Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: *Bolton & Clinton*
Project Title: *Nashua River Communities Resilient Lands Management Program*
Award Year (FY): *FY22-FY23*
Grant Award: *$308,691*
Match: $77,173
Match Source: *Staff, Volunteer, Minuteman Students time/hours*
One or Two Year Project: *Two year*
Municipal Department Leading Project: *Town of Bolton*
Project Website URL: ***https://climateresilient.wixsite.com/nashuariver***
Community Overview:

- What is the population size of your community and where is it located?

  Bolton and Clinton are located in Central Massachusetts. Bolton has a population of 5,665 and Clinton has a population of 8,166 (2020 Census Bureau). The two communities are located in Central Massachusetts within the Nashua River Watershed.

- Do you have any Environmental Justice or other Climate Vulnerable communities?

  Clinton has an Environmental Justice population based on minorities and income data. Bolton does not have an Environmental Justice population but has vulnerable communities including Seniors and youth populace. Bolton has properties (as proven through correspondence and community engagement in this project) that serve the EJ population from Clinton and other nearby communities.

- Other unique traits of your municipality like who the top employers are, geography, history, etc.

  Bolton is a residential and agricultural community on the east slope of the Nashua River Valley on an historic east-west corridor. With many hills but few streams for power, it developed as an agricultural community. Rich forests and lime deposits also supported limestone quarries and kilns which once produced potash, lime, and brick products. Currently top employers consist of Paragon Communications, International Golf, and VMS Software among others. Bolton boasts 2,000 acres of permanently protected open space parcels throughout which are over 47miles of trail allowing engagement with the outdoors only a short distance from their parking location or front door.

  Clinton was in the Mill District of Lancaster. The Bigelow brothers, Erastus, and Horatio started the industrial revolution that left a lasting mark on many aspects of Clinton in the early 1800s. Later, unprecedented growth in the population and industry allowed local leaders to separate from Lancaster, forming Clinton in 1850. The industrial foothold began to slope during the Great Depression but numerous mill buildings were discovered again from 1970s - 1980s by modern day entrepreneurs and many successful businesses continue to thrive within the community. Currently, leading private sector full-time equivalent employers are Jabil, Umass Memorial Health HealthAlliance-Clinton Hospital, and Phillips Medisize among others.

Project Description and Goals:

- Where was the project located?

  The Project was located within the territory of Nipmuc peoples; Towns of Clinton and Bolton within the Nashua River Watershed.

- What climate change impacts did the project address?

  The changing climate, specifically, has shown a negative impact on how forested, wetlands and grass covered lands provide important ecosystem services. The role of forested areas in storing and sequestering carbon, cooling neighborhoods, reducing runoff from rain events, and filtering rain water is well documented. As our climate changes, getting warmer with more severe storms, the ability of forested areas to provide these services is diminished, and the importance of keeping existing trees healthy and growing is even more important. Management of forest and tree health, soil health, and at times, tree species and forest density, can work against the effects of climate change to maintain and enhance forest health and the abilities of forested areas to provide these services.

  Grass covered areas, both public, such as playing fields, or private, such as residential lawns, also provide carbon storage and sequestration, rainwater management, neighborhood cooling, and other services, as well as providing recreational spaces of all sorts. Because these areas are much more actively managed, the opportunities for increasing the level of ecosystem services through management practices is much greater.

  While many of the ecosystem services provided by wetlands are recognized by the interests of the Wetlands Protection Act and associated regulations (WPA) and local wetlands bylaws and regulations, the WPA does not recognize the carbon storage and sequestration functions of wetlands, nor the landscape cooling functions, and does not explicitly identify the interests of the WPA as climate resilience ecosystem services. Consequently, the 2 towns of Clinton and Bolton do not have mechanisms to establish performance standards for impacts to the climate related ecosystem functions of wetlands. This project allows the towns to protect these important ecosystem services, and thereby enhance the climate resilience and ecological carbon storage/sequestration capacity of these communities.

- What were the specific goals and tasks of the project as stated in your application?

1. *The goal of the project is to strengthen the health of these lands so that they remain resilient in providing ecosystem services, so that the communities can, in turn, build strength and resilience.*

2. *Promote management practices that improve forest and wetland health*
3. *The goal of the land management guides is to transform how existing maintenance time and resources are spent, not to create new maintenance needs. A successful project would shift how land maintenance is done.*
4. *Create Wetland bylaws and regulations that would establish carbon storage/sequestration and climate resilience interests for the Clinton and Bolton wetlands bylaws and regulations and associated performance standards.*

5. *The aim of the Nashua River Communities Resilient Lands Management Project is to define land management practices that strengthen and enhance ecosystems services of lands within the participating municipalities and the region that are not covered with impervious surfaces and not engaged in agricultural production. Water management, carbon sequestration, habitat support, temperature modulation, are examples of ecosystem services that improved management practices can support and enhance.*

- Did your project meet the goals set forth in your application in terms of:
    - Employing nature-based solutions
    - Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations
    - Providing regional benefits
    - Implementing the public involvement and community engagement plan set forth in your application
    - Finishing the project on time

The project goals set forth in our application were met in terms of employing nature-based solutions, improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations, providing regional benefits, implementing public involvement and community engagement plan set forth through our application and finishing the project on time. The project significantly focused on public involvement and community engagement to directly inform the land management guides, and creation of bylaw revisions tailored toward climate resiliency components. Regional benefits were directly derived through the process of developing climate regulations and bylaw revisions through collaboration with (MACC) Massachusetts Association of Conservation Commissions. Additionally, participation from regional partners including the Nipmuc tribal partners, directly influenced the components of the Land Management Guides. These guides and the bylaw with regulations may be duplicated across the Commonwealth while allowing other communities to tailor these deliverables to their own communities. This MVP Action grant also sought to focus on connecting with our EJ and other climate vulnerable populations through the use of focus group meetings, discussions, site visits, translation services and the use of community liaisons. Nature-based solutions are the centerpiece of this work in conjunction with community engagement. Nature-based solution centered approaches are highlighted in the management guides providing the community with a point of initiation as they embark on a journey contributing to a more resilient community. The project has finished on time, but this does not mean the end of these efforts. These networks, partnerships, and relationships are pivotal components of the past two years (and more). The communities of Clinton and Bolton hope to continue working towards strengthening these relationships and working together toward a more resilient land stewardship approach.

