

SCOPE: Town-wide

RESOURCES:

- [Efficiency Maine Weatherization Rebates](#)

MID TO LONG-TERM ACTIONS:

- Explore incentives (at municipal, county and/or state level) including low interest rates, property tax credits, offsets, special project financing for high performance building improvements. (FY 2025)
- Explore opportunities to reduce the “split incentive” between landlords and tenants for energy efficiency upgrades and rooftop solar. Possible strategies may include green leases and energy efficiency standards for rental properties.
- Explore opportunities to encourage energy use reduction in vacant summer homes during winter months.

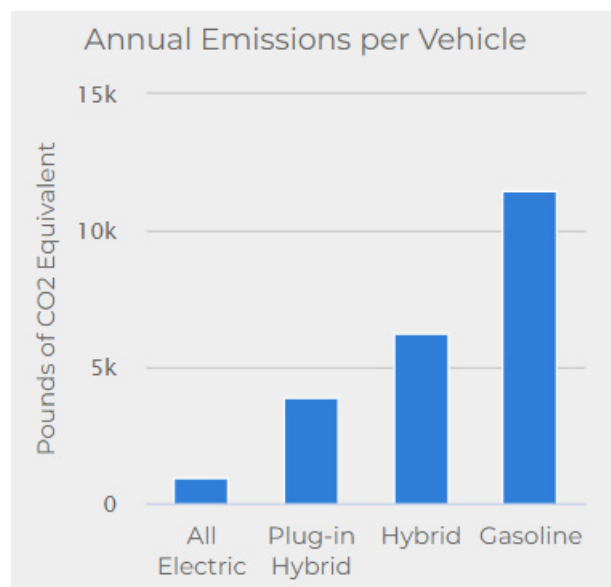
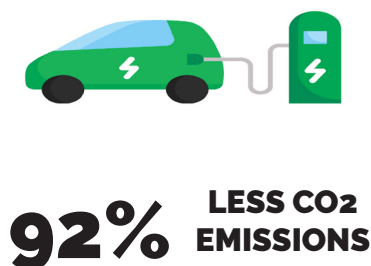
4 | TRANSPORTATION

THE FUTURE OF OUR TRANSPORTATION

Transportation is the sector responsible for the greatest amount of carbon dioxide emissions in Maine, making up 54% of the state's emissions²⁹.

The State of Maine has identified transitioning cars to electric vehicles (EVs) as the most important, and technologically viable, strategy for reducing emissions from transportation.³⁰

Currently, a light-duty electric vehicle in Maine produces 92% less emissions than a gasoline-powered car.³¹ Greenhouse gas emissions from EVs will continue to decline as Maine's electricity supply transitions to fully renewable resources.



Electric vehicles today are well equipped to meet daily use needs. Rural residents in Maine drive an average of 30 miles a day, well within the 200-300 mile range of many electric vehicles on the market today.³²

Charging has also significantly improved, with fast chargers providing 80% charge in 20-30 minutes. EVs are becoming increasingly economical and the average EV owner saves money over time due to lower fuel and maintenance costs.³³ **In fact, car owners can save as much as \$14,500 on fuel costs over 15 years by driving an electric vehicle rather than a comparable gas car.³⁴**

Transitioning to electric vehicles is a key part of ["Maine Won't Wait"](#), the State's climate action plan, which aims to put 219,000 light-duty EVs on Maine roads by 2030. It is also well aligned with the Federal Government's goal that EVs make up 50% of new vehicle sales in 2030.³⁵

In addition to transitioning to electric vehicles, the State of Maine has identified reducing vehicle miles traveled and shifting trips traveled in personal cars, to alternatives such as bicycles, walking, and public transportation, as strategies to reduce emissions from transportation.³⁶

Path to Zero

Greenhouse gas emissions reduction in transportation will take place through:

- Electrification of town fleets
- Installing EV charging infrastructure
- Supporting the installation of chargers for businesses and residences
- Supporting and encouraging EV adoption by residents
- Developing clean energy supply for EV charging infrastructure
- Maximizing resilience of charging infrastructure through battery storage and solar

Goals

- Achieve 100% all-electric light-duty vehicles by 2030.
- To the greatest extent possible, replace medium and heavy-duty vehicles with all-electric by 2030.
- Ensure adequate charging infrastructure in public places to accommodate the use of electric vehicles by residents and visitors.
- Support EV adoption by Mount Desert residents and establish more specific goals for this adoption by 2025.

ACTION T.1

All new Town vehicles (including boats) will be battery electric, unless no feasible electric option is available. Vehicle replacements will reflect the goal of a fully electrified fleet by 2030.

DESCRIPTION: As vehicles reach their end of life, replacements will be battery electric vehicles unless no feasible electric option is available. Feasibility will be assessed based on planned operations and cost-effectiveness. Cost-effectiveness will reflect the **total cost of ownership**, including available incentives, the price of carbon emissions, maintenance, fuel, insurance, and reliability. When a conventional internal combustion engine vehicle is requested for purchase, the budget request should clearly list the electric alternatives that were considered, including total cost of ownership comparisons, and provide clear justification for why the electric vehicle was not deemed feasible. Budget requests for internal combustion engine vehicles should also assess options to lease or postpone purchase.

When an EV alternative is not immediately available, but is expected to become cost effective in the near future, postponing scheduled replacement will be considered on a case-by-case basis depending on the urgency of the vehicle replacement and the anticipated availability of the EV alternative. In these cases, leasing a vehicle should also be considered.

When a viable battery electric vehicle is not available, and leasing or postponing replacement is infeasible, the Town will use the following prioritization hierarchy:

- 2nd choice, plug-in hybrid electric;
- 3rd choice, hybrid electric;
- 4th choice, other fuel types

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: Finance Director, Town Manager, Public Works, Climate Action Coordinator

BUDGET IMPACT: Cost to be reflected in annual budget requests. Full cost of ownership costs will be calculated prior to purchase. Many EVs currently have a higher upfront purchase cost, but save money on fuel and maintenance over time.

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - Purchasing or leasing of electric vehicles is an action on CRP's Action Lists.
 - There is a \$2,000 grant cap per light-duty electric vehicle
- [Efficiency Maine](#) offers the following rebates for municipalities (as of December 2021)
 - \$7,500 for new Battery Electric Vehicles
 - \$2,000 for a new plug-in hybrid electric vehicle
 - \$350 per plug for an electric vehicle charger

RESOURCES:

- [Vehicle Cost Calculator, Alternative Fuels Data Center](#) - this free tool provides high level total cost of ownership comparisons between different vehicle models. The user inputs estimated annual mileage in order to provide an estimate. (This tool does not account for the cost of carbon emissions).
- [Dashboard for Rapid Vehicle Electrification \(DRVE\) Tool](#), this free excel tool estimates total cost of ownership for electric vehicles compared to conventional alternatives.
- [Alternative Fuel Life-Cycle Environmental and Economic Transportation \(AFLEET\) tool](#) - this free tool estimates total cost of ownership, fuel use, greenhouse gas emissions, and air pollution for vehicles. The tool is available as an excel spreadsheet or online tool.
- [Electric Vehicle Procurement Best Practices, 2018](#), Fleets for the Future.
- [Guide to Financing Alternative Fuel Vehicle Procurement](#), Fleets for the Future.
- [Climate Mayors Electric Vehicle Purchasing Collaborative](#), leverages collective purchasing power of municipalities to reduce the cost of EVs and charging infrastructure. Webpage includes EV resources for local governments

EXAMPLES:

- [City of Seattle Green Fleet Action Plan](#)
 - Uses a Total Cost of Ownership calculator, including the cost of carbon, to evaluate new vehicle purchases.
 - Uses a decision-making hierarchy to prioritize vehicle types (electric vehicles are first choice, then plug-in hybrids).
 - The City plans to "purchase hybrid police patrol vehicles starting in 2019 to convert total patrol car fleet by 2025."
- [Flagstaff Carbon Neutrality Plan](#)
 - "Adopt a policy requiring 100% of new City fleet sedans and SUVs to be electric vehicles starting in 2022, complemented by aggressive goals to test, evaluate, and, where feasible, acquire electric vehicles for other light-duty, medium-duty and heavy-duty fleet vehicles and equipment categories."
- [Town of Cumberland Maine Climate Action Plan](#)
 - "Phase in automobiles, light duty vehicles and school buses as EV or plug in hybrid."
- Town of Bedford Climate Action Plan
 - "Continue to transition all municipal vehicles to EVs. Establish plan for next 10 years that takes into account alternatives that are available "now" (e.g. for municipal vehicles that can be switched to EVs) and focus on pilots/new technology to convert heavy duty vehicles (e.g. DPW trucks) and emergency vehicles (e.g. police cars and trucks) as developed and available."
- [Boston Zero Emissions Vehicle Roadmap Targets](#)
 - 100% of passenger (light-duty) vehicles are emissions free by 2035
 - 100% of medium-duty vehicles are emissions free by 2050
 - 100% of heavy-duty vehicles are emissions free or low emissions by 2060
- [City of Sacramento Sustainable Fleet Policy](#)
 - "A minimum commitment for 50% of annual light-duty Fleet purchases to be ZEV by 2018 and 75% of annual light-duty Fleet purchases to be ZEV by 2020."

