TOWN of HUBBARDSTON
Community Resilience Building Workshop Summary of Findings

Funding provided by the Executive Office of Energy and Environmental Affairs Municipal Vulnerability Preparedness (MVP) Program

JUNE 2020

Weston & Sampson

Montachusett Regional Planning Commission
established 1968
Commonwealth of Massachusetts

Contents

1.0 INTRODUCTION

The Town of Hubbardston pursued the Municipal Vulnerability Preparedness (MVP) Planning Grant to expand the assessment of the Town's vulnerability to climate change and to identify priority action items that are well suited to advancing the MVP program's priorities. The MVP process in Hubbardston was multidisciplinary in nature as stakeholders represented each facet of the municipal government. The MVP Planning Grant was also leveraged as an opportunity to craft a coordinated vision and to identify future areas of collaboration.

MVP Objectives in Hubbardston

Increase the resilience of the community

Raise awareness of climate threats

Identify priority actions to move forward

Create implementation pathways

1.1 Land Use and Critical Facilities

Most of Hubbardston's land is either undeveloped forest or wetlands and water (87.8%), and these natural resources are important components of the Town's physical, historical, and cultural landscape. Forested areas are most vulnerable to brush fires and severe storms that are anticipated to worsen with climate change. Brush fires can become a serious concern when residential uses are dotted throughout all the forested areas. In addition, large tracts of forest can have invasive species that can decrease the value and aesthetic of the forests, as well as choke out native species. Agriculture uses 3.6% of Hubbardston's land and are also vulnerable to climate change. Increased temperatures, drought and intense rainfall can all impact the yield of crops. The growing season is likely to expand, but in the current climate, late spring freezes have been disruptive.

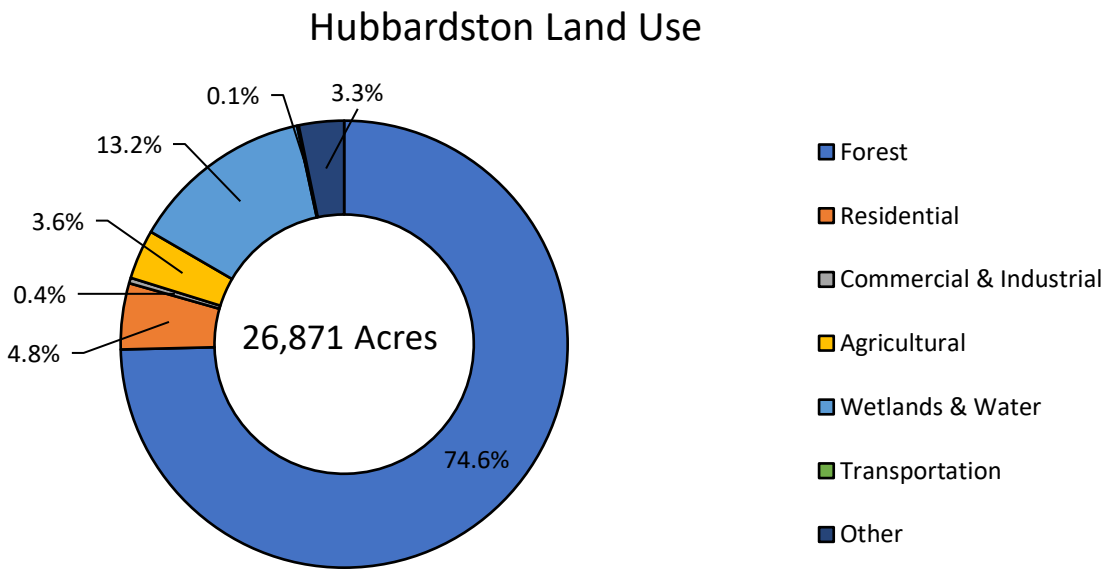

Figure 1. Land Use in Hubbardston (Town of Hubbardston and MRPC, 2015)

Using the Town's latest Hazard Mitigation Plan (updated in 2015) as a base, the planning process updated and confirmed a list of critical facilities (included in Appendix B: Community Resilience Building Workshop Materials). These critical facilities were mapped against the Federal Emergency Management Agency's (FEMA) flood maps. The resulting Hazard Map (included in Appendix B) was used as a reference for participants during the Community Resilience Building Workshop.

