Community Resilience Planning, Public Health, & Emergency Management Working Group

**Strategy # 2 - Improve Delivery System of Technical Assistance on Resilience to Municipalities**

Recommended Climate Strategies,

Actions and Measurable Outcomes

1. Describe the Recommended Strategy and how it addresses Maine’s climate resiliency and mitigation goals.

**Summary**:

The magnitude of the impacts of climate change is significant yet specific effects vary across the state. Some localities do not understand their current and future vulnerabilities, nor do they have the capacity to develop a resilience response. Others have a better understanding of their vulnerabilities yet lack the capacity to secure funding or manage their response. This strategy establishes the institutional infrastructure at the state and regional levels to support resilience in all municipalities. It stresses the importance of using existing governance structures, providing access to the most recent data and tools, and tailoring assistance to municipal need and capacity.

* 1. For adaptation strategies, what climate impacts does it address? How will this strategy reduce the vulnerability of Mainers to the impacts of climate change?

As an overall technical assistance strategy, all climate impacts are addressed. Municipalities will learn of their specific climate vulnerabilities and obtain support in addressing them.

As noted in Strategy #1, our Working Group focused mostly on adaptation and little on how improvements in technical assistance could help municipalities focus on mitigation. As all six Working Group strategies are integrated by the Maine Climate Council, we anticipate that recommendations for how improvements in the delivery of technical assistance can address mitigation goals will emerge.

* 1. List any site-specific geographies where the strategy would be applied.

As above, the strategy applies statewide, however, technical assistance will be scaled to each municipality depending on need and provided regionally in rural low population areas.

1. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?
   1. For mitigation strategies:
      1. What is the estimated CO2e savings (metric tons) by 2025, 2030, 2050?

N/A

* + 1. What is the cost effectiveness of those reductions (cost per ton of CO2e reduced) and the total cost?

N/A

* 1. Are outcomes measurable with current monitoring systems?