ACTION T.2

Develop an electric vehicle charging plan to accommodate the town-wide community and visitor electric vehicle charging needs that will emerge in the next 10 years.

DESCRIPTION: Develop a strategic plan, or list of prioritized sites, to install electric vehicle chargers town-wide to accommodate growing adoption of electric vehicles by residents and visitors. Plan for sufficient chargers to meet resident and visitor demand in 2030. Collaborate with other island towns and Acadia National Park to plan for a coordinated island-wide network of EV chargers to accommodate residents and visitors. Prioritize installing chargers in high demand locations first. Work with businesses and major employers to identify potential locations and encourage these entities to install and publicize chargers. Explore creative funding for installing chargers through state grants and collaboration with businesses and local organizations.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Coordinator, Public Works, Comprehensive Planning Committee, Climate Action Taskforce, Green Tourism Committee

BUDGET IMPACT: The need for town-wide charging could be assessed through the Comprehensive Plan update, by staff, and by Climate Action Taskforce. Research could also be supported through a student project from a local college or university. Charger installations will be funded through grants, partnership with businesses, or annual budget requests.

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - Installing electric vehicle chargers in public parking areas is included in the CRP's list of Community Actions.
- [Efficiency Maine](#) offers rebates for electric vehicle chargers
- Federal Funds from the [Infrastructure Investment & Jobs Act](#)
 - Maine is expected to receive \$19 million over 5 years from the Federal Government to support EV charging infrastructure. It remains to be seen how this money will be distributed from the state.

SCOPE: Town wide

RESOURCES:

- [Plug-in Electric Vehicle Readiness](#), resources to help communities plan for EV charging.
- [Electric Vehicle Charging Infrastructure Procurement Language for Fleet Managers](#), [EnergyStar](#)

EXAMPLES:

- [Aspen Community Electric Vehicle Plan](#), the plan includes a list of prioritized charging locations based on agreed upon criteria including proximity to electrical connection, ADA accessibility, willing owner, etc.

ACTION T.3

Strategically plan and install charging stations to accommodate the electric vehicles that will be added to the town fleet in the next 10 years.

DESCRIPTION: Based on capital improvement plan replacement schedules, draft a tentative timeline of anticipated electric vehicle purchases. Use this timeline to determine where chargers will be needed first for municipal charging needs. Consider charging needs of each vehicle and where chargers can be shared. Determine which chargers will be available for both Town vehicles and public use and which will be exclusively for Town operations. Plan for any infrastructure updates that may be needed to enable facilities to install EV chargers. When constructing new town buildings and parking lots or undergoing significant remodels, evaluate the need for EV Chargers and integrate them into the project. Develop and circulate information to ease concerns about dependability of a fully electric fleet.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Coordinator, Public Works, Planning, Climate Action Taskforce

BUDGET IMPACT: Evaluating the need for charging stations can be accomplished through staff and committee time. The cost of installing chargers will be reflected in annual CIP requests as equipment is needed.

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - Installing electric vehicle chargers in public parking areas is included in the CRP's list of Community Actions.
- [Efficiency Maine](#) offers rebates for electric vehicle chargers.
- Continue to monitor State allocation of funds from the 2021 Federal Infrastructure Bill.

SCOPE: Town Operations

RESOURCES:

- [Plug-in Electric Vehicle Readiness](#), resources to help communities plan for EV charging.
- [The Alternative Fuels Data Center](#) provides a basic overview of charging infrastructure development.
- [Guide to the Guides, Municipal EV Charging Resources](#), Fleets for the Future
- [Electric Vehicle Charging Infrastructure Procurement Language for Fleet Managers](#), EnergyStar
- [Boston Zero Emissions Vehicle Roadmap](#)

EXAMPLES:

- [Seattle Green Fleet Action Plan](#) - "Any capital departments doing major renovations, remodels or new construction will evaluate the need for EVSE and incorporate into the project."

ACTION T.4

Develop a permanent post-pandemic remote work policy and support employee carpooling.

DESCRIPTION: Develop a policy to allow continued remote work for certain employees whose work does not require their physical presence. By allowing remote work, the Town can reduce the greenhouse gas emissions associated by employee commute to Town offices. Encourage carpooling for Town employees and assist staff in identifying carpool options. Provide incentives for staff that choose to carpool. For example, staff that carpool 2+ days per week could receive an extra vacation day or other reward.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Town Administration, Town Clerk

BUDGET IMPACT: No direct implication.

SCOPE: Town Operations

RESOURCES:

- [Remote and Flexible Work Toolkit for Employers](#), developed by the City of Vancouver, 2020.

EXAMPLES:

- [Flagstaff Carbon Neutrality Plan](#) includes an action to develop a remote work policy and support employee carpool coordination.

ACTION T.5

Adopt ordinances and simplify permitting to encourage EV charging infrastructure.

DESCRIPTION: There are various policies that Towns can enact to support the development of electric vehicle charging infrastructure. Potential ordinances are described below.

EV Readiness- To minimize the cost barrier for installing charging infrastructure and prevent expensive retrofits, a number of communities have adopted codes to ensure new construction is designed to make future charger installation easy. Including electric vehicle charging during new construction is significantly cheaper than retrofitting an existing building to add charging.

Charging installation costs are two to six times more expensive for spaces made EV ready after construction as opposed to during construction. A number of communities have adopted codes to ensure new construction, or large renovations, are EV-ready, EV capable, or include EV charging. The difference between these terms is shown below.

- **EV Capable:** EV chargers are not installed at the time of construction, but some of the electrical requirements that are most difficult to install during a retrofit are in place. For instance, EV capable construction has sufficient electrical panel capacity and conduit to accommodate future EV charging.
- **EV Ready:** EV chargers are not installed at the time of construction, but all of the electrical hardware needed for a future charger is provided.
- **EV Chargers Installed:** EV charging is fully installed during construction.

Permitting - Communities can support the development of electric vehicle chargers through permitting. Examples include:

- Streamline the permitting process to avoid unnecessary complexity and delays for charging installations
- Reduce permitting costs of EV charging infrastructure
- Provide an easy checklist to clearly expand the process for getting an EV charger permitted
- Ordinances to clarify the types of EV chargers permitted by land use type to eliminate confusion
- Standards for public use EV charging design, installation, and operation
- Standards for public use EV charging signage
- Encourage accessible EV chargers
- Clarify use of public EV parking spaces; such as reserving EV parking spaces for EVs
- Include EV spaces in the minimum and maximum required parking spaces for applicable developments
- Standards for public EV parking signage

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Land Use Zoning Ordinance (LUZO) Advisory Group, Code enforcement, planning committee, Climate Action Taskforce, Climate Action Coordinator

SCOPE: Town-wide

BUDGET IMPACT: No direct cost. Can be accomplished through the LUZO Committee and Planning Board.

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - This action is included in the CRP list of community actions.

RESOURCES:

- [Municipal EV Readiness Toolkit](#) from the Southern Maine Planning and Development Commission. Includes recommendations for EV ordinances.
 - [Model EV Infrastructure Ordinance](#) (from SMPDC)
 - [Word Version of Model Ordinance](#)
 - Includes recommendations for streamlining permitting for EV charging infrastructure (pages 4-7).
- [City Electric Vehicle Policy Toolkit](#) from the Electrification Coalition.
- [Summary of Best Practices in Electric Vehicle Ordinances](#) from the Great Plains Institute
- [Building Electric Vehicle Ready Homes](#), factsheet from EnergyStar.
- [EV Ready Commercial Buildings](#), factsheet from EnergyStar.
- [EV Infrastructure Building Codes: Adoption Toolkit](#).
- [Plug-in Electric Vehicle Readiness](#), resources to help communities plan for EV charging.

EXAMPLES:

- The City of Portland, OR is currently developing an [EV Ready Code](#).
- Auburn Michigan adopted an [electrical vehicle zoning ordinance](#) to facilitate, encourage, and expedite new EV charging infrastructure.
- The [Town of Bedford NY Climate Action Plan](#) includes actions to
 - "Consider requirement through building codes and/or incentives of provision for vehicle charging equipment in all new building construction and renovations to existing buildings."
 - "Electrical permitting simplified to expedite home and business charging stations."
 - "Streamline process for adoption of private EV charging stations"
- St. Louis has passed an [ordinance](#) requiring that "certain new construction and major renovations of residential, multi-family, and commercial buildings will be required to be EV ready."
- The [City of Ann Arbor Michigan](#) passed an ordinance with EV charger requirements for new developments.
- [Boston EV Readiness Policy for New Developments](#)
- [Atlanta Georgia](#)
 - Passed an ordinance requiring that all new residential buildings are developed with infrastructure capable of accommodating EV charging infrastructure, such as conduit wiring and electrical capacity.
 - 20% of spaces in new commercial and multifamily parking structures are required to be "EV Ready."
- The [City of Boston](#) provides resources to support residents interested in EV charging.
 - [How to Guide EV Charger Installation](#)
 - [Right to Install EV Charging](#)

ACTION T.6

Support a community-wide transition to electric vehicles.

