Adapt Land Management and Conservation to Support Resilience

PENOBSCOT CLIMATE ACTION

HIGH POTENTIAL to build community resilience

GHG

While this toolkit may not directly reduce emissions, expanding and conserving green spaces can contribute to carbon sequestration benefits that offset emissions in the region.

Description of the Action

The Penobscot Climate Action region's ecosystems are integral to community resilience. They provide flood mitigation, clean the region's drinking water, cool off hot neighborhoods, and sequester carbon. Regenerating soil health, managing invasive species, fostering habitat connectivity, and supporting plant and wildlife diversity also contribute to ecosystem resilience which in turn supports community health, well-being, recreation, and the local economy. Indigenous knowledge, science and stewardship practices are foundational to many resilient and regenerative practices. It would be essential for this action to be developed with great respect for traditional ecological knowledge. In cases where there is mutual commitment to respect, collaboration, and partnership, this action should be developed under the leadership of, and in collaboration with, the Penobscot Nation.

By implementing this toolkit, municipalities will adopt resilient land management and conservation practices in their comprehensive plans, ordinances, and zoning. Subsequently, the toolkit will support education and engagement to facilitate understanding and adoption by municipalities, organizations who steward private lands, and individual parcel owners. Regional collaboration, by jointly developing or sharing regulatory language, conducting assessments and legal review, or supporting educational initiatives, provides opportunities to be efficient with limited resources and maximize effect given that ecosystems span municipal boundaries.

Steps for Implementation

Adapting land management and conservation practices to support resilience can be carried out in three parts. They can be developed and implemented individually and may not occur in a stepwise fashion. For example, a best practice may be identified and piloted before serving as an example to integrate into municipal practices or policy. Further, communities may wish to conduct education and engagement activities concerning a proposed policy change in order to develop community understanding and buy-in prior to government action.
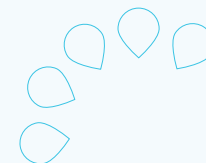
PART 1

Municipal Resilient Land Management Resource Guide Development

The Resource Guide will include goals and model language for land management and conservation policy that can be incorporated into a community's comprehensive plan, ordinances, and zoning. These may address zoning for development, agriculture, parking, landscaping, protection of natural systems, stormwater management, and more. This guide may provide language for policies or ordinances that would make some of the best practices in Part 2 mandatory. Steps include:

Form a project team – Form a project team comprised of relevant municipal staff and board/commission member(s), legal expertise, and subject matter experts who bring technical and lived expertise.

How This Action Supports the Goals of Penobscot Climate Action

⭐ **Equity and Environmental Justice.** While expanding resilient ecosystems will benefit the entire region, it has the potential to bring greater value to developed areas and areas with lower access to ecosystem benefits. However, care must be taken to ensure other community needs (such as housing affordability) are supported in tandem and not at odds with expanding healthy and resilient green spaces in order to best support equity and climate justice goals.

⭐ **Environmental Health.** Supporting the health and resilience of ecosystems contributes to a wide number of environmental health benefits, including improved biodiversity, cleaner water systems, and healthier soils and trees.

⭐ **Community Resilience.** Protecting and expanding the health and resilience of natural systems will better protect the community from flooding, extreme heat events, and mitigate economic impacts to the region's outdoor recreation and tourism economy.

⭐ **Regional Collaboration.** Using shared resources and processes to assess and draft model language is a more efficient way of supporting all municipalities to act on this strategy. The sharing of best practices and learning from pilots in individual communities is another way to expand adoption.

Photo in upper left by Town of Orono

Conduct a policy review – Review municipal policies, ordinances, and zoning in relation to the municipality's (or region's) resilience goals and collect model language (from examples within the region or beyond) of resilient land management and conservation practices. Keep in mind that findings may recommend repeal or relaxation of existing policies and ordinances that hinder goals (such as Bangor's 2023 vote to ease code enforcement on lawn heights to allow No Mow May). Consider cases in which a policy may not be applied uniformly (e.g., only in certain cases or only to a specific part of the municipality) in order to reach an intended resilience goal, and conduct assessments to determine the parameters as necessary.

KEY PARTNERS

Because of the different pathways available, this strategy involves many key partners such as:

- **Those who will research and advise on best practices** (e.g., Penobscot Nation, University of Maine, Trust for Public Lands, First Light Foundation);
- **Those who will be responsible for drafting and implementing local ordinances and zoning** (e.g., Planning Boards/Planning staff, Public Works, Tree Boards, Trails Committees);
- **Those who steward, manage, and develop land and who will implement practices** (e.g., Bangor Land Trust, Orono Land Trust, Brewer Land Trust, Penobscot Nation, University of Maine, Water Districts, Contractors and Landscapers, Parks & Recreation Departments); and
- **Those who can support community education and engagement** (e.g., Arbor Day at local schools, Orono Town Council potlucks, Mitchell Center, Maine Discovery Museum, University of Maine, Husson University, Fields Pond Audubon, Community Gardens).