1. Completed climate vulnerability assessments and climate resilience planning documents.
2. Designated climate resilience individuals and/or local group.
3. Collaboration among municipalities, shared responsibilities, shared responses.
4. Adequate staff at state and regional levels to provide technical assistance.
5. Contributions by non-profit organizations to provide of technical assistance and tools to assess vulnerability, design adaptation responses, and support resilience efforts through funding that leverages public dollars.
6. What specific actions would be required to implement the strategy, including but not limited to legislation or regulation.  Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?
7. Expand state level support of technical assistance on the impacts of a changing climate and develop resilience into all activities.
   1. Designate resilience officers within state agencies; define their responsibilities and qualifications.
   2. Provide specialized training and support to regional organizations to carry out their technical assistance delivery to communities. Include and engage engineers, landscape architects, and consultants as audience for certain climate resiliency concepts (e.g. stormwater infrastructure, coastal infrastructure, etc.). Draw on their expertise as well for training programs.
   3. Where regional planning commission capacity is not available, establish a “circuit rider” program to provide technical assistance to small communities
   4. Increase capacity for training and certification of Code Enforcement Officers
   5. Anticipate potential for support and management of technical assistance program by nonprofit/private partners to allow for continued program viability in the event of loss of state funding
   6. Link technical assistance to funding programs and incentivize municipal participation (see Resilience Strategy #3 Funding Mechanisms)
8. Support regional delivery of technical assistance on climate impacts and resilience across the state.
   1. Support regional planning organizations/councils of government with demonstrated capacity, expertise, and municipal relationships in providing technical assistance; expand training programs to those lacking current capacity.
   2. Create regional groups to exchange ideas, share information and facilitate the transfer, sharing, and/or demonstration of strategies provided in one community to others within regional service areas.
   3. Create consistent and coordinated messaging for climate resilience while accommodating variable delivery (organizations, people, agencies).
   4. Require designation of resilience staffing capacity within the regional organization for access to state contractual support.
   5. Provide support to municipalities to update a comprehensive plan, create a climate chapter or develop a resilience plan, and to assist them in defining, adopting and implementing tangible actions that are specific to their circumstances and hazards.
   6. Provide resilience training and guidance to Select Boards/Councils, Planning Boards, designated resilience staff and/or committees, Code Enforcement Officers and other key municipal staff, particularly for municipalities that lack such capacity.
   7. Require transfer, sharing, and/or demonstration of strategies provided in one community to others in regional service area.
   8. Facilitate and participate in community conversations regarding available climate resilience strategies, including visioning a resilient future, mitigation, adaptation, natural solutions (eg. living shorelines), fortification, and relocation[[1]](#footnote-1).
9. Use existing governing structures and processes rather than creating new ones
   1. Define responsibilities and qualifications of local resilience officer and local resilience committees and to the greatest extent feasible, engage with existing community staff and capacity.
   2. Designate a local official, municipal staff member, or committee to be responsible for resilience planning and implementation as a prerequisite for qualifying for state financial assistance for resilience-related capital expenditures.
   3. Create models and guidance documents for integrating resilience into existing planning, regulatory, and governance processes for municipalities of varying sizes and risk categories.
10. Support municipalities to understand the impacts of a changing climate and develop resilience into all activities.
    1. Scale technical assistance to:
       1. different community types (urban, rural, large, small, inland, coastal) level of awareness and understanding of their risks and vulnerabilities, and
       2. level of vulnerability (some communities will simply need more help than others).
    2. Assist municipalities with processes that create a vision of their resilient and economically viable future.
    3. Provide information and documentation on the legal and social obligations of municipal governments for resilience planning (with reference to legal liability work by Conservation Law Foundation and Sea Grant Law Center, announcements by bond rating agencies), and why it/how it benefits them and the community at large.
    4. Provide educational and technical assistance to businesses and individuals to become more sustainable and resilient.
    5. Develop practical messaging on climate change impacts that resonates with communities and stakeholders. For example, instead of simply discussing how sea levels will rise X feet in 50 years, discuss it in the context of how nuisance flooding in a community has increased and will increase in the future or how droughts and temperature extremes have impacted food production.
11. Provide a clearing house to coordinate public and non-profit sector data and decision-support tools to ensure use of consistent, current data on vulnerability and risk, assets, economics, demographics, nature-based solutions[[2]](#footnote-2), and mitigation opportunities[[3]](#endnote-1).
    1. Coordinate across state agencies to ensure consistent messaging and a central location/information source for end users to navigate. Consider a Maine ‘climate dashboard’ with interactive maps, data, and guidance to consolidate and communicate climate-related information.
    2. Ensure any “Climate Dashboard” is accessible at the municipal level.
    3. Share case studies[[4]](#endnote-2) of successful resilience projects that demonstrate how and where to obtain and leverage funds, how to progress from planning and design to project implementation, who to contact for more information and practical experience, and what kinds of projects are possible and transferable to other communities.
    4. Share lessons learned from post-disaster recovery analyses that demonstrate community resilience, for example post Tropical Storm Irene in Vermont and ReBuild NY after Hurricane Sandy.
    5. Prepare presentations for municipal officials describing funding programs, example projects, application procedures, technical information on how communities can interpret/integrate scientific information and engage vulnerable communities in local decision-making..
    6. Create guidance documents on funding sources for Green House Gas mitigation and resilience work
       1. Categorize for scientific research and monitoring, assessment, planning, implementation, and evaluation with best practices for each sector.
       2. Include models to consider social vulnerability and equity in resilience planning.
       3. Include ways to access programs, keys to a successful proposal, and use this exchange to inform improvements to funding programs themselves
       4. Include how to manage and administrate grants, contracts, and Request For Proposal procedures.
    7. Focus on hazards including coastal and riverine flooding, high heat, and extreme storms and impacts to critical infrastructure, historic downtowns, and vulnerable populations.
    8. Require consistent design guidance for critical transportation infrastructure (culverts, roads, bridges, (utilize MaineDOT design guidance) and all critical infrastructure (WWTPs, hospitals, drinking water systems, etc.)
    9. Track the accomplishments and need to understand the efficacy of implementation efforts.
12. What is the timeframe for this strategy?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Short-term (2022) | Mid-term  (2030) | Long-term (2050) | 2070 -2100 |
| To implement |  |  |  |  |
| To realize outcomes |  |  |  |  |