DESCRIPTION: Support a community-wide transition to electric vehicles. The Town will consider the following initiatives to promote EV adoption:

Group Buy Programs for EVs or EV Chargers - Consider coordinating with other towns in Hancock County or statewide to initiate a group buy program. Group Buy EV programs decrease the cost of EVs for community members to increase local adoption and awareness of electric vehicles. Past group buy programs have done this successfully, by **increasing dealership sales up to 10 times the monthly average.**³⁷ Group Buys are a low cost strategy for communities because the purchasing discounts are funded by private dealerships or auto manufacturers. Under a Group Buy Program a local government or organization conducts a competitive bid process to receive the lowest possible prices for select EV models. The discounted EVs are then offered to community members for a limited amount of time (typically 3 months). The local government and/or organizations promote the opportunity to community members. This model could also be used to offer discounted prices for EV charger installation.

Increase Community Education and Awareness around EVs. Strategies to educate the community about electric vehicles include:

- **Hold a community EV Workshop with Q&A covering:** EV ownership; lifetime savings; common concerns such as EV maintenance, range, charging availability; etc.
- **Host a ride and drive event** - Ride and Drive events provide opportunities for community members to test drive electric vehicles and have their EV questions answered. The events are a good way to increase public awareness and comfort around EVs. Many communities, including several Maine Towns, have held EV Ride and Drive events as part of National Drive Electric Week. National Drive Electric Week is a nationwide campaign to raise awareness around electric vehicles.
- **Clearly mark all town-owned EVs as electric** to increase community awareness
- Promote EV charger locations to residents and visitors to dispel charging anxiety. Ensure that tourism agencies and community organizations are aware of charging availability so that information can be shared with visitors and residents.
- **Provide education about:**
 - EV and EV charging incentives available federally and from Maine
 - Options to make EVs affordable for low-to-moderate income
 - The role of vehicles in Maine and Mount Desert's greenhouse gas emissions
 - Emerging opportunities such as vehicle-to-grid integration and the role of EVs in grid resilience
- **Share EV guidance** with the community such as [EV Home Charger Guide](#) (from Efficiency Maine) and an EV Charger Permitting Guide.
- **Provide an EV page on the town website** - An EV page would provide information about available EV incentives with links to State and Federal resources; EV charging locations; permitting process; benefits of EV ownership such as fuel cost and greenhouse gas emissions savings; etc.

Conduct Strategic Outreach:

- Direct outreach to businesses, hotels, employers, and multi-family housing about the benefits of installing electric vehicle charging. Consider targeting outreach to areas of the Town that will likely have highest demand for EV charging, such as villages.
- Provide recognition for businesses that install EV charging. Consider offering EV-Friendly certificates or branding for businesses that have installed charging stations.
- Outreach to AirBnB owners to encourage EV charger installation and marketing of charger availability to vacationers. AirBnb now allows users to search specifically for hosts with EV Chargers.
- Encourage major employers of Mount Desert residents to install charging and promote carpooling and work from home.

Promote EVs to Visitors

- Work with the other island towns, local chambers of commerce, and tourism industry to promote MDI as an EV-friendly destination.
- Provide a publicly available list of hotels and businesses that accommodate EV charging.

Encourage the local utility to provide EV charger incentives and to pilot a grid flexibility program with EV chargers

- Various utilities offer incentives for purchasing EV or chargers. Many utilities also offer reduced rates for EV charging off-peak times. Burlington Power, for example, offers \$1,200 towards the purchase of an EV, a \$400 EV charger rebate, and a residential EV rate which lowers the cost of energy used for charging. Encourage Versant Power to offer utilities for EVs, and or EV chargers, and provide reduced charging rates based on time-of-use.

FY: 2022-2023 onwards

RESPONSIBLE PARTIES: Climate Action Coordinator, Climate Action Taskforce, and Green Tourism Committee

SCOPE: town-wide

BUDGET IMPACT: Some outreach can be accomplished through staff time, Climate Action Taskforce, and collaboration with other island towns and organizations. Pursue grants for additional funding for community engagement.

POTENTIAL FUNDING:

- [Community Resilience Partnership](#)
 - CRP list of community actions includes public engagement around climate action.
- [Efficiency Maine](#)
 - Provides rebates for EV purchases.
- [Federal Tax Incentives for EVs](#)
 - The Federal Government currently offers up to \$7,500 in tax rebates for eligible EV purchases (as of 2022).

POTENTIAL PARTNERS: Consider partnering with the Mount Desert Chamber of Commerce and other organizations involved with tourism and local businesses. A Climate To Thrive has run several successful group-buy campaigns for solar and weatherization.

RESOURCES:

- [National Drive Electric Week](#) - a network of events occurring in communities nationwide to spread awareness of the benefits of electric vehicles. Information about hosting a national drive electric event can be found [here](#).
- [How to Select and Install a Home EV Charger](#) - a simple guide developed by Efficiency Maine
- [Electric Vehicle Charging Resources from Efficiency Maine](#) - a resource hub for EVs in Maine, including available incentives, vehicle cost calculators, etc.
- [EV Group Buy Programs: Handbook and Case Studies](#) - this handbook provides an overview of group buy programs, examples from other communities, sample language for an EV purchase request for proposals (RFP), sample program timeline, and sales data from past EV Group Buy Programs. The handbook was developed by the Southwest Energy Efficiency Project.

EXAMPLES:

- Portland, ME [Electrify Everything!](#) - Portland is launching a group by program that will include EV chargers, solar panels, heat pumps, and heat pump water heaters.
- [South Paris, ME Solar and EV Expo, 2021](#) - held as part of national drive electric week, the event featured EV test drives, E-bikes, and workshops on solar and EVs.
- Somerville, MA provides a [guide](#) for Somerville residents for installing EV Charging equipment.
- Montgomery County, MD - issued a [Request for Information for an Electric Vehicle Group Buy Program](#).

ACTION T.7

Begin tracking fuel consumption, miles traveled, and maintenance costs for Town vehicles.

DESCRIPTION: Establish a transparent system for tracking vehicle fuel consumption and miles traveled to ensure that quality data is available to inform vehicle purchasing decisions and greenhouse gas inventories. Quality data on fuel consumption and miles traveled is necessary to make cost-effective purchasing decisions based on total cost of ownership. This data will also help the town to optimize the number of vehicles owned, based on use data. Further, data on fuel consumption and mileage is needed for an accurate greenhouse gas inventory.

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: All Departments that operate vehicles. Lead staff person could identify a consistent method for collecting data in a format that will be useful for a greenhouse gas inventory and financial decision-making. Work with those responsible for conducting the greenhouse gas inventory to determine exact data needs.

BUDGET IMPACT: Can be accomplished through staff time.

SCOPE: Town Operations

ACTION T.8

Evaluate the feasibility of a local incentive for electric vehicles.

DESCRIPTION: Under Maine law, vehicle owners pay excise taxes to the local town office prior to registering their vehicles. The Town could incentivize electric vehicle purchases, by exempting electric vehicles from paying the full tax. Under this action, the Town would evaluate the feasibility of exempting electric vehicles from paying the full tax.

Analysis of cost benefits should consider the emissions reductions and resilience benefits of greater community-wide EV adoption.

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Finance Director, Climate Action Coordinator

BUDGET IMPACT: Costs and benefits to be evaluated through this action. Evaluation will occur through staff time.

SCOPE: Town-wide

EXAMPLES:

- [Portland, ME](#) is exploring the feasibility of offering an excise tax exemption for electric vehicles.
- [Warren, RI](#) offers an excise tax exemption for electric vehicles.

ACTION T.9

Collaborate with other island towns and Acadia National Park to develop strategies to engage visitors in MDI sustainability efforts and reduce emissions from tourism to the island.

DESCRIPTION: Collaborate with other island towns and Acadia National Park to develop strategies to reduce emissions from tourism, especially visitor transportation to and from the island. Work with local businesses, Airbnbs, hotels, and tourism agencies to develop a coordinated strategy.

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Climate Action Coordinator, Climate Action Taskforce, and Green Tourism Committee (or another island-wide task force developed for this purpose).

BUDGET IMPACT: This action could be initiated through a volunteer committee.

SCOPE: Island-wide

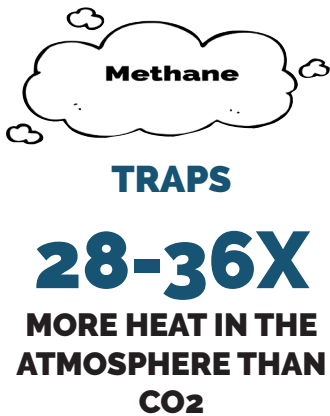
MID TO LONG-TERM ACTIONS:

- Monitor funding for medium and heavy duty electric vehicle pilot programs (such as funding for dump trucks, snow plows, buses, etc.).
- Continue to monitor changes in technology and funding opportunities to stay ahead of the constantly evolving electric alternatives for medium and heavy-duty vehicles.
- Continue assessing vehicle use and maintenance cost to optimize the number of town-owned vehicles.
- Pass an anti-idling ordinance and provide education and enforcement.
- Pursue opportunities to install solar panels and/or energy storage with EV charging stations to improve resilience.
- Monitor emerging vehicle-to-grid technology and position the town to take advantage of technological advances.
- Coordinate with other island Towns to encourage the electrification of ferries that provide regional transportation.
- Consider opportunities to increase operational efficiencies within town departments and avoid unnecessary driving.
- Support the use of bikes and E-bikes for short trips within the town.
- Establish bike lanes or parallel routes for biking. (The road between Northeast Harbor and Seal Harbor is heavily used by bicycles and is probably the most dangerous stretch on the island.)

