

# **BIDDEFORD COMPLETE STRATEGY MATRIX**

BIDDEFORD CLIMATE ACTION PLAN

OCTOBER 2023



# BUILDINGS AND ENERGY

- ★ = Priority action – Identified through public engagement
- = Associated goal/action in Comprehensive Plan
- = Potential regional action

Timeframe: Short = 1-2 years, Medium = 3-4 years, Long = 5+ years  
 Cost: \$ = Low, \$\$ = Moderate, \$\$\$ = High

Action Description	Equity Considerations	Co-Benefits										Cost	Timeframe	Metrics		
		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation				Community (re)development	
<b>Building Electrification</b>																
<b>B1. Renewable Energy</b> <i>Encourage and incentivize small scale renewable energy installation, such as rooftop solar panels.</i>																
★ To encourage the development of rooftop and small scale solar in the community, municipalities can work to reduce the barriers to solar energy (such as prohibitive or unclear ordinances) and to accelerate the development of local solar energy markets (by streamlining the permitting process).	Efforts to promote roof-top solar tend to be targeted toward wealthier homeowners. Communities that prioritize distributed solar generation should consider how their efforts could cater to lower income homeowners and renters by connecting low-income homeowners to programs with reduced upfront costs and by promoting solar development on multi-unit dwellings.	●	●			●						●		\$	Medium	Permits issued for rooftop solar installations at residential buildings; Renewable Energy Ratio (ratio of energy provided from renewable sources as a percentage of total energy used in a facility)
<b>B2. Building Electrification</b> <i>Shift existing buildings &amp; new construction to all-electric heating and appliances.</i>																
● Create a program to shift single family homes and larger buildings from fossil fuel heating to all-electric heating and cooling via air-source and ground-source heat pumps, aligning with the LD166 goal of installing 100,000 new heat pumps in the state within 5 years and in an effort to get ahead of conversions to natural gas.	A local or regional electrification incentive program could prioritize low income homeowners, multi-unit rental properties, and homes using fuel oil and provide significant technical assistance to program participants to reduce barriers to heat pump adoption.	●	●			●			●			●		\$\$	Medium	Percent of residential buildings using heating oil, gas, or coal  Target: Electrify 15% of existing housing units using heating oil and propane per year.

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## Building Energy Efficiency

**B3. Energy Efficiency** Increase efficiency of large buildings and rental properties through local ordinances and standards: standards to increase efficiency over time, programs to track and disclose energy consumption, and efficiency standards for rentals.

★	<p>Efficiency standards for rentals ensure that landlords upgrade the efficiency of their residential properties as a prerequisite for renting a property. Rental buildings consume, on average, 20 percent more energy per square foot than owner-occupied buildings. Much of this disparity stems from the so-called “split incentive problem.” Landlords have little incentive to improve home efficiency when they do not pay energy bills, and tenants have little incentive to make improvements to a home when they may not be present to reap the full benefits of that investment. In addition, these poorly- performing homes are disproportionately occupied by low-income residents, people of color, and other underserved communities—the constituents who can least afford to pay exorbitant energy bills.</p>	<p>Many policies to address home energy efficiency have helped only a small fraction of homes nationwide and often disproportionately benefit white people and wealthy people. However, rental efficiency standards can help improve quality of life and affordability for renters. By reducing home energy costs, particularly for the worst-performing rental units, these standards can mitigate unfair burdens for a city’s most vulnerable residents.</p>	●				●						●		●	●	●	\$	Medium	<p>Target: Perform energy efficiency retrofits to 15% of existing commercial square footage per year.</p>
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**B4. Maine 'Stretch Code' Adoption** Adopt the most up-to-date building codes (also known as "stretch codes") to help new buildings to be more efficient.

●	<p>Adopting the Maine “Stretch” Code is one way municipalities can require new buildings to be more energy efficient. A stretch energy code is an alternative to the base energy code (in Maine, MUBEC) to achieve greater energy efficiency and cost-effectiveness in new buildings. The state of Maine has adopted IECC 2021 as the official Stretch code for Maine communities. Stretch codes only help new buildings be more efficient, not already built ones.</p>	<p>While there are upfront costs associated with higher energy efficiency buildings, these costs are compensated by lower energy use and energy expenditures. More energy efficient homes are also healthier homes, with better air quality and moisture control.</p>	●										●		●	●	\$	Short	<p>IECC Code in Use</p>
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**Building Energy Efficiency (continued)**

**B5. Building Weatherization** *Create a program to help single family homes increase energy efficiency through weatherization efforts, such as improved insulation, sealing leaks, or improved ventilation.*

<p>● The Inflation Reduction Act of 2022 provides significant new federal tax credits and deductions to help Americans to make their homes and buildings more energy-efficient to help reduce energy costs while reducing demand as we transition to cleaner energy sources. New federal income tax credits are available through 2032 providing up to \$3,200 annually to lower the cost of energy efficient home upgrades by up to 30 percent. A local or regional weatherization program could provide awareness, education, and technical assistance to homeowners about these and Efficiency Maine incentives.</p>	<p>Because many weatherization incentives are targeted towards homeowners, weatherization programs have the possibility of leaving out renters or non-tax payers from the program benefits. Weatherization programs should be designed to support these community members as well (either through non tax-based funding or programs targeting multi-unit dwellings). They should also be designed to work with York County Community Action's low income weatherization program.</p>	●	●							●		●	\$	Medium	<p>Number of efficiency audits conducted;            Number of Biddeford applicants for YCCAC Weatherization Program;             Target: Perform energy efficiency retrofits to 15% of existing housing stock using heating oil, propane, and electricity for heating per year.</p>
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**B6. Municipal Energy Efficiency** *Increase municipal energy efficiency through energy audits, renewable energy installation, and energy efficiency measures for all city owned properties and buildings.*