1. Please analyze the Recommended Strategy against the following criteria. (Each Working Group can add its own sector-specific criteria as appropriate.)

|  |  |
| --- | --- |
| **Workforce** - Will the strategy create new jobs, prevent job loss, or cost the state jobs? | Yes, additional staff at the state and regional levels are needed in order to effectively implement this strategy Including:   * MPAP program (2 + staff at minimum) * Maine Geological Survey (marine geologist, currently federally funded) * Maine DEP * state coastal engineer, * resiliency specialists in regional organizations (support for ~ 8 staff and/or circuit rider).   New jobs are likely in some of the larger municipalities. New roles will be defined within local government that may not require additional hiring or expense. New jobs are also likely in non-profit and educational institutions. Workforce impacts can be measured in avoided damage to vulnerable infrastructure, downtowns, and businesses. |
| **Benefits** (non-workforce) - What are the expected co-benefits of this strategy (e.g., improved health, increased economic activity, wildlife habitat connectivity, reduce natural hazard risk, increased recreation, avoided damage)? | The primary benefit of enhanced technical assistance is avoided damage to infrastructure, buildings, businesses, and the natural environment. Secondary impacts to the local and state economy may be minimized. Negative impacts on water quality and shellfish resources will also be avoided if wastewater treatment plants are protected from flood damage and catastrophic effluent release.  Efficiency considerations are paramount such that:   * The creation and distribution of data and tools will avoid duplication and achieve consistency. * Delivery mechanisms are useable and scalable to communities of varying size and capacity. * Actions may be new but can be integrated into existing governance processes. |
| **Costs** – What are the estimated fiscal costs and other costs to carry out this program. To the state? To municipalities? What resources do you anticipate needing to inform Mainers about the strategy and the opportunity/costs of the strategy? Where would financing likely come from? | Funds are needed to support additional staff at the state level (Municipal Planning Assistance Program, Floodplain Management Program, Maine DEP, Maine Geological Survey) and at the regional level (contracts to regional councils), and large municipalities.  Anticipated funds (from General Fund) are:  New state personnel: ~ $600,000  Additional contractual support for regional staffing: ~$500,000  Development of training programs: ~$100,000 |
| **Equity** - Is this strategy expected to benefit or burden low-income, rural, and vulnerable residents and/or communities? What outreach has been/will be undertaken to understand the impact of the strategy on front-line communities? | There is a deliberate effort to achieve efficiency in the delivery of the necessary technical assistance in this strategy. This is done by establishing statewide clearing house of data, tools, and training coupled with regional delivery of assistance to municipalities. In particular, the strategy stresses coordination and regional support to low-income, rural, and vulnerable residents and communities. |
| **Proven strategy & feasibility** – Has this strategy been implemented successfully elsewhere? Is it feasible with today’s technology? What barriers to implementation exist (e.g., financial, structural, workforce capacity, public/market acceptability)? | The recommended framework for providing technical assistance at state and regional levels is very similar to one that exists now. The primary difference is that current staffing levels are a fraction of what they were in the past at the state level (in municipal planning assistance, floodplain management, marine geology, permitting and compliance, code enforcement training, and others) and support for the regional planning councils has been level or in decline for 30 years.  Training and certification programs for elected officials provided by Association of Climate Change Officers and New England Environmental Finance Center.  A list of example technical assistance tools and approaches are provided in Appendix ##; these come from within Maine and around the country.  There are no technical/feasibility issues associated with the strategy. |
| **Legal authority** - Does the strategy require new statutory (legal/legislative) authority? | No, there is expertise available within state government and regional organizations (regional planning commissions, councils of government, non-profits, extension service) to provide technical assistance. |
| Additional research and data gaps. |  |
| Other? |  |