4 WASTE & WATER



Municipal Solid Waste landfills are the third largest source of methane emissions in the United States.



Methane and the climate

Methane is a potent greenhouse gas that traps 28-36 times more heat in the atmosphere over a 100-year period than carbon dioxide (CO₂).³⁸ Methane stays in the atmosphere less time than CO₂, but is much more effective at trapping heat in the short-term.³⁹ **This makes methane a high impact contributor to near-term climate change, so reducing methane now can have an immediate benefit on climate change.**⁴⁰

Food Waste

Much of the methane generated in landfills comes from food waste.

Food waste is the single largest category of landfilled material.

⁴¹This means that reducing food waste provides an enormous potential to reduce near term climate change. In the United States, 30-40% of food is wasted.⁴² Much of this waste could be preventable (see the EPA's Food Recovery Hierarchy, Donating excess food and composting will be two key strategies to divert food from the landfill.



Compost

Properly composting food significantly reduces methane emissions, as opposed to a landfill.⁴⁵ When applied to soil, it is a rich source of nutrients for plants and can eliminate the need to apply chemical fertilizers (which produce greenhouse gases and have other negative environmental impacts).⁴⁶

Wastewater

Wastewater treatment processes can produce direct emissions in the form of methane and nitrous oxide, and indirect emissions from the consumption of energy.⁴³ Determining the quantity of greenhouse gases produced by wastewater treatment in Mount Desert requires a thorough greenhouse gas inventory. Statewide, waste accounts for 2% of gross greenhouse gas emissions, this includes both waste and wastewater.⁴⁴

Path to Zero

Greenhouse gas emissions reduction in waste and waste will take place through:

- Composting
- Food waste diversion
- Recycling
- Renewable energy and energy efficiency for water and wastewater treatment facilities

Goals

- Reduce landfill waste from restaurants and businesses by encouraging food donations and composting.
- Increase residential composting.
- Improve the energy efficiency of water and wastewater facilities.
- Develop renewable energy to offset energy use at water and wastewater facilities.



ACTION W.1

Pilot a composting program.

DESCRIPTION: Explore partnerships with local farms or waste processors to pilot a composting program. The pilot program might prioritize large waste producers, such as restaurants and grocery stores first, and then expand to residential compost. Residences in the villages, where there is less opportunity for backyard composting, might be prioritized first, with the goal of expanding the offering town-wide. The town and prospective partner(s) will evaluate different models such as neighborhood composting sites, compost drop-off location, or curbside pick-up, and determine which is most effective and feasible. Once the pilot is established, the town will invite community members to participate and provide education on proper composting. For residents not included in the initial pilot, the Town can provide resources and education regarding backyard composting. The town might consider offering free backyard composters to rural residents not included in the pilot program.

FINANCIAL YEAR: 2022-2023, begin exploring partnerships and evaluating program structure, 2023-2024 pilot for restaurants and grocery stores. 24-25 town-wide implementation.

RESPONSIBLE PARTIES: Climate Action Coordinator, Climate Action Taskforce, Public Works

BUDGET IMPACT: Cost dependent on partnership and program structure. Will be evaluated and reflected in the FY budget request.

POTENTIAL FUNDING:

- Community Resilience Partnership
- The CRP list of community actions includes community engagement around climate solutions.

SCOPE: Town wide

RESOURCES:

- [Composting at Home](#) - resources from the EPA for backyard composting.
- [Backyard Composting Cheat Sheet](#) - a graphic depiction of what can and cannot be composted in a backyard system. From the Conservation Law Foundation.

EXAMPLES:

- [Waterville, ME](#) is partnering with Garbage to Garden to offer residents a free trial of curbside composting pickup
- [Town of Bedford, NY](#)
 - "Work with municipality to establish community-wide residential curbside pick-up for household organic waste."
 - "Establish composting/curbside pickup for restaurants"
- [Orland, FL](#) provides free backyard composters for residents.
- [Stevens Point, WI](#) curbside compost pickup program through a local farm.
- [Portland, ME](#) offers drop-off composting sites for residents.

ACTION W.2

Evaluate opportunities for enhanced energy efficiency at wastewater and water facilities.

DESCRIPTION: Initial steps to identify energy efficiency improvements may include contacting the Maine Department of Environmental Protection for support with energy use analysis and audits.

Initial steps to identify efficiency improvements may also include:

1. Benchmarking energy performance to establish a baseline. One resource for benchmarking is ENERGY STAR portfolio manager, which has specific tools and resources for wastewater utilities.
2. Conducting an energy audit and/or reviewing recommendations from past audits. An energy audit helps identify inefficiencies and high priority areas.

FINANCIAL YEAR: 2022-2023 and 2023-2024

RESPONSIBLE PARTIES: Public Works

BUDGET IMPACT: Implementing this action will likely involve conducting energy audits of water and wastewater facilities (some of these audits may be included in Action B.7). Staff will solicit estimates for audit costs and work with the state to identify available funding resources. Funding for audits and efficiency measures will be requested in annual budget/CIP requests. Lifetime energy cost savings should be considered in addition to upfront costs.

POTENTIAL FUNDING:

- [The CRP list of community actions](#) includes adopting and executing a plan for energy efficiency and building envelope weatherization improvements for municipal buildings.

SCOPE: Town Operations

RESOURCES:

- [The Maine Department of Environmental Protection \(DEP\)](#) can provide support to municipal wastewater treatment facilities for energy use analysis and energy use audits.
- [EPA Resources on Energy Efficiency for Water Utilities](#), provides: tools for assessing energy use and conducting benchmarking; funding resources for paying for audits; webinars and trainings; etc.
- [Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities](#), provides step by step guidance on energy management for water utilities.
- [ENERGY STAR portfolio manager](#), includes wastewater and water treatment. Provides a tool to assess energy and water consumption.

EXAMPLES:

- [Lancaster, PA](#)
 - Strategy to implement energy efficiency measures at water and wastewater facilities.

ACTION W.3

Encourage and support food waste diversion by local restaurants and grocery stores.

DESCRIPTION: Educate local restaurants and grocery stores about the climate impact of landfilling food waste, the benefits of composting, and how to properly separate food waste. Provide incentives, such as tax deductions, for restaurants and grocery stores to donate, rather than trash, excess food. Connect restaurants and grocery stores with nonprofits that accept food donations and with composting services. Consider providing public recognition or a "climate friendly composter certificate" for participating businesses to incentivize participation.

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Climate Action Coordinator, Climate Action Taskforce, Economic Development Committee

BUDGET IMPACT: Some of the outreach involved in this action can be completed through staff and committee time. Providing incentives and creating a public recognition certificate would likely require funding. The town can pursue grant funding for community engagement and request any additional funds through annual budget proposals.

POTENTIAL FUNDING:

- [Community Resilience Partnership](#)
 - The CRP list of community actions includes community engagement around climate solutions.

SCOPE: Town wide

RESOURCES:

- [Composting 101 Guide](#), from the Natural Resource Defense Council
- [Sustainable MDI Pledge](#). ACTT has developed a sustainability commitment for MDI businesses to reduce their waste (including food waste).

EXAMPLES:

- [Cambridge, MA](#)
 - Requires food waste diversion for restaurants and small grocery stores and is developing a food waste reduction strategy.

ACTION W.4

Evaluate the feasibility of offering curbside recycling pick-up.

DESCRIPTION: Evaluate the feasibility of offering curbside recycling pick-up to begin in FY 2023-2024.

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Public Works, Climate Action Taskforce, Climate Action Coordinator

BUDGET IMPACT: Because it is explorative, this action does not have a direct budget implication. Staff can evaluate the feasibility and associated costs of offering curbside composting. If the town chooses to pursue curbside recycling pickup costs will be reflected in annual budget requests.

ACTION W.5

Evaluate the feasibility of implementing a Pay-as-you-throw (PAYT) program.

DESCRIPTION: Under a Pay-As-You-Throw (PAYT) system, households pay only for the amount of waste that they generate, rather than a flat fee. This structure allows residents to take greater control of their waste fees; under a PAYT you are not responsible for paying for your neighbor's waste - only your own. With PAYT you can voluntarily choose to recycle more or generate less waste to pay less for disposal.

Paying only for the amount used is similar to how most other utilities, such as electricity and gas, are billed. This structure provides a financial incentive to reduce trash and focus on recycling and composting.

On average waste disposal declines 14-27% in communities that implement PAYT. PAYT is not new, many communities have used this system for over 20 years and 138 Maine communities already employ PAYT.

Under this action the town would conduct outreach to ensure awareness of the PAYT system. Outreach might be conducted in the summer to reach seasonal residents. A special consideration will be providing information to landlords and AirBnB owners to pass on to vacationers

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Public Works, Climate Action Taskforce, Climate Action Coordinator

BUDGET IMPACT: By reducing the amount of landfilled waste, the town could realize potential savings in landfill tipping fees and transportation costs, while extending the life of landfills. Both costs and cost savings should be considered in the financial viability of a PAYT program. The initial evaluation of a PAYT program can be conducted without a budget request.