<p>● Maine municipalities are often faced with budget pressures and high operating costs to maintain older municipal buildings that house town offices, public works garages, fire stations, and wastewater treatment facilities. Energy efficiency is a great way for municipalities to save energy and money, and improve comfort, safety, and maintenance costs. There are many sources of funding for municipal energy efficiency improvements including Efficiency Maine, the Community Resilience Partnership (CRP) grants, and new federal funding.</p>	<p>Municipal energy efficiency measures may support equity by ensuring that energy efficiency improvements target buildings that provide public services to vulnerable community members (i.e. community centers, schools, senior centers, warming/cooling centers).</p>	●											\$\$	Medium	<p>Number of energy audits conducted;            Number of rooftop solar installations;            Annual expenditures for energy</p>
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<b>Building Resilience</b>															
<b>B7. Risk Management</b> Reduce climate risks to buildings through improved information, education, and action, including: requiring hazard disclosures for property transactions, increasing awareness of adaptation options, and encouraging actions to manage flood risks.															
Encourage real estate professionals, developers, and prospective property buyers to disclose and/or be made aware of local coastal hazards pertaining to property during the property transaction process. Municipal staff can be encouraged to share available local climate hazard information with property owners and/or prospective buyers when they come into city hall to discuss a property. Tenants should also be made aware of coastal hazards when renting property.	Risk reduction measures can prevent upfront costs for low income residents.					●							\$	Short	Number of property owners in hazard areas contacted; number of prospective buyers contacted.
<b>B8. Limit Reconstruction &amp; Encourage Relocation</b> Increase municipal energy efficiency through energy audits, renewable energy installation, and energy efficiency measures for all city owned properties and buildings.															
● Placing regulatory limits on rebuilding structures damaged by natural hazards can mitigate future risk, damage, and expenses. Limits can follow a tiered system that allows for limited rebuilding (e.g., permitted only a certain number of times), completely prohibit rebuilding, or allow reconstruction with conditions, such as advanced resilient design standards. (Example: limit replacement or reconstruction of a structure that is 'substantially damaged' by storm impacts to one time for any single lot of record).	Restrictions on re-building must account for equity considerations. Will the cost of rebuilding with resilience measures pose a burden on disadvantaged community members? Will support be provided to ensure that community members can relocate or rebuild with resilience despite the associated costs?	●						●		●			\$	Long	Number of permits issued for reconstruction in hazard areas; Number of permits issued for relocation

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### Building Resilience (continued)

#### B9. Resilient Design Standards *Encourage or require new and redeveloped buildings to include sustainable and resilient design measures, especially in flood-prone areas.*

<p>● Encourage, incentivize, or require new and redeveloped buildings to incorporate sustainable and resilient design measures for buildings. Examples of measures include elevating structures above projected flood levels that account for future sea level rise; underground or covered parking; minimizing impervious surfaces; amending maximum building height standards to accommodate elevation of structures (i.e. freeboard) above projected flood levels; requiring consideration of sea level rise projections and impacts in development applications and review of those applications; and adopting resilient design guidelines for coastal and marine businesses.</p>	<p>Do the design standards represent a cost burden on vulnerable or disadvantaged community members? What supports could be put in place to ensure that disadvantaged community members are not harmed by this action?</p>	●											\$	Short	—
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#### B10. Critical Facility Resilience *Increase the resilience of critical facilities such as our wastewater treatment facility through risk reduction or relocation.*

<p>● Ensuring critical facilities are operational and accessible at all times is vital for protecting the health, safety, and wellbeing of the community. This strategy is likely appropriate for the Biddeford Wastewater Treatment Facility and Biddeford Pool Fire Station. While the fire station is not expected to be directly impacted by flooding from sea level rise, access to and from the station is expected to be negatively impacted by road flooding from 1.6 ft of sea level rise combined with storm surge. Investigating flood protection measures and/or relocation of the fire station could enhance the flood resilience of the facility and its operations.</p>	—													\$\$\$	Long	Create Plan by end of 2024.
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<b>Energy Resilience</b>														
<b>B11. Maintain Power at Critical Facilities</b> <i>Develop and implement a plan for maintaining power at critical facilities during power outages.</i>														
<p>● Municipalities can develop and implement a power resilience plan by 1) partnering with the local utility, 2) identifying critical municipal and community facilities (i.e. hospitals and healthcare facilities, police, fire stations, community centers, water and wastewater facilities, and airports), 3) assessing power loads, 4) identifying and implementing energy efficiency measures, and 5) identifying and implementing backup power solutions (such as solar + storage, batteries, microgrids, etc).</p>	<p>Efforts to maintain power at municipal facilities should target those facilities that provide public services to vulnerable community members, such as police stations, healthcare facilities, emergency services and community center.</p>	●			●					●		\$\$\$	Long	Assess needs for critical facilities by 2027.
<b>B12. Improve Grid Resilience</b> <i>Work with power companies and state agencies to advocate for efforts to improve the resilience of the electrical grid.</i>														
<p>● Extended power outages from extreme weather events pose a substantial risk to community members and businesses. The municipality or the larger region could work with CMP to identify frequency, duration, and location of power outages, their causes, and work together to find solutions for increasing grid resilience.</p>	<p>Power outages have disproportionate negative effects on vulnerable populations, especially people with disabilities, older people, and people with serious health conditions who rely on equipment powered by electricity, such as motorized wheelchairs, elevators, refrigerated medications, oxygen generators, and more.</p>		●		●					●		\$-\$	Long	Identify frequency, duration, location, and causes of power outages in Southern Maine by 2026. Work with regional partners, including Central Maine Power.