1. Rationale/Background Information
2. There are many tools, different people are using different tools, often for the same purpose. You don’t always get the same answer from different tools, so what are the appropriate uses for each tool?
3. Some communities are using the flood resilience checklist to revise their flood response, others use it to retain/institutionalize knowledge of programs and activities over time, and others are sharing information across departments and integrating actions with emergency response.
4. Municipalities need support after flood resilience checklist completion to continue implementation and to learn from the experience of others
5. Communities need a process that guides them to define and adopt tangible, actionable things that are specific to their circumstances and hazards.
6. Communities and RPOs rely on guidance products that are created by state agencies as time savers, they don’t need to spend time reinventing the wheel.

\*\*Please footnote substantive disagreements among the Working Group members

**Technical Assistance Examples/Ideas (to be further described and organized and** included in an Appendix**)**

-- [Municipal Vulnerability Preparedness Program](ttps://www.mass.gov/municipal-vulnerability-preparedness-mvp-program) created through Executive Order 569: Establishing an integrated Climate Change Strategy for the Commonwealth 9.16.2016. provides planning and "action" grants that support vulnerable communities; Case Study slide deck : <https://www.mass.gov/doc/mvp-webinar-recording-fy21-funding-round/download> describes 82% of municipalities have rec'd $33M+ in planning & action grants during 1st threes of program.

Flesh out what this might look like. [Tug Hill Commission (NYS)](https://www.tughill.org/wp-content/uploads/2011/09/CRConcept-BPC1987Article.pdf). Look for examples of circuit rider programs through contracted staff/professionals

from [Wells Reserve at Laudholm](https://www.wellsreserve.org/project/decreasing-vulnerability-for-our-beach-based-businesses) Vulnerability for Beach based business; SMPDC FY20 CCG [Tides Taxes and New Tactics](https://www.wellsreserve.org/project/tides-taxes-and-new-tactics)  project description.

See [Damariscotta FY16 CCG](https://www.maine.gov/dacf/municipalplanning/casestudies/docs/6_Damariscotta%20FY14%20CCG%20Coastal%20Resiliency.pdf), [Boothbay Harbor FY17 CCG](https://www.maine.gov/dacf/municipalplanning/casestudies/docs/39_%20LCRPC%20FY17%20CCG%20Downtown%20BBH%20Resiliency.pdf) case studies.

Link to [Resilience Dialogues](file://C:\Users\judith.c.east\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\7BWVMZUN\esilience%20dialogues%20are%20conversations%20that%20occur%20among%20people%20with%20diverse%20perspectives%20who%20have%20agreed%20to%20work%20together%20to%20increase%20community%20and%20ecological%20resilience.%20Planning%20and%20facilitating%20resilience%20dialogues%20requires%20skills%20in%20collaboration,%20stakeholder%20engagement,%20and%20conflict%20management.) webinar recording featuring Chris Feurt, Wells NERRS

Approach Maine News for coverage in a regular feature/column on CC efforts. Consult w/MMA on partnering w/MMA on getting this particular message out in addition to Tides, Taxes and New Tactics and Island Institute work on property tax implications of SLR.

Work in progress [South Portland FY20 CCG](https://www.maine.gov/dacf/municipalplanning/casestudies/docs/65_South%20Portland%20FY19%20CCG%20Vulnerability%20Assessment%20Mapping%20Project%20Description.pdf) project description. Story map approach.

Explore the Boston Region MPO [TA program](https://www.ctps.org/ctta) with regard to how to provide support to municipalities through a circuit rider program which could include regional planning, EDD staff and state staff.

Link to Island institute [I LEAD Leadership workshops](http://www.islandinstitute.org/leadership) etc.

Link to [Small Town Resilience: Lessons from Maine webinar recording.](http://www.communityresilience-center.org/webinars/february-climate-center-webinar/)

Link to [Coastal Community Grants Case Studies webpage](https://www.maine.gov/dacf/municipalplanning/casestudies/ccg-case-studies.shtml).