SCOPE: Town-wide

RESOURCES:

- [Pay-As-You-Throw Toolkit](#), developed by the Maine Natural Resource Council includes examples on Maine PAYT programs, sample ordinance and warrant article language, etc.

EXAMPLES:

- [Maine Towns with PAYT programs](#)
- [Bath, ME](#)
- [Town of Hancock, ME](#)

ACTION W.6

Assess wastewater treatment facilities for clean energy potential such as an anaerobic digester or solar. Consider opportunities to increase resilience through onsite power.

DESCRIPTION: Evaluate opportunities to install onsite power generation capable of functioning during grid outages. This action could reduce greenhouse gas emissions from facility power while improving resilience. Options for onsite power may include:

- Microgrid
- Solar arrays
- Anaerobic digestion of biomass
- Battery banks (to store energy generated)
- Fuel Cells
- Combined Heat and Power - the co-generation of electricity and heat.

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Public Works, Climate Action Taskforce, Climate Action Coordinator

POTENTIAL FUNDING:

- [Efficiency Maine Trust](#)
 - Offers financial incentives for distributed energy generation. As of 2022, "Awards range from a minimum of \$10,000 to a maximum of \$1 million per customer per year, or up to 50% of the total project cost. Customers may also be eligible for free scoping audits and technical assistance incentives."
- [Funding from the U.S. Department of Energy Solar Energy Technologies Office](#)
 - This office supports funding for photovoltaics, concentrating solar-thermal power, etc. [Subscribing](#) to the Office's newsletter will help the town receive updates on new funding opportunities.
- [Federal Financial Assistance Programs that may apply to solar](#) (list provided by the US Department of Energy)
- [Database of State Incentives for Renewables & Efficiency \(DSIRE\)](#)
 - This is a database for searching for available renewable energy incentives by state.
- [Community Resilience Partnership](#)
 - This action is included on the CRP list of community actions.

BUDGET IMPACT: Initial cost estimate is approximately \$3,000-\$5,000 for solar feasibility study, environmental site evaluation and level two interconnection pre-application. More information on potential cost savings and installation costs will be generated at the time of the feasibility study.

SCOPE: Town Operations

RESOURCES:

- [Solar Energy for Water and Wastewater Utilities: Step-by-Step Project Implementation and Funding Approaches](#), EPA webinar slides with step-by-step guidance.
- [Power Resilience, A Guide for Water and Wastewater Utilities](#), this guide provides an overview of strategies and technologies available to improve power resilience for facilities. Developed by the EPA.
- [Combined Heat and Power \(CHP\) Partnership](#), provides resources and information regarding combined heat and power including: information about what facilities are good candidates for CHP, CHP technologies and incentives, and emissions savings calculators. This is an EPA resource.
- [Resources for water and wastewater renewable energy and energy efficiency](#), from the EPA.

EXAMPLES:

- [Lancaster, PA](#)
 - Conducting a feasibility study for combined heat and power or renewable energy at the wastewater treatment plant.

ACTION W.7

Improve community recycling rates and proper disposal of refrigerants, such as air conditioners, refrigerators, freezers, etc.

DESCRIPTION: Continue to provide education about town recycling services including clear guidance on what can be recycled, with emphasis on proper disposal of refrigerants. Provide Air BnBs and vacation rentals with clear guidance that can be shared with temporary occupants.

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Public Works, Sustainability Committee

POTENTIAL FUNDING:

- [Community Resilience Partnership \(CRP\)](#)
 - The CRP list of community actions includes climate change education and engagement programs.

BUDGET IMPACT: Outreach can be accomplished through staff time, Climate Action Taskforce, and collaboration with other island towns and organizations. Pursue grants for additional funding for community engagement.

SCOPE: Town-wide

7

SEQUESTRATION, NATURAL CARBON SOLUTIONS, AND OFFSETS

Sequestration and Natural Carbon Solutions

Natural ecosystems including forests, grasslands, and coastal habitats can store carbon from the atmosphere.⁵⁰ Measures to conserve and manage these ecosystems to improve carbon storage are called natural solutions. Meanwhile, deforestation and soil disturbance from agricultural practices can release carbon back into the atmosphere.

Carbon sequestration refers to the capture and storage of carbon dioxide from the atmosphere.

Worldwide, agricultural soils have already lost 50-70% of their original carbon.⁴⁷ Natural solutions are a vital component of addressing climate change; globally nearly a quarter of greenhouse gas emissions come from agriculture, forestry, and land use (mainly from agriculture and deforestation).

While agriculture is currently a significant source of global greenhouse gas emissions, improved agricultural practices can enhance the soil's ability to store carbon. Agricultural practices that build soil carbon are sometimes referred to as "carbon farming," a concept which has gained significant traction in California. Pursuing local carbon farming is one way that the town can improve carbon storage while supporting local food production.

Forests also play an important role, accounting for as much as 45% of carbon stored on land.⁴⁸ This makes conserving forests an important climate strategy. Coastal ecosystems, including tidal salt marshes and seagrass meadows, also are significant carbon stores. Climate change makes preventing the destruction of these ecosystems more important than ever. In addition to improving carbon storage, intact ecosystems can also enhance resilience to climate change impacts, such as flooding.

All of the IPCC's pathways to limit warming to 1.5 °C rely on carbon dioxide removal to some extent.⁴⁹ Increasing local carbon storage through natural solutions is one way that the town can contribute to the global effort to reduce atmospheric carbon. Even if the town reduces true carbon emissions to zero, natural solutions to sequester carbon should be pursued to reach net negative emissions.

Offsets

Carbon offsets are also highly problematic as a climate change solution. Carbon offsetting often shifts the focus away from the necessary action of actually stopping carbon emissions. Many offset programs cannot deliver the level or dependability of carbon capture they promise. For example, many airlines and even fossil fuel companies identify tree planting programs in their offsets. However, it can take at least 20 years for the trees planted to begin capturing the level of carbon promised in the offset equation. Furthermore, if the trees die, due to wildfire, drought, or disease, not only does the offsetting stop, the captured carbon is largely released back into the atmosphere. Finally, there is simply not enough plantable land on the globe to fulfill all the tree planting offsets that would be needed. A massive amount of trees would have to be planted and protected for decades to offset just a fraction of the world's emissions.

Furthermore, many offset programs involve countries in the Global North using land in the Global South to develop offset programs to continue to emit high levels of greenhouse gases. Land is sometimes taken from Indigenous communities or from uses more valuable to community needs.

In setting a goal for emissions reductions, the Town of Mount Desert will make every effort to set and achieve a real zero emissions goal (total reduction of emissions rather than offsetting continued emissions) by 2030. Where the Town meets limitations, it will make every effort to contribute to the structural shifts needed to make zero carbon targets more accessible, paving the way for other communities to do the same. However, it is also important to recognize that certain limitations exist beyond the Town's control. In the case that a true zero carbon goal is unattainable by 2030, the Town will transparently pursue meaningful offsets that more than compensate for the remaining emissions, effectively achieving a net negative goal, while also prioritizing shifting to a real zero goal as soon as possible after 2030.

Meaningful Offsets

If the Town of Mount Desert should need to engage in offsets, it is essential that selected offsets both have a meaningful impact on atmospheric carbon and make a positive contribution to the communities in which the offsets are located.

The Town of Mount Desert will work with organizations like A Climate to Thrive to develop a standard for meaningful, just offsets.

Path to Impact

The Town of Mount Desert will:

- Invest in carbon sequestration and natural solutions
- Work with A Climate to Thrive and others to develop a set of meaningful offsets should the Town be unable to attain a goal of zero emissions by 2030

Goals

- Develop programs to encourage local carbon sequestration and natural solutions, including through sustainable agricultural practices and the preservation of forests, tidal salt marshes, and seagrass meadows.
- Explore integrating local carbon sequestration and natural solutions into any offsets needed if the Town is unable to attain a goal of zero emissions by 2030.
- Develop a set of meaningful offsets should the Town need to use offsets to reach a net negative goal

ACTION S.1

Map local potential for carbon sequestration and natural carbon solutions. Support realization of solutions through pilot programs.

DESCRIPTION: The Town will work with resources such as the University of Maine to map local potential for carbon sequestration and natural carbon solutions. The Town will then support pilot programs that realize these solutions, such as supporting small-scale regenerative agriculture projects at locations like Beech Hill Farm.

FINANCIAL YEAR: 2024-2030

RESPONSIBLE PARTIES: Climate Action Taskforce, Climate Action Coordinator

BUDGET IMPACT: This action is explorative and can initially be completed through staff time, partnership with local research entities, and committee or student research.

SCOPE: Town-wide

EXAMPLES:

- [San Luis Obispo, CA](#) is developing a carbon farm to sequester emissions and is exploring applying compost to the city's greenbelt to increase local carbon sequestration.
- [Flagstaff, AZ](#)
 - The Flagstaff carbon neutrality plan includes a strategy to develop local and regional carbon removal initiatives.
 - Flagstaff is exploring the feasibility of using small-scale regenerative agriculture as carbon sinks and is interested in partnering with the local university to explore regional initiatives.