Results and Deliverables:

- Describe, and quantify (where possible) project results (e.g. square footage of habitat restored or created, increase in tree canopy coverage, etc.). Report out on the metrics outlined in your application.

The Nashua River Communities Resilient Lands Management Project was a Type 1 Project (Planning, Assessment, capacity building and regulatory updates). The land management guides were developed through the Nashua River Communities Resilient Lands Project to be highly transferable to other communities .

MACC will create and share broadly the wetlands bylaw and regulation updates produced by this project. Elements will be incorporated specific to carbon storage and sequestration and cooling ecosystem service performance standards.

The primary measure of success for the land management guides will be how widely they are adopted by both public and private land managers. The Town of Clinton will take the Wetland Bylaw with climate resiliency components to Town meeting next spring (after further review by the community) in the hopes of implementing their first Wetland Bylaw. The Town of Bolton will take the Wetland Bylaw and Regulations now revised with climate resiliency components to Town meeting next spring with the hopes of implementing these changes. A second measure of success will be the extent to which Town residents feel that the guides help them to work together to achieve the towns' and Massachusetts' climate action and resilience goals. A constant piece of feedback from both communities was "I just don't know where to start". The guides have already provided that starting point to which residents and other community members can seek to grow into a more resilient community.

Over time, the towns of Clinton and Bolton will continue to monitor the success of the wetland and development bylaws and regulation updates by tracking improvements in development projects in terms of their 1) avoidance of impacts and 2) minimization of impacts to wetlands, forests and soils, and when avoidance and minimization of impacts have been pursued to the fullest, then mitigation for any remaining impacts, including mitigation for losses of wetland, forest and soil carbon, temporal losses, and losses of capacity to provide climate resilience. Additionally, feedback will be obtained from the MACC Climate Conversations Committee (in addition to feedback from the Clinton and Bolton communities), which will help assess the effectiveness of the bylaws and regulations once implemented.

- Provide a brief summary of project deliverables with web links, if available.

Many of the project deliverables may be found by utilizing the link to the project website. There you will find the Project Story Map, Data Viewer, Project Recommendations, Climate-Smart Policy Recommendations, then a breakdown and resources associated with two of the major land uses of this project; Forests and Turf.

Project Website Link: https://climateresilient.wixsite.com/nashuariver

During the 2022-2023 school year, the Minuteman Environmental Class of 2025 collaborated with the Nashua River Project team to develop a set of climate solutions for increasing resilience at Forbush Field. The project was focused particularly on natural resource conservation and nature based solutions. They used their technical expertise in ArcGIS and I-tree, as well as conducting interviews with residents, to produce their recommendations.

Story Map Link: https://storymaps.arcgis.com/stories/6f3de2565ea44ed498ed638bbbb70422

One of the primary deliverables is the land management guides focused on forests and turf land covers. These user friendly guides will provide property owners, managers, and businesses with a strong starting point for creating a more resilient landscape.

The other primary deliverable being the climate resiliency language incorporated into bylaw and regulations tailored specifically to each community (Bolton and Clinton). These Bylaws and regulations will be reviewed by relevant stakeholders, boards, and council before being brought to Town Meeting for a final decision to be made on what components to adopt in each Town.

Lessons Learned:

- What lessons were learned as a result of the project? Focus on both the technical matter of the project and process-oriented lessons learned.

  Community engagement benefits from relationships and relationship building takes time. It cannot be rushed, and must happen through organic reciprocal communication or activities. Each community member brings their own knowledge and experience. This project specifically allowed shared experiences to be explored through verbal exchange of ideas. Additionally, this process allowed for the acknowledgement of some prejudices that came to light while allowing a safe space for these prejudices to become disbanded.

  In all the major lessons learned along with the above, community members wish to support and create a more resilient community but just do not know where to start. They also may be overwhelmed with the amount of information therefore need a place to start. It is our hope that through the use of the curated land management guides geared towards various audiences, and implementation of climate resilient components integrated into bylaws and regulations; that the community will have a strong starting place to continue toward a path to climate resiliency.

- What is the best way for other communities to learn from your project/process?

  Replicate and improve upon networking/relationship building components of the project. Review online resources through our project website or contact local community leads.

Partners and Other Support:

- Include a list of all project partners and describe their role in supporting/assisting in the project.

  Minuteman School Students (teacher Sarah Cammer)

  Nipmuc tribal partners

  Mashpee-Wampanog tribal partners

  Council on Aging Bolton

  Parks and Recreation Bolton

  Soccer Association Bolton

Project Photos:

- In your electronic submission of this report, please attach (as .jpg or .png) a few high-resolution (at least 300 pixels per inch) representative photos of the project. Photos should not show persons who can be easily identified, and avoid inclusion of any

copyrighted, trademarked, or branded logos in the images. MVP may use these images on its website or other promotional purposes, so please also let us know if there is someone who should receive credit for taking the photo.

Representative photos and related descriptions are located in the MVP SharePoint under 15.2 Draft Year 2 Case Study Folder.