Michigan’s (Re)Development Ready Communities Model. Contact is Kara Wilbur 512-6047 and kara@principleplaces.com [Development Ready Community Framework Draft Materials dated 3.4.20.](https://www.dropbox.com/s/0mt62suar47m2al/2019_03_01%20Build%20Maine%20Development%20Ready%20Communities.pdf?dl=0)

Encourage the development and use of resiliency standards through planning, design and development process. Such standards would apply to materials, construction techniques, siting of critical facilities and infrastructure, for both new development and redevelopment” Source: [APA Draft Hazard Mitigation Policy Guide](https://www.planning.org/media/document/9195893/)

**Living Shorelines design guidelines, regulations & certifications**

NJ Living Shorelines Engineering Guidelines

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=2ahUKEwjQqo3K67XoAhXkQd8KHcnWDrkQFjAEegQIBRAB&url=https%3A%2F%2Fwww.nj.gov%2Fdep%2Fcmp%2Fdocs%2Fliving-shorelines-engineering-guidelines-final.pdf&usg=AOvVaw2Xdvty-EJG0oWGcTqQnVtM](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.google.com%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3D%26esrc%3Ds%26source%3Dweb%26cd%3D5%26ved%3D2ahUKEwjQqo3K67XoAhXkQd8KHcnWDrkQFjAEegQIBRAB%26url%3Dhttps%253A%252F%252Fwww.nj.gov%252Fdep%252Fcmp%252Fdocs%252Fliving-shorelines-engineering-guidelines-final.pdf%26usg%3DAOvVaw2Xdvty-EJG0oWGcTqQnVtM&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502269887&sdata=KvWqpfasAMkJ8kyCE3bKmQHhWk8LO5cqR%2BzYiZIFmGM%3D&reserved=0)

2015 living shorelines contractor training workshop – maybe some ideas for similar training in Maine?

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwjQqo3K67XoAhXkQd8KHcnWDrkQFjAAegQIARAB&url=https%3A%2F%2Fs3.amazonaws.com%2Fdelawareestuary%2Fpdf%2FNotes\_Living%2BShoreline%2BContractor%2BTraining\_June102015.pdf&usg=AOvVaw1T4uCw8HhkHXwBOUvFYPXF](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.google.com%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3D%26esrc%3Ds%26source%3Dweb%26cd%3D1%26cad%3Drja%26uact%3D8%26ved%3D2ahUKEwjQqo3K67XoAhXkQd8KHcnWDrkQFjAAegQIARAB%26url%3Dhttps%253A%252F%252Fs3.amazonaws.com%252Fdelawareestuary%252Fpdf%252FNotes_Living%252BShoreline%252BContractor%252BTraining_June102015.pdf%26usg%3DAOvVaw1T4uCw8HhkHXwBOUvFYPXF&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502279880&sdata=bK%2FaS54lvl6SVsjELBBHCScrtDKCwUUQEYnzeSg0y84%3D&reserved=0)

Certified Natural Shoreline Professional Course

[https://livingshorelinesacademy.org/index.php/forum/events/116-michigan-certified-natural-shoreline-professional-course#118](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Flivingshorelinesacademy.org%2Findex.php%2Fforum%2Fevents%2F116-michigan-certified-natural-shoreline-professional-course%23118&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502279880&sdata=WfLog0yQfsrIepsn5KhGartbGavanZJpfsxGwK6zSVc%3D&reserved=0)