1.2 Demographics and Social Services in Hubbardston

Hubbardston is home to approximately 4,642 residents. Over a third of the population is under 18 or over 65, which is comparable to Massachusetts as a whole (36%). Youth and seniors are considered vulnerable populations during extreme weather events because of potential isolation, lack of access to resources, and need for additional care. People with a disability may also be vulnerable for similar reasons. The most recent data shows that the residents of Hubbardston trend towards older than the state, with the median age of Hubbardston being nearly 47 years old, more than 7 years older than the reported median age of Massachusetts at 39. Climate change planning efforts should consider the unique needs of this demographic, and the increasing demand that an aging population may put on the Town's emergency response personnel, public facilities, and other social services.

Table 1. Vulnerable Populations (5-Year American Community Survey, 2014 - 2018)

Population	Hubbardston	Massachusetts
2010	4,310	6,477,096
2018	4,642	6,830,193
Age		
Under 18 years:	20.9%	20.2%
65+ years:	15.3%	15.8%
Median age:	46.9	39.4
Education		
Bachelor's degree or higher:	32.2%	42.9%
Additional Information		
Median household income:	$95,530	$77,378
Persons in poverty:	2.9%	10.8%
With a disability:	7.0%	11.6%
Language other than English spoken at home:	7.4%	23.6%

Residents with limited English-language proficiency are also considered vulnerable because emergency alerts and communications are less likely to be in their native language. For this reason, additional care should be taken to provide emergency communications in multiple languages. Low-income households that face financial burdens considered vulnerable because they may find it more difficult to prepare, adapt, or recover from extreme events. Although Hubbardston has a lower percentage of people living in poverty compared to the state (refer to Table 1), and has no environmental justice communities, it is important to maintain awareness of these vulnerable population blocks.

1.3 Background on Current Resilience Efforts

The Town of Hubbardston is involved in ongoing resiliency work related to zoning and regulations, public infrastructure, stormwater management, public safety, community outreach, and tree maintenance. Many of these actions were captured in the 2015 update of Hubbardston's Hazard Mitigation Plan as part of the Regional Montachusett Hazard Plan and summarized in the table below.

Table 2. Summary of Existing Hazard Mitigation Measures (Town of Hubbardston and MRPC, 2015)

Hazard	Mitigation Measure	Update/comments
Flooding	Storm water management standards	No improvements or changes needed. Storm water management standards are and continue to be enforced.
	Wetlands Protection Act (state)	No improvements or changes needed.
	Wetlands Protection Bylaw (local)	No improvement or changes needed.
	100 Year Flood Zone	Insurance Flood Rate Maps Need to be updated.
	Town Bylaw Flood Plain District	Insurance Flood Rate Maps need to be updated.
	Maintenance of municipal storm water drainage system	Maintenance continues but additional personnel and equipment is needed to undertake this task.
	Maintenance of public water bodies (ponds, streams, brooks, wetlands)	Maintenance continues. No improvements or changes needed.
	Inspection of major dams	Update Dam failure studies for the dams rated as high hazard.
	Storm water management standards	No improvements or changes needed. Storm water management standards are and continue to be enforced.
	Wetlands Protection Act (state)	No improvements or changes needed.
	Wetlands Protection Bylaw (local)	Continued enforcement remains in place. No improvements or changes needed.
Wind	State Building Code	Continued enforcement remains in place. No improvements or changes needed.
	Code Red	Code Red remains in effect. No improvements or changes needed.
	Tree Maintenance	Tree maintenance continues. No improvements or changes needed.
Winter-Related	Residential Parking Bans	Enforcement continues but additional personnel and equipment needed.
	Clearing Snow from Major Arterial Routes	Snow clearing continues but additional personnel and equipment needed.
Fire	Limited Brush Clearing	Identify additional Areas with Potential for Brushfires.

During the Community Resilience Building Workshop and Listening Session, participants shared additional examples of existing resilient strategies in Town:

- Operations and Maintenance:
  - The Town coordinates its tree trimming program with the National Grid
  - Ongoing work to maintain and update road infrastructure
- Public Outreach and Education:
  - The Town shares emergency notifications with residents using Reverse 911
  - The Town shares information through its website and social media platforms including Twitter, and Facebook
- Emergency Shelters:
  - The Senior Center is used as a shelter
- Regulations:
  - A forest management plan is currently under development

2.0 PROCESS AND TIMELINE

The MVP planning process engaged municipal leaders, key stakeholders and the general public to inform the Summary of Findings Report.