# TRANSPORTATION AND INFRASTRUCTURE

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<b>Reduce Vehicle Miles Traveled</b>															
<b>T1. Public Transit</b> <i>Expand access to and use of public transit services.</i>															
★ ● Biddeford is already working with BSOOB to expand use of public transit. Biddeford also developed a Transit Oriented Development Plan with Saco and GPCOG. Pgs 68-71 of the plan detail strategies to increase use of transit, including: Develop welcoming bus stops, adopt innovative customer service technology, increase frequency and hours of operation, implement transit-supportive roadway improvements, involve the community, consider bus route redesign and microtransit options, transition to electric vehicles, support Downeaster improvement, and plan for rapid transit.	Although public transit does not serve a large portion of the population in these communities, public transit is an essential public service, especially for more vulnerable community members such as those without a vehicle and older residents.	●	●					●	●				\$\$\$-\$\$\$	Medium	BSOOB Ridership; Number of BSOOB routes; Number of BSOOB bus stops



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**Reduce Vehicle Miles Traveled (continued)**

**T2. Increase Walkability** *Improving the “walkability” of our city’s roadways through a safe, comfortable, and convenient network of pedestrian walkways.*

★	Improving the “walkability” of our roadways and communities with safe, comfortable, and convenient walkways makes it possible to convert more short trips to walking, reducing VMT. The strategy can include: Maintain streets and sidewalks for efficiency and safety; Create Safe Routes ordinance to require or incentivize the creation of safe routes on private properties; Adopt a 'Complete Streets' policy, or similar.	Alternative transportation options are vital for households with one or no cars. Walking and bicycling to school is more common among children from low-income and minority households. For older adults, children, and people with disabilities, access to safe and comfortable walking infrastructure allows for greater independence and reduces reliance on cars. Investments in pedestrian infrastructure should consider who is most likely to benefit from that investment, and should direct resources to those portions of the community that would have the greatest equity outcomes.	●					●						●	●	\$\$\$	Long	Number of miles of "Complete Streets"
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**T3. Increase Bikeability** *Improve the “bikeability” of our city’s roadways with safe, comfortable, and convenient networks of bikeways and bike-related infrastructure.*

★	Improving the “bikeability” of our roadways and communities with safe, comfortable, and convenient bikeways makes it possible to convert more short trips to bicycling, reducing VMT. The strategy can include: Identify gaps in pedestrian and the bicycle networks and barriers to active modes of travel; Develop and implement a bicycle and pedestrian plan to improve connectivity in the community and beyond; collaborate with regional partners to connect on-and off-road bicycle facilities with existing and planned regional trail networks. It can also include strategies to increase access to bicycles, such as a bikeshare program.	Investments in bicycle infrastructure should consider who is most likely to benefit from that investment, and should direct resources to those portions of the community that would have the greatest equity outcome	●					●						●	●	\$\$\$	Long	Number of miles of "Complete Streets"
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<b>Reduce Vehicle Miles Traveled (continued)</b>															
<b>T4. Transit-Oriented Development</b> <i>Concentrate housing, business, and leisure activities within easy walking distance to public transit in new development.</i>															
★ Transit-oriented Development (TOD) is an approach to development that maximizes the amount of residential, business, and leisure space within an easy walk of public transit. The goal is to promote sustainable growth by increasing walkability and transit use while reducing reliance on private vehicles. Actions can include using Tax Increment Financing (TIF) districts to direct development to transit locations and requiring high levels of accessibility and connectivity for pedestrians, bicycles, and motor vehicles in all new development and significant redevelopment. The Biddeford Saco Transit Oriented Development Plan includes strategies to support transit oriented development including: Align Zoning To Support Higher Density Transit Oriented Development Principles, Leverage The Saco Transportation Center As A Community Anchor, and Advance Development And Investment Through Public-Private Partnerships.	The high demand for housing adjacent to transit can make TOD homes inaccessible to people with lower incomes, while the rapid appreciation sparked by new transit investments can lead to gentrification and displacement, countering equity goals. TOD can have an explicit commitment to achieve equity goals through dedicated strategies that ensure low-income residents and residents of color benefit from – and are not displaced by – the new development. With strategies in place to preserve and expand affordable housing, protect tenants from rising costs and displacement, connect residents to jobs and economic opportunities, stabilize and support small and local businesses, TOD can also increase equity outcomes.	●	●				●	●		●	●	●	\$\$\$	Long	—
<b>T5. Reduce Single-Occupancy Vehicle Trips</b> <i>Assess methods to reduce single-occupancy vehicle trips made by municipal staff.</i>															
● Create programs and incentives to encourage municipal staff utilize all means of alternative transportation (i.e. active mobility, public transit, carpooling). Also, develop citywide Travel Demand Management (TMD) plans to focus the TDM-specific activities of the municipality. May include a description of current city activities, how these fit into state and regional plans and efforts, and a set of specific implementation objectives for the next several years.	—	●				●							\$	Short	Miles driven in municipal vehicles

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<b>Reduce Vehicle Miles Traveled (continued)</b>																		
<b>T6. Direct Development</b> <i>Decrease the need for private vehicles by reducing sprawl through directing new development to areas where services are easily accessible and reducing minimum parking requirements.</i>																		
Development patterns directly influence where and how much community members, employees, and visitors must drive. Directing development to areas of service and increasing density directly reduces sprawl. It can be combined with efforts to increase walkability and bikeability to reduce driving overall. Strategies to direct development include incentives to promote infill development, allow for mixed use development where appropriate, and supporting brownfield redevelopment.	Infill development may skew towards investment in parcels that provide a greater return on investment, which can exacerbate patterns of underinvestment in other areas. In other cases, infill development in historically underinvested areas can lead to the displacement of residents with lower incomes, especially if concentrated development results in an increased demand for residential and commercial spaces. To encourage equitable benefits for current residents and businesses, communities can implement affordable housing programs and policies, workforce development opportunities, and partnerships with local groups to ensure that infill developments benefit residents and local partners. Brownfield redevelopment in particular provides an opportunity to address environmental injustices, increase community assets, and improve conditions that impact the quality of life in historically underserved areas.		●									●	●		●	\$\$	Medium	Density bonus approvals