Living shorelines regulations

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=51&ved=2ahUKEwj14qLW7rXoAhWmY98KHVkwBvU4MhAWMAB6BAgCEAE&url=http%3A%2F%2Fwww.mde.state.md.us%2Fprograms%2Fwater%2FWetlandsandWaterways%2FDocuments%2Fwww.mde.state.md.us%2Fassets%2Fdocument%2Fwetlandswaterways%2FLiving%2520Shoreline%2520Regulations.Final.Effective%252002-04-13.pdf&usg=AOvVaw0sXLNDSMGW8K2FabYl0s6S](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.google.com%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3D%26esrc%3Ds%26source%3Dweb%26cd%3D51%26ved%3D2ahUKEwj14qLW7rXoAhWmY98KHVkwBvU4MhAWMAB6BAgCEAE%26url%3Dhttp%253A%252F%252Fwww.mde.state.md.us%252Fprograms%252Fwater%252FWetlandsandWaterways%252FDocuments%252Fwww.mde.state.md.us%252Fassets%252Fdocument%252Fwetlandswaterways%252FLiving%252520Shoreline%252520Regulations.Final.Effective%25252002-04-13.pdf%26usg%3DAOvVaw0sXLNDSMGW8K2FabYl0s6S&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502289877&sdata=SXx%2FbQLY7SVbRo0jZSGGlpPC%2Btsnlyu1hZBGwyYHDY4%3D&reserved=0)

Maine Geological Survey - Living Shorelines in Maine

<https://www.maine.gov/dacf/mgs/explore/marine/living-shorelines/>

The Nature Conservancy – Living Shorelines in New England: State of the Practixe

<https://www.conservationgateway.org/ConservationPractices/Marine/Pages/new-england-living-shorelines.aspx>

**Climate change certifications**

Association of Climate Change Officers provides training for elected officials and the New England EFC has a relationship with them to provide trainings and webinars in RI & MA. Trainings are pretty general but on-point for the states, and appropriate for elected officials.

[https://climateofficers.org/certification-professional](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fclimateofficers.org%2Fcertification-professional&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502289877&sdata=BzPA2jKZ0R5udf7rYrsk4RgAX9MWkQ40YtSC40cEgOc%3D&reserved=0)

Coastal Climate Risk and Resilience Certification

[https://c2r2.rutgers.edu/certificate-program/](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fc2r2.rutgers.edu%2Fcertificate-program%2F&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502299868&sdata=s9qfa3YUh%2FM5iAWkxxC8N4nDX9YZzvKNhC5bwjXavPk%3D&reserved=0)

Infrastructure Resilience Professional (IRP) designation – Canadian but intended for engineers – maybe a model?

[https://engineerscanada.ca/services/infrastructure-resilience-professional](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fengineerscanada.ca%2Fservices%2Finfrastructure-resilience-professional&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502299868&sdata=g32Y2jM6qQbI3zBUW9M5FrFw%2F%2BayxMwM0d1EGSegsYQ%3D&reserved=0)

more on program [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=12&ved=2ahUKEwjp5pOE8bXoAhWLUt8KHeA6BQg4ChAWMAF6BAgHEAE&url=http%3A%2F%2Fwww.pegnl.ca%2Fadmin%2Fresources%2Firppegnlarticlerevisedjuly-2017.pdf&usg=AOvVaw2Ngy8SZ7T\_DqPVv-URjLs1](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.google.com%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3D%26esrc%3Ds%26source%3Dweb%26cd%3D12%26ved%3D2ahUKEwjp5pOE8bXoAhWLUt8KHeA6BQg4ChAWMAF6BAgHEAE%26url%3Dhttp%253A%252F%252Fwww.pegnl.ca%252Fadmin%252Fresources%252Firppegnlarticlerevisedjuly-2017.pdf%26usg%3DAOvVaw2Ngy8SZ7T_DqPVv-URjLs1&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502309865&sdata=FaPUgZfpcjR3lNTNmZOFpQ%2FFUghXBMd%2FqtgullL%2Bm%2Bw%3D&reserved=0)

and more [https://www.canadianconsultingengineer.com/engineering/first-six-people-made-infrastructure-resilience-professionals/1003402863/](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.canadianconsultingengineer.com%2Fengineering%2Ffirst-six-people-made-infrastructure-resilience-professionals%2F1003402863%2F&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502309865&sdata=QX%2BUVxbVFFpojlp1roH69TEnvTkFUXIV2ZvoLEyz530%3D&reserved=0)