2.1 Core Team Meetings

The Town recognized the need for robust engagement of all municipal departments and utilized a standing leadership meeting to convene its first Core Team meeting on March 25, 2020. The Core Team guided the process by reviewing and providing feedback on the materials that would later be used at the Community Resilience Building Workshops. The Core Team provided information about past hazard events and other input related to natural hazards and climate change impacts in Hubbardston. The narratives and ideas of the Core Team improved the project team's materials and brought the global phenomenon of climate change down to the local scale. The Core Team also developed the invitation list for the Community Resilience Building Workshop described below and reviewed the final priority action items to ensure local priorities were captured.

2.2 Community Resilience Building Workshops

The Town planned to engage stakeholders using the Nature Conservancy's Community Resilience Building (CRB) Workshop Guidebook. The objective of the CRB Workshop was to capture ideas from a diverse set of perspectives and to build a broad coalition of stakeholders to move climate resilience forward in Hubbardston. Municipal staff, town boards and committees, local organization, regional partners and residents were invited to participate in the CRB Workshop along with any interested residents. Originally planned for an all-day event, the CRB Workshop was amended to follow the public health guidelines in response to the COVID-19 pandemic. Approximately 20 participants were able to join throughout the three CRB workshops held virtually. The CRB workshops utilized a Risk Matrix to complete the objectives of the individual sessions as a single group. The CRB workshop's central objectives were to:

- Define top local natural- and climate-related hazards of concern
- Identify existing and future strengths and vulnerabilities
- Develop prioritized actions for the community
- Identify immediate opportunities to collaboratively advance actions to increase resilience

2.3 Listening Session

As part of the CRB process, the Town created a virtual public listening session in the form of an online video webinar and survey to collect feedback. Fifty-three people provided feedback through the survey. To promote the listening session, an invitation was sent to the CRB Workshop invitee list who were asked to promote the listening session through their own networks. Additional promotional materials were posted to social media and the Town's webpage. The listening session presented an overview of the planning process, climate impacts in Hubbardston, and the results of the CRB Workshops. The summary of the meeting and survey results are available in the Appendix.

3.0 TOP HAZARDS

During the CRB Workshop, participants discussed the Town's greatest threats under climate change in a large group format. The hazards initially introduced to start the conversation included flooding, wildfires, extreme wind events (including severe thunderstorms and tornados), drought, extreme temperatures and winter weather (including Nor'easters, ice storms, and severe storm storms). During the group discussions, workshop attendees were able to narrow down these event types to four top hazards.

3.1 Top Hazards

Flooding, severe winter storms, extreme heat events such as drought and fires, and more powerful storms and high winds emerged as the top areas of concern during the CRB Workshops. These hazards are discussed in more detail in the following sections. At the public listening session, attendees indicated that flooding was of the most concern.

Flooding | High Winds | Extreme Heat Drought, and Fire | Winter Storms

3.2 Current Concerns and Future Challenges

3.2.1 Winter Storms

The 2008 ice storm was an important event in Hubbardston as the ice storm occurred when there were still leaves on the trees and it caused a lot of damage to trees and widespread power outages. The blizzard of 2013 left nearly 400,000 Massachusetts residents without power and these storms are among the most expensive and disruptive weather events in Massachusetts.[1] A blizzard in 2015 led to limited public transportation services in Hubbardston and the surrounding area for weeks after the event.[2] Public transit connections are especially important for low income residents who may not have access to a personal vehicle. Snowfall is likely to decrease due to climate change in the long term, but in the short term, snowstorm intensity is likely to increase.

[1] Commonwealth of Massachusetts, Massachusetts Emergency Management Agency (MEMA), and Massachusetts Executive Office of Energy & Environmental Affairs (EOEEA), "Massachusetts State Hazard Mitigation and Climate Adaptation Plan," September 2018, mass.gov/files/documents/2018/10/26/SHMCAP-September2018-Full-Plan-web.pdf.

[2] Town of Hubbardston and Montachusett Regional Planning Commission (MRPC), "Town of Hubbardston Hazard Mitigation Plan: 2015 Update."

3.2.2 High Winds

High winds and more intense weather events such as thunderstorms and Nor'easters can produce strong, powerful winds in addition to heavy rainfall or snow. Nor'easters are expected to increase in intensity and duration and have in the historic data.

Felled trees and power lines are a frequently cited concern in Hubbardston. Most of the Town's electrical distribution is through overhead lines and as such these lines are vulnerable. Feedback from the Listening Session survey following the Community Resilience Building workshops revealed that a number of residents have experienced downed powerlines and cut communications, such as internet, as a result of such weather previously.