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## Resilient Infrastructure

### T7. Protect Critical Infrastructure *Improving the “walkability” of our city’s roadways through a safe, comfortable, and convenient network of pedestrian walkways.*

<p>● Ensuring these critical assets are operational and accessible in the face of climate hazards is vital for emergency response and for protecting the health, safety, and wellbeing of community members. Take steps to protect critical assets (water, sewer, etc.) and other structures that will be impacted by sea level rise, storm surge, flooding and extreme weather events associated with climate change. Coordinate with the local water and sewer districts to incorporate climate change resilience and sustainability principles in management and decision-making and ensure they are planning for future conditions such as extreme precipitation events and coastal flooding that can overwhelm stormwater systems, exacerbate flooding, and cause significant damage. Ensure that drinking water sources are adequately protected to improve drought resilience. Both water and sewer directly impact public health. Planning for and adapting to future climate change conditions can help to minimize the indirect public health impacts of climate change. Some of Biddeford’s stormwater and sewer infrastructure, including the wastewater treatment facility, and water infrastructure are located in areas at risk of flooding from storms and sea level rise. Infrastructure-specific assessments and adaptation planning should occur to provide the City with a better understanding of risks, vulnerabilities, and protection measures. The City should partner with Maine Water to assess vulnerabilities.</p>	<p>Upgrades to infrastructure should consider how upgrades will impact utility rate payers, as responsibility and the burden of trying to repair and rehabilitate aging infrastructure has traditional fallen on the backs of local ratepayers, For this reason, community involvement is critical in the decision making process. Biddeford’s WWTP is located near the downtown in an area with elevated social vulnerability, meaning that public health impacts due to infrastructure failures would be born by more disadvantaged community members.</p>	●										●	\$\$\$	Long	Initiate identification of vulnerable critical infrastructure by 2026.
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### Resilient Infrastructure (continued)

#### T8. Vulnerability Assessment *Assess the vulnerability of transportation infrastructure to the impacts of heat, groundwater rise, and saltwater intrusion caused by sea level rise.*

<p>●</p> <p>●</p> <p>Extreme heat, groundwater rise caused by sea level rise, and saltwater intrusion can impact and degrade critical infrastructure above and below ground, shortening its lifespan and increasing maintenance costs. Assess impacts of heat, groundwater rise, and saltwater intrusion caused by sea level rise on local transportation infrastructure to better understand how climate change might impact important infrastructure assets and plan for appropriate upgrades.</p>	—	●	●						●	●		●	●	\$\$	Medium	The Sustainability Commission, in partnership with Public Works will complete an assessment of transportation infrastructure by 2026.
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#### T9. Build Infrastructure Resilience *Modify roads, culverts, and bridges to increase their resilience to flooding, sea level rise, and other climate hazards, including raising, relocating, and/or upsizing.*

<p>●</p> <p>With a better understanding of what key travel routes are at risk of flooding, municipalities can plan to prioritize detours and alternative routes that both redirect traffic to safety and prioritize access to key economic centers. Roads at risk of coastal flooding include Mile Stretch Road, Hills Beach Road, Yates Street, Bridge Road, Maddox Pond Road, Fortunes Rocks Road, Granite Point Road, Timber Point Road, and Beach House Lane</p>	—		●						●					\$\$\$	Long	The sustainability Commission, in partnership with Public Works and engineering will develop a plan to identify vulnerable roads, bridges, and culverts by 2026.
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## Support Electric Vehicles

### T10. Encourage Transition to Electric Vehicles *Streamline permitting, install public EV chargers, require EV chargers in new development, and transition city fleets to EV.*

<p>★ ●</p> <p>Municipalities that manage their own electrical permitting and inspections are responsible for ensuring the safe installation of EV charging stations (EVCS). According to EVCS providers, expensive, complex, protracted, and/or non-uniform permitting and inspection procedures are a significant barrier to charger installations. Delays and confusion can result in residents and businesses giving up on EVCS installations. In Maine, the state has not yet issued any guidance on how municipalities should be permitting and inspecting EV charging stations. To encourage and expedite EVCS installations, permitting and inspection processes should be designed to: 1. Clarify the requirements for EV charging stations; 2. Simplify the permitting and inspection process; 3. Ensure permitting fees do not place a significant cost burden onto the EVCS owner; 4. Provide training to Code Enforcement staff on EV charging station installations.</p>	<p>Unequal access to EV charging infrastructure can be a limiting factor to community adoption. Low- and moderate-income drivers have less access to charging-enabled off street parking. Municipalities can design permitting processes to reduce barriers to EV charging station installation, including installation costs. Currently EVs can be cost prohibitive for lower income folks so in the current market EV charging infrastructure tends to support higher income populations.</p>	●										●	\$-\$\$	Short	<p>Number of EVCS located in Biddeford; Number of EVs registered in Biddeford</p> <p>Targets:            Increase total Vehicle Miles traveled by Electric Vehicles 30% by 2030.            Increase total Vehicle Miles Traveled by Electric Vehicles replacing diesel vehicles 15% by 2030.</p>
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# LAND USE AND NATURAL ENVIRONMENT

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		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation			

## Protection of Natural Resources

**LN1. Sustainable Landscaping** *Create and enforce climate resilient and sustainable landscaping approaches, eliminating the use of fertilizers, herbicides, and pesticides, especially in city parks and green spaces.*

★	Create and enforce climate resilience and sustainable landscaping approaches. Draft zoning standards that require or incentivize new development and redevelopment to increase the amount of landscaping, open space, and tree canopy in neighborhoods that currently have less of these site design features. Manage municipal landscaped areas using natural products and low-impact practices. Promote native, climate resilient, and sustainable landscaping initiatives community wide by connecting residents to plants and information	Historically disadvantaged and vulnerable neighborhoods often have less tree canopy to cool properties and offset heat island effects, which make many of these neighborhoods significantly warmer than others and creates health challenges for older adults and persons experiencing disabilities.	●			●	●			●	●	●	●	\$	Medium	Number of trees planted and monitored; city expenditures on pesticides, insecticides, and herbicides; number of property owners contacted with educational materials
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Timeframe: Short = 1-2 years, Medium = 3-4 years, Long = 5+ years  
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Action Description	Equity Considerations	Co-Benefits										Cost	Time Frame	Metrics
		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation			