ACTION S.2

Develop a set of meaningful offsets should the Town be unable to reach a goal of zero emissions by 2030. Integrate local sequestration and natural carbon solution initiatives into these offsets if possible.

DESCRIPTION: After completing the greenhouse gas inventory, the town will set a goal for real emissions reduction by 2030. Ideally, the town will set a goal of zero emission, but should that goal seem unattainable, the Town will simultaneously explore and develop a transparent set of meaningful offsets, working with A Climate to Thrive and other resources.

Components of meaningful offsets include, but are not limited to:

- **Additionality** - meaningful offsets clearly and demonstrably add to the reduction of global atmospheric carbon
- **Local** - offsets are as locally-based as possible and build equity for the community in which they are based
- **Community impact** - offsets positively contribute to the communities in which they are located

FINANCIAL YEAR: 2023-2024

RESPONSIBLE PARTIES: Climate Action Taskforce, Climate Action Coordinator

BUDGET IMPACT: This action is explorative and can initially be completed through staff time, partnership with local research entities, and committee or student research. Costs of implementing offsets will be assessed through this action. Once projects/offsets are identified, implementation costs will be requested in annual budgets.

SCOPE: Town-wide

RESOURCES:

- [Oxford Carbon Offsetting Principles](#)

EXAMPLES:

- [San Luis Obispo, CA](#) is developing a carbon farm to sequester emissions and is exploring applying compost to the city's greenbelt to increase local carbon sequestration.
- [Flagstaff, AZ](#)
 - The Flagstaff carbon neutrality plan includes a strategy to develop local and regional carbon removal initiatives.
 - Flagstaff is exploring the feasibility of using small-scale regenerative agriculture as carbon sinks and is interested in partnering with the local university to explore regional initiatives.

6

ADAPTATION & RESILIENCE

Maine is already experiencing the effects of climate change and will see increasing impacts over the next century.

Proactively planning for anticipated changes can save the town future losses and allow for smoother adaptation to unprecedented conditions and disruptions.

CLIMATE CHANGE IMPACTS ALREADY OCCURING IN MAINE INCLUDE⁵¹



Sea levels in Maine have risen two times faster over the last century than during the past 5,000 years



TEMPERATURE RISE

Annual average temperatures have risen by 3.2 F since 1895



PRECIPITATION CHANGES

Annual precipitation has increased six inches since 1895



STORM CHANGES

Increased storm frequency and intensity



WINTER ICE

Decreased thickness in winter ice



ANTICIPATED CLIMATE CHANGE IMPACTS IN MAINE⁵²



WARMING

Maine may warm an additional 2 to 4°F by 2050 and up to 10°F by 2100⁵³



EXTREME HEAT

More extreme heat, with 2 to 4 times as many extreme heat days by the 2050s.



STORMS

Increased frequency and intensity of extreme precipitation events, coastal storms, and Nor'easters.



BIODIVERSITY LOSS

Extinction of species.



SEA LEVEL RISE

Likely sea level rise of 3-5 ft by 2100, depending on global emissions, with higher rise possible.

- Increased flooding; 1ft increase in sea level rise leads to a 15-fold increase in the frequency of "nuisance" flooding.
- Greater risk of coastal inundation and groundwater contamination from sea level rise.



OCEAN ACIDIFICATION

Ocean acidification impacting New England Shellfisheries.

PATH TO RESILIENCE

Adaptation to climate change will take place through:

- Assessing changing risks from climate change
- Taking actions to adapt

OBJECTIVES

- Understand the Town's vulnerabilities to climate change
- Identify actions to build resilience to anticipated and unforeseen changes
- New infrastructure is resilient to climate change impacts



ACTION A.1

Assess town-wide climate change vulnerabilities and identify actions to improve resilience, for integration into the Town's Comprehensive Plan.

DESCRIPTION: Assess the climate change risks to the Town and evaluate vulnerabilities. Assessment should consider risks to infrastructure, such as roads, bridges, water treatment, facilities, etc, and risks to public health and safety (particularly for vulnerable populations). Determine actions to adapt to and increase resilience to anticipated changes. Assessment should be considered in the development of the Town Comprehensive Plan and could be integrated into this planning process.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Climate Action Taskforce

BUDGET IMPACT: There are various avenues for this analysis, each associated with different costs. Several options are outlined below:

- Include climate vulnerability assessment in the development of the comprehensive plan. Assessment to be conducted by the Comprehensive Plan Committee and Climate Adaptation Subcommittee. Research could be supported through a student project from a local college or university.
- Higher cost option: partner with other island towns to hire a consultant for an island-wide climate vulnerability assessment. Consultant costs are variable and would depend on responses to an RFP.

POTENTIAL FUNDING:

- [Coastal Community Grants](#) in Fiscal Year 2022, grants of \$20,000-50,000 awarded to Towns in Maine for projects related to climate adaptation and resilience.

SCOPE: Town wide

RESOURCES:

- [Planning for Climate Variability](#), a web page of resources, including the municipal adaptation guidance series which provides guidance on preparing for climate change impacts in each area of Town operation (transportation, stream crossings, waste water, drinking water, stormwater, comprehensive planning, shoreline zoning, site plan review, and subdivision ordinances). The page includes many other resources for planning for climate change and was developed by the Maine Department of Agriculture, Conservation, and Forestry.

- [Maine Flood Resilience Checklist](#), this is a self-assessment tool to help Maine communities evaluate their local flood risk and vulnerability, and determine measures to build resilience to flooding.
- [Municipal Climate Adaptation Guidance Series](#), provides communities with step by step guidance on adapting to climate impacts.
- [Coastal Resilience Tool](#), Nature Conservancy - this tool provides an estimation of where sea level rise may affect roads in coastal communities.
- [Resources for Resilience and Adaptation in New England](#) - resources from the EPA to assist communities in preparing for climate change impacts.

EXAMPLES:

- Kittery, ME
 - Has a [climate adaptation committee](#) to identify options to make the town more resilient to climate change and sea level rise.
 - [Kittery Coastal Hazards Planning Best Practices Report](#) - this report, prepared by a University of New Hampshire fellow, assesses the town's vulnerability to climate hazards and includes recommended actions to increase resilience.
-

ACTION A.2

Integrate future climate risk into consideration of all new capital improvement projects and the development of the annual budget.

DESCRIPTION: This action is intended to avoid constructing new infrastructure that will be damaged by future climate impacts, endangering public safety or causing costly repairs, replacements, or re-locations. Consider anticipated climate change impacts (such as sea level rise and flooding) likely to impact proposed projects over their lifetimes. Assess vulnerability to climate change and modify project proposals to reduce risk from future climate impacts. This could be accomplished by developing a "climate resilience checklist" to ensure that all major town projects consider applicable climate risks. This checklist could also be provided as best practice guidance to private development permit applicants.

FINANCIAL YEAR: 2022-2023 onwards

RESPONSIBLE PARTIES: Public Works, Finance Director, Climate Action Coordinator

BUDGET IMPACT: No direct cost, but cost savings from avoiding future damage to infrastructure.

SCOPE: Town wide

RESOURCES:

- [Integrating Resilience into Local Capital Improvement Programs, Best Practices for Maryland's Eastern Shore Communities](#)
 - Provides best practice recommendations for integrating resilience into capital improvement planning.
- [Maine Flood Resilience Checklist](#), this is a self-assessment tool to help Maine communities evaluate their local flood risk and vulnerability, and determine measures to build resilience to flooding.
- [Municipal Climate Adaptation Guidance Series](#)
- [Municipal Climate Adaptation Guidance Series: Site Plan Review Ordinances](#)

EXAMPLES

- Southern California Association of Governments
 - Has developed [project checklists](#) for climate change adaptation. This checklist is intended to help southern California communities consider climate change impacts in project planning and development. The checklist provides criteria for considering sea level rise, drought, flooding, etc. in project review.
- [Santa Cruz, CA](#)
 - Considered updating the city council agenda template to include "how the project or program supports or addresses CAP Update goals. For example, for CIP projects that are located in climate hazard zones, staff will describe how they will be resilient to the projected risks for the life of the structure."
 - The City's climate adaptation plan includes an action to "evaluate capital project, capital improvements program and infrastructure, and land use decisions in light of best available climate science."

7 GOVERNANCE



Governance strategies aim to mainstream climate action into the town's existing plans and processes.

Integrating climate action into existing town processes streamlines implementation, making more efficient use of budget, staff, and committee capacity. Applying a "climate lens" to decision-making and planning allows for a cost-effective transition and avoids decisions and projects that ultimately conflict with the town's climate action goals.

ACTION G.1

Incorporate the cost of carbon emissions in financial decision-making and planning regarding new Town purchases and projects.

DESCRIPTION: Include the cost of carbon in the cost-benefit analysis for new purchases and projects. Considering the cost of carbon emissions will help the Town account for greenhouse gas emissions through its budgeting and procurement process. This will be a "carbon shadow price" because it will incur no cost to the town, instead it is a mechanism to ensure that carbon dioxide emissions are considered in decision-making. It is recommended that the town update the shadow carbon price as best practices emerge to better reflect the true cost of carbon.

The first step will be determining an appropriate cost of carbon to use to evaluate financial decisions. This "carbon shadow price" will be re-evaluated annually.