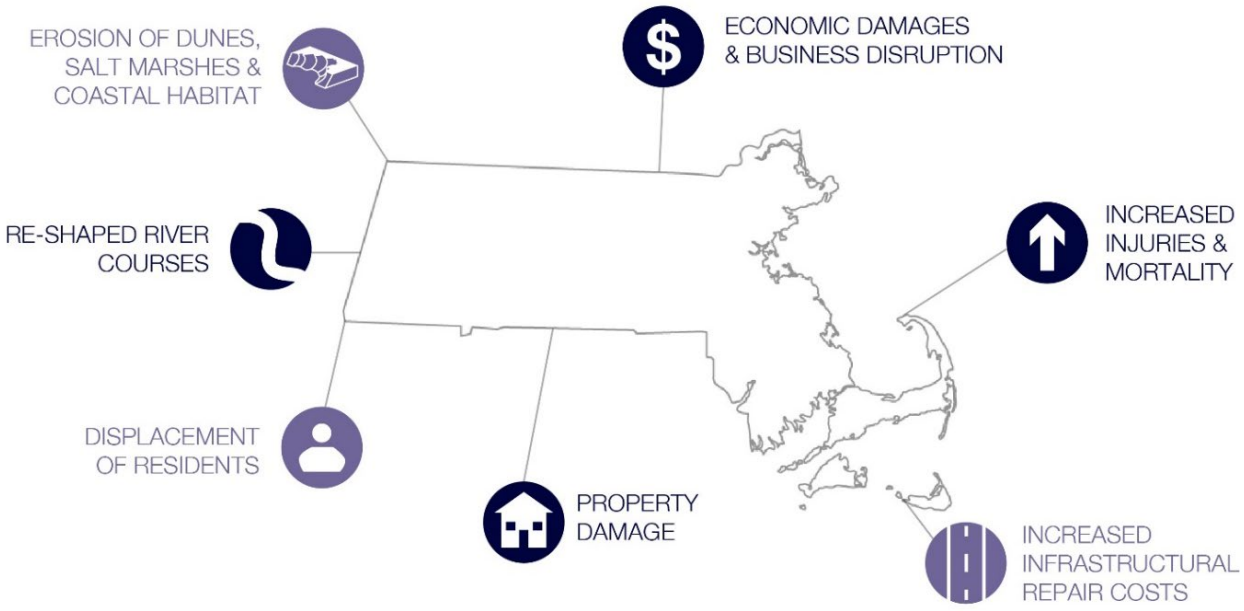

Figure 2. Impacts of severe storms (EOEEA, 2019)

3.2.3 Extreme Temperatures and Drought

Episodic droughts, or droughts lasting one to three months, are predicted to occur more frequently in the late summer and early fall. Under a high emissions scenario, the frequency of episodic droughts lasting up to three months could increase as much as 75% by 2100. Increasing temperatures combined with decreasing summer rainfalls could produce drought conditions like those experienced in the summer of 2016.[3] Increasing temperatures and dryer conditions under droughts can also lead to increased wildfire risk. There is concern about wildfire risk in the areas close to residential housing. In addition, more extreme high temperatures can cause residents health difficulties and increase power usage due to needed air conditioning.

[3] Massachusetts Executive Office of Energy & Environmental Affairs and Adaptation Advisory Committee, "Massachusetts Climate Change Adaptation Report." P19.

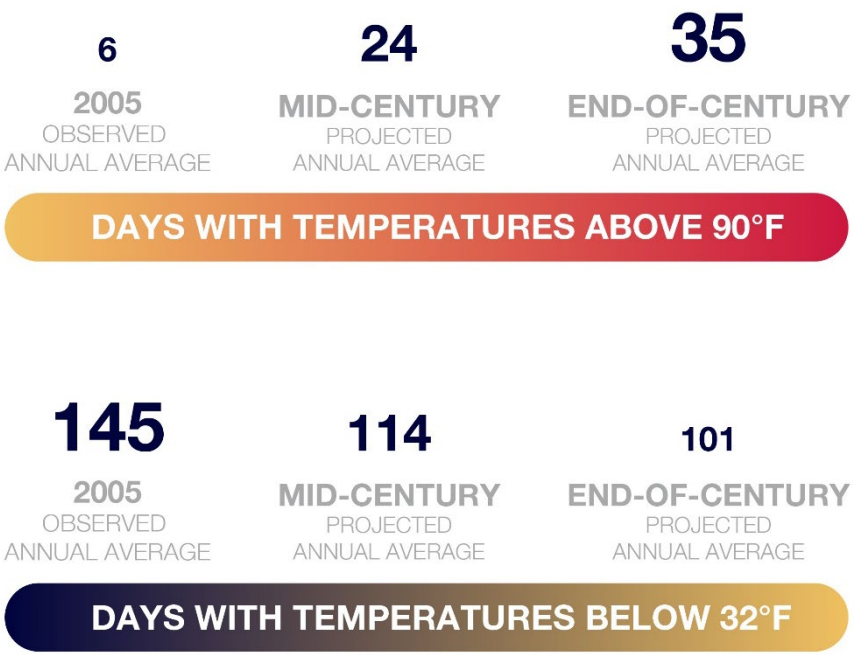

Figure 3. Extreme temperatures (EOEEA, 2019)