**Protection of Natural Resources (continued)**

**LN2. Protect Vulnerable Areas** *Conserve areas of the city that are vulnerable to climate hazards, as well as those that help to minimize climate risks through carbon storage and flood reduction.*

<p>● Strengthen ecosystem resilience by preserving climate-threatened natural areas such as wetlands, riparian areas, and headwater streams, as well as those areas that provide carbon sequestration, through zoning or other regulations. Conserve, revegetate, and reconnect floodplains and buffers in riparian areas. Possible measures: Enact and enforce policies (such as a wetland impact assessment requirement) that preserve and restore functioning wetlands. Partner with local and regional land trusts for strategic land conservation and management of those lands. Participate in a watershed protection program and coordinate with watershed communities on stormwater management and watershed protection measures. Apply land use regulations, like shoreland zoning standards, to wetlands that are smaller than state threshold of 10 acres.</p>	<p>The benefits of conservation may come at a cost to communities. Conserved areas should be identified, protected, and governed equitably</p>				●	●										<p>Acres in conservation areas; Acres of preserved wetlands; Acres of re-vegetated areas. Work with regional partners to identify conservation and climate resilience priorities by 2026.</p>
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Action Description	Equity Considerations	Co-Benefits											Cost	Time Frame	Metrics
		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation	Community (re)development			

**Protection of Natural Resources (continued)**

**LN3. Nature Based Solutions** *Promote and enable "nature-based solutions", such as the restoration of sand dunes or wetlands, to protect shorelines and coastal property from flooding and erosion.*

<p>● Nature-based solutions (NBS) are sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. These solutions use natural features and processes to combat the effects of climate change, improve water quality, and protect coastal property from flooding and erosion. They offer an alternative to traditional 'hard' or 'gray' infrastructure approaches and provide monetary and non-monetary benefits to people and the environment. Ensure local land use regulations enable the use of NBS and promote the use of NBS on public and private property. Conduct education to property owners about NBS for shoreline stabilization and climate resilience measures they can implement on their own properties. Examples of NBS include vegetation and/or geotextiles, dune restoration, wetland restoration, thin layer deposition, wetland enhancement, living shorelines, beach nourishment, and soft armoring.</p>	<p>Nature based solutions projects should incorporate equity throughout: 1. Ensure that design governance and implementation processes are inclusive and transparent. 2. Tackle root causes of marginalization, inequality and injustice at all stages. 3. Limit the creation of economic and non-economic losses, and avoid the unjust redistribution of risks and costs. 4. Prioritize interventions for the most at-risk places and communities.</p>	●	●	●	●	●				●	●	●	\$\$	Long	Non-native species removed; acres of wetlands preserved; Sea berm installation in coastal areas.
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**LN4. Restoration of Natural Habitats** *Promote the restoration or enhancement of natural habitats for biodiversity and wildlife protection.*

<p>Healthy ecosystems and the biological diversity they support are a source of food, water, medicine, shelter and other material goods. They also provide ecosystem services – the cleaning of air and water – which sustain life and increase resiliency in the face of mounting pressures.</p>	<p>The benefits of habitat restoration may come at a cost to communities. Restoration projects should be identified, managed, and governed equitably</p>			●	●				●	●			\$\$	Long	Number of non-native species removed; Number of native trees planted; Number of wildlife corridors created. Work with regional partners to identify and prioritize most important areas to restore for habitat protection.
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Cost: \$ = Low, \$\$ = Moderate, \$\$\$ = High

Action Description	Equity Considerations	Co-Benefits											Cost	Time Frame	Metrics
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## Sustainable and Resilient Development

**LN5. Sustainable Food Systems** *Promote and expand local and resilient food systems through sustainable practices such as actions that improve soil health and that store carbon.*

★	Food production systems and eating habits are major contributors to climate change, and it is impossible to meet our climate targets unless a shift occurs. Eating more plant-based foods will reduce our carbon footprint in no uncertain terms. Because greenhouse gas emissions occur at every step of food production, growing food locally will reduce emissions attributed to storing and transporting food for local consumption. Regenerative agriculture restores soil health and promotes carbon sequestration, increasing ecosystem resilience and creating localized carbon sinks. Regenerative farming practices can also be used to by fruit and vegetable farmers.	—	●		●	●							\$\$	Long	Number of community gardens per resident  Acres of productive farmland and forest land
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**LN6. Mixed-Use Zoning** *Implement zoning to allow a blend of residential and commercial uses in some areas of the city, in order to reduce sprawl and make neighborhoods more walkable.*

★	Land use regulations, such as zoning ordinances and building codes that determine the location and type of development permitted in an area, impact the natural environment and resilience of a community. Policies that promote higher-density, mixed-use developments with access to public infrastructure, along with energy-efficiency improvements to older structures being redeveloped, can reduce greenhouse gas emissions. Enable and incentivize climate resilient and compact, mixed-use development in appropriate areas to reduce environmental impacts, increase housing affordability, and enhance community resilience to climate change	Growth and investment in the downtown area have led to gentrification in Biddeford and a housing affordability crisis. The city needs to consider how investments can be paired with affordability to ensure equitable access to livable, walkable areas.	●	●		●	●					●	\$	Medium	Number of new or upgraded sidewalks created; Miles of bike lanes created; Average distance of new housing to critical services (food shopping, schools etc.).
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Action Description	Equity Considerations	Co-Benefits										Cost	Time Frame	Metrics
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### Sustainable and Resilient Development (continued)