Certified Climate Change Professional

[https://www.mdclimateacademy.org/programs-ccp](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.mdclimateacademy.org%2Fprograms-ccp&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502319855&sdata=90h%2BQvu6z6lpuqMkPE0zQ1Oi5x82BUkxim1PPW2Tcz4%3D&reserved=0)

Climate Resilience Certificate

[https://www.antioch.edu/new-england/degrees-programs/environmental-community-studies/climate-resilience-certificate-for-professionals/](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.antioch.edu%2Fnew-england%2Fdegrees-programs%2Fenvironmental-community-studies%2Fclimate-resilience-certificate-for-professionals%2F&data=02%7C01%7CJudith.C.East%40maine.gov%7C25a1aef229824491d40108d7d0cd7e5d%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637207454502319855&sdata=K1qf5ue0vh%2Fh7mY91q4F2PEOoVbh5QW70NZZUt1x31k%3D&reserved=0)

Municipal flood protection program of the Pennsylvania DEP.  Rather than provide TA only, the state instead provides a very high level of assistance to municipalities starting at initial evaluation of flood risk right through to funding and constructing recommended improvements that exceed a 1:1 C/B ratio.  The program is not intended to address SLR but rather is focused on protection from “normal” river and stream flooding but I can see how it might be adapted to enhanced flooding due to climate change/SLR.  Projects proposed for implementation must be funded individually by the state legislature rather than the Department using a pool of funds set aside for such projects.  Pretty interesting approach.

The program is described here [https://www.dep.pa.gov/Business/Water/Waterways/Flood-Protection/Pages/default.aspx](https://nam03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.dep.pa.gov%2FBusiness%2FWater%2FWaterways%2FFlood-Protection%2FPages%2Fdefault.aspx&data=02%7C01%7CJudith.C.East%40maine.gov%7Cc3c86e4fcb644c63b61908d7c43d941e%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637193641511758730&sdata=UqtXhqjpS%2BSsbZjVTNPglod9uNDeDGMmz29IWsqV%2Brw%3D&reserved=0) but the nuts and bolts are summarized in the Flood Protection Manual [http://files.dep.state.pa.us/Water/BWEW/Flood\_Protection/Documents/FP\_MANUAL.pdf](https://nam03.safelinks.protection.outlook.com/?url=http%3A%2F%2Ffiles.dep.state.pa.us%2FWater%2FBWEW%2FFlood_Protection%2FDocuments%2FFP_MANUAL.pdf&data=02%7C01%7CJudith.C.East%40maine.gov%7Cc3c86e4fcb644c63b61908d7c43d941e%7C413fa8ab207d4b629bcdea1a8f2f864e%7C0%7C0%7C637193641511758730&sdata=4Fa83uMlg%2BmIuOKhFyNbpvHKle%2FLzCczoeUYp5kW0U0%3D&reserved=0).  Based on the projects list, they have implemented a ton of projects.

1. Relocation discussions need to recognize the wide range of potential community impacts such as availability of alternate housing, loss of tax base, reduction in user base for municipal utilities, loss of population to neighboring communities, impact on community culture, historic properties, neighborhoods, and others. [↑](#footnote-ref-1)
2. Projects that restore, protect and/or manage natural systems to address hazards like flooding, erosion, drought, and heat islands in ways that are cost-effective, low maintenance, and multi-beneficial for public health, safety, and well-being. Examples include living shorelines, land conservation, restoration and green stormwater management among others. [↑](#footnote-ref-2)
3. Examples include helping towns navigate the RFP issued by the PUC for municipal solar projects, establishing micro-grids, additional municipal financing option (perhaps through the Bond bank) to help town bring more municipal solar or other renewable projects online. [↑](#endnote-ref-1)
4. Many good examples exist based on projects completed using Coastal Community Grants and Shore and Harbor grants. Additional case studies are available from New England environmental Finance Center. [↑](#endnote-ref-2)