Conduct a legal review – Conduct a legal review and revisions for any model language to ensure applicability with current laws and within the State of Maine.

Lead community conversations to support adoption – Education and dialogue with the public and municipal boards and commissions will be necessary for building shared understanding around the policy changes and their implications, incorporating revisions to address community concerns or additional insight, and for building buy-in that will lead to eventual adoption.
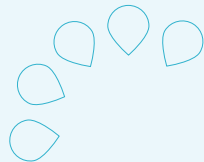
PART 2

Best Practices for Resilient Land Management and Conservation

Building upon the wealth of knowledge and experience in the region, this action will focus on developing a collection of best practices for resilient land management and conservation in the region. These best practices may or may not have a regulatory link. For example, guidance for managing the urban tree canopy in ways that support tree health, ecosystem functions, and reduced urban heat may require a change in practice but not a change in community ordinances. These best practices could be voluntarily adopted by municipal, Tribal, private landowners, landscapers and other professionals, and residents. The best practices collection can include case studies of where these practices have been implemented with an emphasis on local examples. This action may be led by Penobscot Nation, university partners, land trusts, and/or similar partners who bring technical and lived expertise. As an optional added scope, this action's working group may identify funding for further research on the effectiveness of these practices in the Penobscot Climate Action region or to conduct pilot projects to

Connections Across Existing Work and Other Climate Action Strategies

The region is rich in precedents and resources to build upon. For example, Bangor will have lessons learned to share from its recent tree inventory and promotion of "No Mow May." Orono uses citizen science to monitor the invasive brown tail moth. The Penobscot Nation is deeply involved in land stewardship efforts and monitoring the effects of climate change on nature. The Penobscot River Restoration Project was a local success story of bringing diverse stakeholders together to restore an ecosystem and important community asset. UMaine conducts research on sustainable and climate adapted forest management and numerous collaboration opportunities exist with its students and faculty.

This strategy will likely intersect with land management practices in Update Zoning and New Development Standards (Toolkit #1). The Resilient Hubs Network (Toolkit #9) may provide the infrastructure for ongoing community education and engagement.

implement certain practices. Local lessons learned can then be shared with others in the region to facilitate adoption.

Topics to be addressed can include but are not limited to:	To support:
• Forests management and conservation • Urban tree canopy management and expansion • Increasing green space • Green infrastructure • Wetlands protection • Vernal pools protection • Soil health and regeneration • Habitat connectivity • Turf management at multiple scales including residential	• Flood storage/mitigation • Heat mitigation • Water quality • Invasive species management • Recreation and well-being • Biodiversity • Protection of existing stored carbon • Ongoing capacity to sequester carbon

PART 3

Community Education, Engagement, and Incentives

There is a significant opportunity to involve all community members in supporting resilience through land management. Partnerships with schools and municipalities, universities, or other groups can support educational programs that teach children about the environment around them, how it is changing, and how our actions can have an impact. Offering ongoing community education on resilient land management practices can foster adoption at the residential/property scale (e.g. encouraging No Mow May, Pollinator Gardens, depaving and low impact development), by professionals such as developers and landscapers, as well as increase understanding of and support for changes in municipal land management requirements and practices. Incentive programs, in the form of tax incentives or cost-sharing/free materials, can be used to encourage adoption and installation of resilient land management practices.

Opportunities for a Regional Approach

Part 1: Municipal Resilient Land Management Resource Guide Development - This task may be approached as a regional effort with model language for a variety of management and policy actions that individual municipalities can use, as applicable. A regional project team of involved municipalities and partner organizations could lead this effort.

Part 2: Best Practices for Resilient Land Management and Conservation - Grant funding to support this step may also allow for a regional approach since best practices are likely to apply to multiple communities.

Part 3: Community Education, Engagement, and Incentives - Community organizations and partners who engage with more than one municipality may be able to partner with municipalities and offer education and other programs regionally, benefiting a broad audience.

COST CONSIDERATIONS

- Much of this work (for parts 1 and 2) could be led and completed by a municipal or regional task force; consultant costs to support facilitation and development of resources may range from $20k - $150k, depending on scope.

- Part 3, in particular, is likely to be implemented jointly between a range of partners, including municipalities, nonprofits, community groups, schools, universities, and other partners, leading to opportunities for cost-sharing and collaborations on securing grant funding.

POTENTIAL SOURCES FOR FUNDING

- **Maine Community Resilience Partnership Grants** – funding for resilience capacity building, planning, and implementation projects.

- **Project Canopy Assistance Grants** - available to state, county, and municipal governments, educational institutions, and non-profit organizations for developing and implementing community forestry projects and programs.