**LN7. Direct Development** *Direct development away from areas of the city that are exposed to climate-related risks, including sea level rise, erosion, and inland flooding.*

<p>Where and how communities accommodate growth, development, and redevelopment profoundly affects vulnerability of people and property, as well as the quality and health of water, beaches, and coastal wetlands. Investigate use of regulatory and policy mechanisms to discourage development in areas exposed to climate hazards and toward more suitable and less vulnerable locations. Actions could include both regulatory (zoning and land use regulations) and non-regulatory measures. Examples include prohibition of new development in hazard areas; erosion-based setbacks; development setbacks from hazard areas; transfer of development rights (TDR); rolling easements; incentivizing and encouraging development in areas that have low exposure to hazards and are appropriate for density. Consider adopting zoning overlay district(s) to help protect buildings and people from climate hazards. The overlay(s) should include development standards and regulations that aim to increase the resilience of development to climate hazards and promote sustainable development approaches.</p>	<p>Evaluate potential policies and regulations for their impact on socially vulnerable and traditionally marginalized populations</p>			●				●		●		●	\$-\$\$	Long	<p>Number of square miles newly designated Limited Growth Areas; Area of Overlay districts that protect hazard areas from development.</p>
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### Sustainable and Resilient Development (continued)

**LN8. Land Use Ordinance Review** *Conduct a review of the city's land use ordinances and policies to identify changes needed to include climate resilience and sustainability measures and standards*

●	Municipal land use planning and regulations are indispensable tools for enhancing local climate resilience and sustainability. Maine's home rule status offers valuable opportunities for municipalities to adopt creative, innovative, and flexible land use solutions that address coastal hazards, promote energy efficiency, reduce GHG e	Any substantial review of land use ordinances should also incorporate equity. Equity in zoning means that those who write, administer, or enforce zoning regulations take clear steps to avoid or "undo" unfair outcomes and mitigate the unequal ability to participate in or influence all parts of the zoning process.			●	●	●	●	●	●	●	●	●	\$	Short	Milestone: Completed land use ordinance review
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**LN9. Encourage Development in Appropriate Areas** *Encourage development in appropriate areas that are already developed, have public services (e.g., water and sewer), and are less vulnerable to natural hazards*

	Consider incentives for infill development in appropriate areas, such as areas close to goods and services, including downtown and village centers outside of flood hazard areas. These can be paired with requirements for energy efficiency, and sustainable and resilient design.	Infill development in historically underinvested areas can lead to the displacement of residents with lower incomes, especially if concentrated development results in an increased demand for residential and commercial spaces	●						●	●		●	\$	Short	Number of density bonus approvals; Number of new housing units created in the three Main Street Revitalization District zones (MSRD-1, MSRD-2, MSRD-3).
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# HEALTH, SAFETY, AND WELL BEING

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 Cost: \$ = Low, \$\$ = Moderate, \$\$\$ = High

Action Description	Equity Considerations	Co-Benefits										Cost	Time Frame	Metrics
		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation			

## Community Resilience/Disaster Preparedness

**H1. Resilience Hubs** *Establish a designated site to serve as a "resilience hub" that can provide critical services to residents during climate-related emergencies or disruptions.*

<p>In the event of a disruption, the Hub will provide community members with critical services, including access to electricity, food and water, shelter, health and medical supplies, information, and logistical coordination with partner groups that provide post-disruption support. The Resilience Hub will reduce the burden on local emergency response teams, improve access to public health initiatives, foster greater community cohesion, and increase the effectiveness of community-centered institutions and programs.</p>	<p>Resilience Hubs can help to shift power to communities and enable them to plan, react, and recover without reliance on local government. In addition to being designed and managed by the community, hubs are meant to be in well-trusted, well-utilized community facilities that serve the needs of the community more broadly than temporary emergency shelters do. Hubs can also enhance social cohesion because they can be designed to serve as community gathering places and "community centers"</p>												●		●	\$\$\$	Medium	<p>Number of designated resilience hubs in operations; number of users.</p>
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Action Description	Equity Considerations	Co-Benefits										Cost	Time Frame	Metrics				
		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation				Community (re)development			
<b>Disaster Preparedness</b>																		
<b>H2. Improve Disaster Planning</b> <i>Improve disaster planning and response to be better prepared for climate change risks, including early warning systems and community evacuation plans.</i>																		
● For every \$1 invested in hazard mitigation, communities save \$6 in avoided future disaster costs. Disaster preparedness is key to a quick, safe, effective recovery after an event. Enhance resilience by taking steps now to prepare for hazards and emergency events. Actions include: developing a storm debris management plan; developing an extreme temperatures emergency plan with strategies that increase use of cooling centers by residents; assessing and monitoring wildfire risk, creating a Coordinated Climate and Health Response Team to address climate health and disaster risks in the community; and establishing a network for pre- and post-storm coordination.	Public health systems should be designed to ensure that they are reaching the most vulnerable community members. This may involve community members without access to internet, cellphones, television, etc.														●	\$\$\$	Long	Number of preparedness plans in place; Number of resilience hubs
<b>H3. Climate Hazard Training</b> <i>Provide emergency responders and medical providers with training about the types of illnesses that might occur as a result of climate hazards</i>																		
● Work with local fire and rescue departments to provide training about climate related illnesses, including heat exhaustion, cardiovascular and pulmonary stressors, and vector-borne diseases. When first responders can recognize and treat these illness, people will be more likely to receive appropriate care. It also allows these departments to plan more strategically for climate related events such as heatwaves, droughts, or pest infestations.	Increasing climate hazards will have a disproportionate impact on already vulnerable community members.														●	\$	Short	Milestone: Create training materials, hold trainings at least once annually with Fire/Rescue and PD by 2026. Metric: Number of emergency responders trained for climate-related illnesses.