FINANCIAL YEAR: 2022-2023 determine an appropriate "carbon shadow price" to be re-evaluated annually. 2023-2024 begin integrating the cost of carbon into financial decision-making.

RESPONSIBLE PARTIES: Town Manager, Climate Action Taskforce, Finance Director, Climate Action Coordinator

BUDGET IMPACT: No direct cost.

SCOPE: Town Operations

RESOURCES:

- [Portland, OR Carbon Shadow Price Policy](#)

EXAMPLES:

- [Portland and South Portland, ME](#) - are currently evaluating an appropriate level for a shadow carbon price to guide financial decisions.
- [Portland, OR](#) - has a carbon shadow price policy. Their carbon shadow price starts at \$117 per ton CO₂e in 2020 and increases every 5 years.

ACTION G.2

Integrate emissions reduction and resilience goals into the town's budgeting and capital improvement planning process.

DESCRIPTION: Ensure that greenhouse gas emissions and resilience are consistently considered in the budgeting and capital improvement planning process. Prioritize projects and investments that align with the city's climate action goals. Ensure that the budgeting and CIP process are consistently addressing this plan through short-term and long-term action items. Work closely with department heads and conduct education to the community and selectmen regarding how climate change goals are integrated into the budgeting process.

Approaches from other communities include:

- Rating all capital improvement proposals as having a positive, negative, or neutral climate impact
- Including a statement for how each proposed project addresses climate goals
- Evaluating proposals with a "climate" checklist to ensure measures to reduce greenhouse gas emissions and improve resilience are included

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Town Manager, Finance Director, Climate Action Taskforce, Climate Action Coordinator

BUDGET IMPACT: No direct cost.

RESOURCES:

- [Integrating Resilience into Local Capital Improvement Programs, Best Practices for Maryland's Eastern Shore Communities](#)

EXAMPLES

- The [Montgomery County Climate Change Budgeting Process Work Group](#) recommended that in the capital improvement checklist, proposals are rated as having either positive, negative, or neutral climate impacts. The group also proposed developing an agreed upon decision-making framework for considering climate impacts in County budgets, and collecting data on the climate impact of budget items to inform decision makers.
- [New Westminster developed a climate action budgeting framework](#) to:
 1. Prioritize climate emergency actions in work plans
 2. Prioritize climate emergency initiatives in Five-Year Financial Plan
 3. Embed carbon pricing into decision-making
 4. Strive for affordability, equity and livability
 5. Implement Climate Action Levy on Electrical Utility bills
- The Town of Bar Harbor Climate Action Plan includes a policy to "Require that all major municipal purchasing proposals, including capital improvement projects, include life cycle costs and estimated greenhouse gas emissions."

- The City of Seattle has a [Capital Green Toolkit](#) that outlines environmentally responsible strategies for city capital improvement projects.
- The City of Boston requires large development and redevelopment proposals to respond to a [climate resiliency checklist](#) and include measures to reduce greenhouse gas emissions and prepare for climate impacts in project planning, design, and construction.
- The [City of Santa Cruz](#) has considered updating their template City Council agenda report template to require "a statement on how the project or program supports or addresses CAP Update goals. For example, for CIP projects that are located in climate hazard zones, staff will describe how they will be resilient to the projected risks for the life of the structure."
- [Integrating Resilience into Local Capital Improvement Programs, Best Practices for Maryland's Eastern Shore Communities](#) recommends including climate resilience as scoring criteria for capital improvement proposals.

ACTION G.3

Integrate community resilience and greenhouse gas emission reduction as pillars of future comprehensive plan updates.

DESCRIPTION: Ensure that the comprehensive plan is consistent with and supportive of the Town's climate action and resilience goals. As examples, consider future electric vehicle charging needs, potential solar development, and bike lanes and active transportation in villages. Assess how future climate risks, especially sea level rise, impact zoning and land use. Integrate the findings of the town's climate vulnerability assessment into the comprehensive plan update. Consider including a land conservation goal into the comprehensive plan update to protect land that provides carbon sequestration, such as forests.

FINANCIAL YEAR: 2022-2023

RESPONSIBLE PARTIES: Comprehensive Plan Task Force, Planning Board, Climate Action Taskforce, Climate Action Coordinator

BUDGET IMPACT: No direct cost.

RESOURCES:

- [Informal Guidance for Integrating Climate Change into a Comprehensive Plan \(DOC\)](#), informal guidance from the Maine Department of Agriculture, Conservation & Forestry (DACF), on streamlining the integration of climate change into comprehensive planning.
- [Municipal Climate Adaptation Guidance Series: Comprehensive Plan](#), this document provides guidance on preparing for climate change impacts through Maine comprehensive plans. The guide includes sample policy language and recommended analysis.
- [Planning for Climate Variability](#), a web page of resources, including the municipal adaptation guidance series which provides guidance on preparing for climate change impacts in each area of Town operation (transportation, stream crossings, waste water, drinking water, stormwater, comprehensive planning, shoreline zoning, site plan review, and subdivision ordinances). The page includes many other resources for planning for climate change and was developed by the Maine Department of Agriculture, Conservation, and Forestry.

EXAMPLES

- [Bar Harbor](#) "Include climate standards for buildings, energy use and transportation in the update of the BH Comprehensive Plan and LUO."
- [The Town of Kennebunk, ME](#) has included climate change action and resilience as a core element of their draft comprehensive plan update.
- [Saco, ME](#) is integrating sustainability and resilience into its comprehensive planning update.
- [Biddeford, ME](#) is including climate change in its current comprehensive plan update.

8

COMMUNITY ENGAGEMENT



Community engagement will play a central role in successful implementation of this plan.

All community members should be aware of the town's climate action initiatives and understand how they can contribute to town-wide goals. Many of the actions in this plan, such as improving home efficiency and local solar generation, could save community members money. However, they will require transitioning to new technologies, such as heat pumps, electric vehicles, etc, that are less familiar to residents. Encouraging this transition community-wide, will require a strong educational effort to increase comfort with and acceptance of new technologies.

Special consideration should be given for reaching to low to moderate income households, the elderly, and vulnerable populations. Elderly populations may be less tuned in to online channels and require other forms of outreach such as mailed materials, door-to-door outreach, etc. Ensuring that solutions are accessible for low to moderate income households, and promoting available state and federal incentives, will also be key. Engaging with those who will be most vulnerable to anticipated changes will also be vital in developing strategies to prepare for the impacts of climate change.

To continue to engage the community the town will:

- Hold educational events and listening sessions around the Climate Action Plan development, updates, and implementation
- Continue to share information about key topics including community greenhouse gas emissions and local climate solutions
- Share key successes with the community
- Update the community on implementation progress through the Annual Town Report
- Pursue funding and partnership opportunities to support local community engagement

MONITORING PROGRESS



A LIVING DOCUMENT

Adaptability and keeping up with constantly evolving technology, data availability and best practices, will be essential in significantly reducing emissions in less than 8 years.

This plan should be seen as a living document to be updated as new information becomes available. Being adaptable and keeping up with constantly evolving technology, data availability and best practices, will be essential in significantly reducing emissions in less than 8 years.

The Town of Mount Desert will include an annual progress update on climate action in the Annual Town Report. The progress update should include:

- a list of completed and initiated actions
- explanation if any actions are behind schedule
- Yearly performance on key metrics

The annual progress report will be an opportunity to assess progress towards the 2030 goal and identify what is working and where a change of approach is necessary. Annual progress updates are vital for keeping progress on track and ensuring transparency. Progress updates can also be encouraging for community members and sustain local self-efficacy and enthusiasm for climate action.

One staff person can be identified to lead the compilation of the annual progress, but the implementer of each action will be responsible for reporting their progress back to the lead.

Greenhouse gas inventory updates are another mechanism for monitoring progress over time. Inventory updates are an important check to ensure that actions are reducing emissions according to schedule. They are an important opportunity to right the course if progress is stalled or more aggressive action is needed. A timeline for inventory updates will be established after the first inventory is conducted in 2022-23. It's recommended that the first inventory update occurs no later than 2026 to assess interim progress towards the 2030 goal. It will be especially important that a greenhouse gas inventory is conducted in 2030 to ensure that all remaining, unavoidable emissions, are accounted for through offsets.

Metrics to evaluate the success of this plan include:

Greenhouse Gas Emissions

- Current greenhouse gas emissions based on greenhouse gas inventory updates

Energy

- Percent of electricity use for town operations supplied through solar or other renewable energy (or number of new arrays)
- Number of new town buildings constructed with solar
- Energy audits and feasibility studies performed
- Number of homes with solar town-wide

Transportation

- Number of electric vehicle registrations town-wide
- Number of new town vehicle purchases that are electric
- Percentage of town vehicles that are all electric

Buildings

- Number of net zero town buildings constructed
- KWh of electricity use reduced through energy efficiency and weatherization projects
- Number of heat pumps or VFR systems installed in Town buildings
- Community participation in bulk-buy heat pump programs
- Number of community members and businesses participating in PACE or C-PACE
- Number of heat pump rebates from Efficiency Maine granted town-wide

Water and Wastewater

- Annual volume of landfilled trash
- Participation in composting programs

Carbon Sequestration

- Estimated metric tons of carbon dioxide equivalent (MTCO₂e) sequestered.