- **MaineDOT Climate Initiative Funding Opportunities** - includes the Municipal Stream Crossing Program to upgrade municipal culverts to improve fish/wildlife habitat and safety and the Maine Infrastructure Adaptation Fund for municipal, tribal, and infrastructure districts to adapt their critical infrastructure to reduce vulnerability to climate change.

- **Invasive Plant Management Program Grants** - available to landowners with parcels of at least 10 wooded contiguous acres. There is funding available to create invasive plant control practice plans and separate funding for execution of these plans.

- **The Land and Water Conservation Fund** - available to assist the State of Maine, counties, municipalities, school districts, and tribal nations in the acquisition and/or development of public outdoor recreation facilities.

- **Recreational Trails Program** - available to municipalities and non-profits for maintenance of recreation trails.

- **Clean Water State Revolving Fund Green Project Reserve** - available to communities, nonprofits, and other local government entities for wastewater infrastructure projects and other water pollution control projects.

PRECEDENTS

Planning and Zoning

- **Regional Planning for Resilient Zoning** - The towns of Jericho, Bolton, Huntington, and Richmond, VT, working with state agencies and other partners, engaged in over a decade of collaborative planning to inventory natural systems and understand community values to inform land use planning and update zoning. Two outcomes included Jericho, VT's Natural Resources Overlay and Bolton, VT's updated zoning laws which increased the size of conserved lands to preserve ecological connectivity and functions and protect critical wildlife habitat.

- **Nashua River Communities Resilient Lands Management Initiative** – was a project conducted by Clinton and Bolton, MA that resulted in a Climate-Smart Development Regulatory Prioritization Tool, a set of recommendations for regulatory updates that support the integrity and continued viability of landscapes before, during, and after development

- **Stormwater and Flood Resilience Utility Ordinance** – proposed ordinance in Dover, NH to establish a dedicated funding mechanism to pay for the community's stormwater management and flood resilience activities; resources include an FAQ and StoryMap to support community understanding.

- **Sustainable Development Code** - A resource that compiles example policies and land use codes from across the country. See "Chapter 1: Environmental Health and Natural Resource" for policies related to protecting water quality, urban forests, and sensitive lands, among other topics.

Community Training, Education, Engagement

- **"100 Resilient Yards" Program** - seeks to expand regenerative practices at a residential scale in Portland and South Portland. The program provides training and resources such as native plants and seeds.

- **Knox-Lincoln Soil & Water Conservation District** – includes extensive community education programs for children and adults as well as publications on conservation and forest practices.

- **Sustainable Neighborhoods Program** - an initiative launched by the City of Portland that engages neighborhoods, with guidance from city staff, to organize workshops, projects and events that enhance the livability of their neighborhood and reduce residents' ecological footprint. Participating neighborhoods may receive designation as a "Participating Sustainable Neighborhood" or an "Outstanding Sustainable Neighborhood" from the City.

- **Aspetuck Land Trust's Green Corridor** - provides guidance to link isolated fragments of habitat in backyards into a unified natural area to support plants and wildlife, improve water and air quality, and more.

- **Various Citizen Science programs** exist to engage and educate the public while collecting important data about climate change and related topics (e.g., biodiversity) such as Earthwise Aware at the Fells.

Incentives and Rebates

- **CalWater Lawn-to-Garden Rebate Program** - provides incentives of $3 per square foot of turf lawn removed for residential and commercial water service account holders.

- **Agricultural Resilience Incentive Grant** - is administered by Santa Clara County, CA. The program developed a list of pre-approved practices that improve soil health and provides grants to support adoption.

RESOURCES TO GET STARTED

- **Climate Resilient Land Use Strategies** – is a compendium of regulatory language and policy examples from the (Massachusetts) Metropolitan Area Planning Council's member communities and beyond addressing floodplain and wetland restrictions, tree protection, water conservation, and more.

- **Climate-Smart Lawns and Landscapes Care Guide** and **Forest Care Guide** - provide climate-smart best management practices. Guides are available in multiple languages and for multiple audiences.

- **Maine Vernal Pool Special Area Management Plan** – allows vernal pool impacts in certain developed areas of a municipality in exchange for conservation of high value vernal poolscapes in the municipality's rural area. It supports a municipality's goals for growth, compact development and conservation; allows development of parcels otherwise limited by the presence of vernal pools; provides a funding stream for land conservation and conserves landscapes that provide multiple values including increased resilience to a changing climate.

- **City of Bath Tree Ordinance (Section 6-111.D)** - includes language that may be used to require the replacement of trees removed from public rights of way.

- **City of Bangor Public Tree Program** - provides model bylaw language for Bangor's tree board, city forester, and associated provisions relating to the city's trees and forests

Boulder Pond • Photo by Town of Orono