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### Disaster Preparedness (continued)

#### H4. Public Health Outreach *Conduct outreach about public health advisories for climate-related health impacts and weather events.*

●	Publicize and amplify public health advisories for climate related health and weather events such as air quality advisories, extreme heat or cold events, extreme storms, power outages, waterborne disease outbreaks, harmful algal blooms, and vector borne disease trends. Use the town's existing lines of communication (website, social media, neighborhood forums, direct contact of at-risk residents, etc.)	Public health systems should be designed to ensure that they are reaching the most vulnerable community members. This may involve community members without access to internet, cellphones, television, etc.					●								\$	Medium	Milestone: Create outreach materials and begin doing quarterly outreach by 2026, with hazard-specific outreach/warnings as appropriate. Metric: Number of climate advisories distributed, whether through social media or direct contact.
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### Health and Safety

#### H5. Affordable Housing *Encourage and support the creation of resilient, energy-efficient, and low-carbon affordable housing.*

★	The recommendations of the Mayor's Affordable Housing Task Force includes: 1. Create or preserve ninety (90) units of affordable rental units per year for five years, with half of the units targeted to serve the 40% to 80% median income community and a desired goal of having at least half the units being created by new construction; 2. Rehabilitate at least sixty-five (65) rental units per year for the next three years so that the units are healthy homes and lead free.	Creation of affordable housing can protect tenants from rising costs and displacement and increase equity outcomes.		●	●			●				●	●	\$\$\$	Long	Number of affordable housing units created.
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### Health and Safety (continued)

#### H6. Ensure Safe Drinking Water Supply *Ensure the safety and quality of drinking water supplies, including through assessment and management of climate change impacts to septic systems and wells.*

<p>★ ●</p> <p>Partner with Maine Water to establish and implement a program to protect drinking water sources and ensure safe and reliable drinking water supply. Prioritize vulnerable neighborhoods and replace lead service lines for drinking water consumption. Monitor and protect water quality in private wells and create resilient water utilities through conservation, demand management, technology, and operations efficiency</p>	<p>Any program should prioritize vulnerable and disadvantaged communities who have historically been left out of decisions and opportunities for water infrastructure upgrades</p>				●					●			●	\$\$\$	Medium	Number of private wells tested
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#### H7. Shade Structure Ordinance *Develop an ordinance to require shade structures (covered bus stops, gazebos, etc.) on city-owned properties.*

<p>★</p> <p>Require shade structures on all properties local governments own. Shade structures can include gazebos, trees, covered outdoor facilities, and transit stops. Full shade canopies have the greatest reduction potential for surface and perceived temperatures. Shade structures provide relief for residents, pets, and wildlife during extreme heat events. Transit stops should be prioritized; shade structures serve the added benefit of protecting people from inclement weather</p>	<p>Shade is an essential component of public health. It encourages people to walk and leave their car behind. Access to shade for the vulnerable in our society – children, outdoor workers, the elderly and the homeless – is critical for preventing heat related illness.</p>													\$	Short	Number of shade structures; Percent of transit stops with adequate shade structures
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		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation				Community (re)development		
<b>Health and Safety (continued)</b>																	
<b>H8. Tree Ordinance</b> <i>Develop an ordinance to increase tree canopy both on city-owned and private property.</i>																	
★	Adopt tree ordinance that requires planting of native trees and other climate-resilient and native vegetation in locations where they make a direct, positive impact on the community or act as a buffer to filter air and water, limit storm runoff, and stabilize soil.	Tree canopy can reduce temperatures in vulnerable neighborhoods where copious hardscaping (concrete, asphalt) creates a heat island effect. A shade tree program monitors and maintains shade trees in the community.													\$	Short	Number of trees planted and monitored
<b>H9. Monitor Vector-Borne Diseases and Invasive Species</b> <i>Explore options for monitoring and managing pests, like ticks and mosquitoes, that are associated with increases in diseases (e.g. Lyme disease) using natural and ecologically sound methods.</i>																	
●	Explore options for monitoring and managing pests, like ticks and mosquitoes, that are associated with increases in diseases (e.g. Lyme disease) using natural and ecologically sound methods. Conduct outreach and education to property owners and provide user-friendly guidance about invasive and native species.	Vector-borne diseases more negatively impact younger and older community members and those without easy access to healthcare.													\$\$	Medium	Number of property owners contacted with educational materials; Vector Borne disease rate reduction.



# LEADERSHIP AND SUPPORT

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## Community Outreach

**LS1. Create Climate Commission** Create a municipal Climate Commission made of up city residents to assist with the implementation of the Climate Action Plan.

★	Created by city ordinance, this commission would collaborate with municipal, public, and private sectors to collectively guide and track climate action. This commission will actively engage community members in local climate sustainability and resilience issues.	A climate commission can weave equity considerations into all future climate actions to ensure that all people, regardless of age, race, income, etc., will benefit equally from progress made toward resiliency.	●	●												\$	Short	Hire Intern or AmeriCorps Volunteer to assist with CAP implementation.  Milestone: Created and operational by beginning of 2024.
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### Community Outreach (continued)

#### LS2. School Curricula *Support local schools to include climate change and sustainability in school curricula.*

★	Climate change and sustainability are sometimes incorporated into science courses, however these issues intersect with all subject areas. Work with the school district and teachers to develop new classes or adapt existing classes to bring climate, sustainability, and resilience to the classroom. Ensuring that the next generation has an understanding of these issues will promote sustained engagement and give them the skills they need to navigate the challenges in their futures.	—																\$	Short	Milestone: Establish relationships with appropriate school staff by end of 2025. Create relevant curricula by the end of 2026. ‘  Metric: Number of teachers who incorporate climate and sustainability issues into lesson plans.
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#### LS3. Climate Change Training *Provide climate change training for municipal boards, commissions, and committees.*