Adaptation & Resilience

- Completion of a town-wide climate vulnerability assessment and integration of vulnerabilities into comprehensive plan update

APPENDIX

APPENDIX A

RESOLUTION ENDORSING THE DECLARATION OF A CLIMATE EMERGENCY AND EMERGENCY MOBILIZATION EFFORT TO RESTORE A SAFE CLIMATE

PREFACE: This document was drafted and reviewed by the Climate Emergency Action Coalition in collaboration with the College of the Atlantic's sustainability group [Earth], and the Town of Mount Desert Sustainability Committee.

WHEREAS, in October 2018, the United Nations released a special report which projected that limiting planetary warming to 1.5°C target within this century will require an unprecedented transformation of every sector of the global economy by 2030;

WHEREAS, the Gulf of Maine is warming faster than other oceans around the world as a result of global temperature rise. posing a serious risk to the fishing industry in Downeast Maine, as well as the state-wide economy. Additionally, climate change caused sea-level rise is eroding wetlands and beaches, increasing damage and vulnerability of the Town of Mount Desert and other coastal towns during severe storms;

WHEREAS, climate change has led to marked shifts in seasonal temperature changes. which threaten the natural ecosystems of Mount Desert Island, economic activity such as tourism and seasonal recreation, and public health, such as an increase in tick-borne illnesses like Lyme Disease

WHEREAS, over 1480 local, county, and national governments worldwide, including the town of Bar Harbor, Portland, South Portland, and Brunswick have passed a declaration of Climate Emergency and committed to taking emergency action to restore a safe and stable climate

WHEREAS, restoring a safe and stable climate will require swift and immediate action on the part of communities across the nation and worldwide, and the Town of Mount Desert can initiate strong climate policies, procedures and infrastructure changes as part of an emergency climate response by towns throughout Maine;

NOW BE IT THEREFORE RESOLVED, the Town of Mount Desert declares that the climate emergency represents a clear and present danger to all life in the Town of Mount Desert and on Mount Desert Island, and is threatening the cultural, social and economic well-being of our community;

BE IT FURTHER RESOLVED, the Town of Mount Desert commits to an effort to reverse global warming and the current ecological crisis, which, with appropriate financial and regulatory assistance from State and Federal authorities, will:

- (a) initiate additional greenhouse gas reductions and reduce as much as possible town-wide greenhouse gas emissions no later than December 31, 2030;
- (b) prioritize zero-carbon solutions for local electricity, heating, and transportation systems towards the goal of a zero-emission, energy-independent Mount Desert Island as quickly as possible and no later than December 31, 2030; and,
- (c) ensure a fair and reasonable transition for all residents;

BE IT FURTHER RESOLVED, the Town of Mount Desert Board of Selectmen directs the Sustainability Committee to work with key stakeholders, including local youth, to collaboratively plan the town's climate emergency response, including emergency climate mitigation and education programs, and to develop proposals to be submitted to the Board of Selectmen for implementation and integration into the Town of Mount Desert Comprehensive Plan;

;

,

;

BE IT FURTHER RESOLVED, that the Town of Mount Desert Board of Selectmen charges the Sustainability Committee with coordinating, in collaboration with key stakeholders, proposals for Town efforts towards the expedient reduction of greenhouse gas emissions across the community, as well as developing funding proposals to support such initiatives;

BE IT FURTHER RESOLVED, the Town of Mount Desert, in collaboration with key stakeholders, commits to engaging our residents and local stakeholders in educational activities and public deliberations on the climate emergency, ensuring that local voices will participate in all climate initiatives;

BE IT FURTHER RESOLVED, the members of the Town of Mount Desert Board of Selectmen request the Town Manager to send this resolution to the Town's state and federal legislative delegations, to the Governor of Maine, and to the President of the United States.

APPENDIX B

FINANCIAL MODELING FOR SOLAR

When the Town considers the feasibility of a solar project, it's essential to compare the various financing pathways available.

Developers will often offer power purchase agreements (PPA). Under a power purchase agreement (PPA), a third-party solar developer purchases, installs, owns, operates, and maintains the PV system for the life of the contract, typically 20-25 years. The developer can choose to offer a short-term buyout option at "fair market value." This typically takes place between years five and seven, after the developer fully realizes the tax incentives.

It is critical to compare the long-term impact of the PPA against the benefits of a direct cash purchase of the solar system through a low-interest municipal bond. As solar has become more affordable through the years, incentives have increased, and electricity prices have risen, systems typically have a relatively short payback period. This market shift means the "fair market value" of a system between years five and seven is much higher than previous years. The delayed purchase of the system often no longer serves the Town economically.

Creating an illustrative economic model comparing the long-term benefits of each financing option can help when making choices about a solar investment. The key is to look at each choice's annual and cumulative impact.

No Solar:

1. Calculate the estimated annual electricity generated by the array.
2. Then calculate how much the Town would spend on that electricity without solar. Remember to use a 2.5% annual electricity price escalator.

The annual cost of electricity without solar:

- Year One=(Total potential kWhs produced annually)* (Current Versant Power rate per kWh)
- Year Two= (Year one estimated production*(.995))*(Year One Versant Power rate per kwh*1.025)
- Year Three=(Year two estimated production*(.995))*(Year Two Versant Power rate per kWh*(1.025))
- And so on over the projected lifetime of the project. Add the annual cost of electricity to find the cumulative cost of electricity over the lifetime of the solar project

APPENDIX B

FINANCIAL MODELING FOR SOLAR CONTINUED...

Direct Ownership:

1. Use the annual production to calculate how much the Town would be saving annually on electricity offset over the estimated lifetime of the project (if the system is not onsite, then remember to use the MPUC net energy tariff rate for accounts using demand charges).
 - $\text{Year One} = (\text{Total potential kWhs produced annually}) * (\text{MPUC Tariff rate per kWh})$
 - $\text{Year Two} = (\text{Year one estimated production} * (.995)) * (\text{Year One MPUC Tariff rate per kwh} * 1.025)$
 - $\text{Year Three} = (\text{Year two estimated production} * (.995)) * (\text{Year Two MPUC Tariff rate per kWh} * 1.025)$
 - And so on over the projected lifetime of the project. Add the annual cost of electricity to find the cumulative savings on electricity over the lifetime of the solar project.
2. Calculate the bond amortization schedule using the projected interest rate.
3. Subtract the annual bond payments from the annual savings over the project's lifetime.
4. If the array has projected operations and maintenance costs, subtract them from the annual electrical savings. If the Town chooses to sell the RECs, incorporating their value into the model is also essential.
 - $\text{Year One Net Savings} = (\text{Year One Electrical Savings} + \text{REC Sales}) - (\text{Year One Bond Payment} + \text{Year One Maintenance Costs})$
 -
5. Add the total savings from each year over the project's lifetime. The cumulative figure is the total net savings generated through a direct cash purchase.

APPENDIX B

FINANCIAL MODELING FOR SOLAR CONTINUED...

Power Purchase Agreement with Short Term Buyout Option:

- Calculate how much the Town will spend on the electricity offset with the discount from the power purchase agreement annually. The formula below demonstrates a 15% discount.
 - Year One= $((\text{Potential production of electricity}) \times (\text{Current Versant Power Rate per kWh})) \times (.85)$
 - Year Two= $((\text{Year one estimated production of electricity} \times (.995)) \times (\text{Year One Versant Power rate per kwh} \times 1.025)) \times (.85)$
 - Year Three= $(\text{Year two estimated production of electricity} \times (.995)) \times (\text{Year Two Versant Power rate per kWh} \times 1.025)) \times (.85)$
- During the buyout year, incorporate the bond amortization schedule for the projected fair market value (typically 70% of the original EPC costs) and shift from annual spending on electricity using a discounted rate to annual savings on electricity offset by the array.
 - Year Seven= $((\text{Year six estimated production of electricity} \times (.995)) \times (\text{Year Six Versant Power rate per kWh} \times 1.025) + (\text{REC Sales})) - (\text{Bond Payment} + \text{Maintenance Costs})$
 - Year Eight= $((\text{Year seven estimated production of electricity} \times (.995)) \times (\text{Year seven Versant Power rate per kWh} \times 1.025) + (\text{REC Sales})) - (\text{Bond Payment} + \text{Maintenance Costs})$

Power Purchase Agreement with No Buyout:

Calculate how much the Town spends on electricity over the project's lifetime using the discounted rate and the 2.5% annual electricity price escalator.

- Year One= $((\text{Potential production of electricity}) \times (\text{Current Versant Power Rate per kWh})) \times (.85)$
- Year Two= $((\text{Year one estimated production of electricity} \times (.995)) \times (\text{Year one Versant Power rate per kwh} \times 1.025)) \times (.85)$
- Year Three= $(\text{Year two estimated production of electricity} \times (.995)) \times (\text{Year two Versant Power rate per kWh} \times 1.025)) \times (.85)$

And so on over the projected lifetime of the project. Add the annual cost of electricity, and you have the cumulative savings on electricity over the lifetime of the solar project.

Compare the cumulative savings of each financing option over the projected lifetime of the solar array. Remember there are variations of each financing option and the examples given above are rough calculations. Electricity prices, tariff rates, and REC prices are all variable.

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