	Community members play a key role in creating a culture of sustainability and resilience by taking action in their own homes and businesses and by providing support and input into municipal initiatives. Biddeford can enable individual and community action by actively engaging City commissions, boards, and committees on local climate, sustainability, and resilience issues through education events, the city website, and other communication outreach.	—																	\$	Short	Milestones: Present in person to the council and all boards and commissions at least once by the end of 2025; Create ongoing training materials available in an online resource by the end of 2026.  Metrics: Number of commission, board and committee members engaged in climate training. Number of educational events conducted annually.
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### Municipal Operations and Funding

**LS4. Create Position of Sustainability Coordinator** *Create a municipal Office of Sustainability and position of Sustainability Coordinator, whose mandate will be to implement the Climate Action Plan.*

★	The Sustainability Coordinator will oversee the development of climate adaptation and mitigation solutions and creates policy to put solutions into action. This position collaborates with residents and businesses, and local, regional, state, and federal partners. This commission will actively engage community members in local climate sustainability and resilience issues.	A Sustainability Coordinator can weave equity considerations into all future climate actions to ensure that all people, regardless of age, race, income, etc., will benefit equally from progress made toward resiliency.	●	●	●	●	●	●	●	●	●	●	●	●	\$-\$	Short	Milestone: Created by the end of 2024.
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**LS5. Establish Local Climate Funding** *Establish local funding mechanisms to support implementation of the Climate Action Plan.*

	Establish a municipal fund and make annual appropriations to the fund and invest the assets to grow the fund over the long-term. This approach provides a significant funding source to supplement more conventional methods, such as bonding and grants. Incorporate elements of accountability into funding programs so that funds are being used to maximize community benefits. Consider establishing a Tax Increment Finance (TIF) District to support local climate resilience projects. A TIF is an economic development tool for capturing the projected increase in tax revenue that is created by a development within a defined area and reinvests those funds into public improvements and development projects for that benefit the zone and increase resilience to coastal hazards. Enact impact fees on new and redevelopment projects to help financially support climate change adaptation and mitigation action within the community.	Evaluate potential policies and regulations for their impact on socially vulnerable and traditionally marginalized populations. Explicitly consider how use of funds (what, where, who, etc.) could perpetuate disparities and/or provide an imbalance of benefits to less vulnerable people/populations. Ensure there is transparency and community input in the decision making process to allow for accountability		●		●									\$-\$-\$	Medium	Annual appropriations to new Climate Action Fund.
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### Municipal Operations and Funding (continued)

#### LS6. Include Climate in Municipal Investments *Incorporate climate resilience and carbon emissions measures into planned investments for city-owned infrastructure and equipment*

★	Accounting for environmental conditions of tomorrow in today's decision-making is not only necessary for ensuring safe and vibrant communities now and into the future, it is also a wise investment of limited municipal funds. However, capacity limitations, strapped municipal budgets, and insufficient information about cumulative costs of storm response and repair have hindered progress on municipal planning and action aimed at addressing growing natural hazards.	Evaluate potential policies and regulations for their impact on socially vulnerable and traditionally marginalized populations. Explicitly consider how use of funds (what, where, who, etc.) could perpetuate disparities and/or provide an imbalance of benefits to less vulnerable people/populations. Ensure there is transparency and community input in the decision making process to allow for accountability	●										●		●	\$	Medium – Long	Amount of funding obtained from federal, state, or private funding opportunities
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★ = Priority action – Identified through public engagement

● = Associated goal/action in Comprehensive Plan

● = Potential regional action

Timeframe: Short = 1-2 years, Medium = 3-4 years, Long = 5+ years

Cost: \$ = Low, \$\$ = Moderate, \$\$\$ = High

Action Description	Equity Considerations	Co-Benefits											Cost	Time Frame	Metrics
		Cost Savings	Support Local Economy	Municipal Revenue	Water Conservation	Education & Awareness	Mobility Improvement	Smart Growth	Water & Air Quality	Greenspace & Recreation	Job Creation	Community (re)development			

**Municipal Operations and Funding (continued)**

**LS7. Include Climate Considerations in Decision Making** *Incorporate future climatic conditions in land use planning and municipal policies.*

<p>Municipal and regional planning and policy documents form the foundation for local decision-making, regulation, and ordinances. Most land use policies and regulations in place today were designed for environmental conditions of the past, and need to be updated to account for increasing risk and changing conditions to protect development, people, and municipal expenditures. Similarly, municipal policies often do not account for climate change. These policies govern the day to day operations of the municipality, so considering the intersection with climate change aligns short term and long term decision making with resilience and sustainability goals. Incorporating climate resilience and sustainability in all short- and long-term municipal decision-making and policy documents and plans, including the Comprehensive Plan, can help a community ensure that decisions, regulations, and policies are supporting local climate change goals and priorities. Coordinating with the County Emergency Management Agency can ensure inclusion of local climate hazards and areas of concern/vulnerability in the County Hazard Mitigation Plan, elevating the significance of those hazards and areas on a regional scale and offering opportunities for hazard mitigation funding.</p>	<p>Evaluate potential policies and regulations for their impact on socially vulnerable and traditionally marginalized populations. Explicitly consider how use of funds (what, where, who, etc.) could perpetuate disparities and/or provide an imbalance of benefits to less vulnerable people/populations. Ensure there is transparency and community input in the decision making process to allow for accountability.</p>	●	●	●	●	●	●	●	●	●	●	●	\$-\$\$	Medium	—
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**LS8. Build Municipal Capacity** *Ensure municipal departments have the resources, guidance, and support to implement the Climate Action Plan*

<p>Municipal departments carry out the day to day operations of the community. To ensure these day to day operations align with long-term climate goals, the departments must be provided with the staff, resources, and training they need to adjust their activities accordingly .</p>	<p>Trainings for staff should include the ways that historically disadvantaged and vulnerable populations are more vulnerable to climate change impacts and should be incorporated with equity training</p>												\$-\$\$	Short - Medium	—
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