3.2.4 Flooding

Across the northeast, precipitation during heavy events increased by more than 70% between 1958-2010.[4] This change in precipitation patterns can lead to increased riverine and stormwater flooding. These conditions are expected to continue to worsen, with an anticipated 8% increase in extreme precipitation events by midcentury, and a 13% increase by 2100.[5] These changes will require incorporating climate change considerations (including future precipitation data) into the design of public infrastructure, which often have a lengthy design life and can be difficult to retrofit.

Stormwater flooding due to poor drainage, increased impervious surfaces, and undersized infrastructure is a growing concern. Hubbardston has documented known areas with undersized and aging culverts that have flooded in the past. Combined with the freeze/thaw cycle, the damage to Hubbardston's roadways could lead to loss of accessibility to and from entire neighborhoods or areas in town if not addressed.

[4] Massachusetts Executive Office of Energy & Environmental Affairs (EOEEA), "Climate Change Clearinghouse for the Commonwealth," Resilient MA, 2019, resilientma.org/.
[5] Massachusetts Executive Office of Energy & Environmental Affairs and Adaptation Advisory Committee, "Massachusetts Climate Change Adaptation Report," September 2011. P19

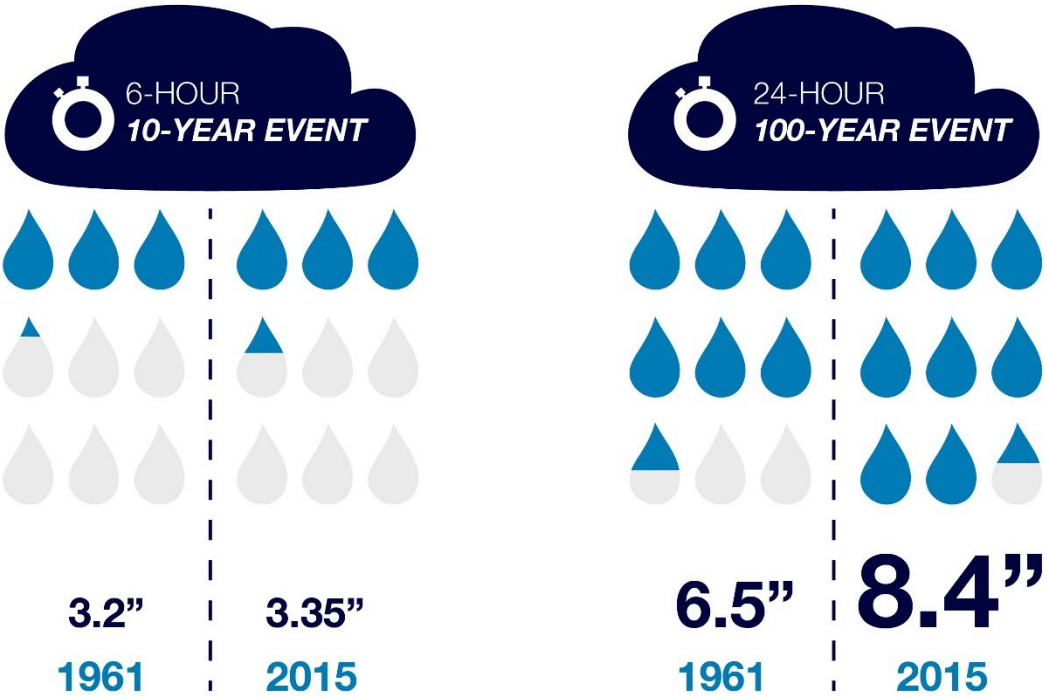

Figure 4. Changes in Precipitation (NOAA TP-40 [1961] and NOAA Atlas Volume 10 [2015])

4.0 VULNERABILITIES

The need for infrastructure upgrades, improved transit and access, and protecting our environmental assets were highlighted during discussions. The specific examples of areas of concern were grouped within the following three categories: infrastructural, societal, and environmental.

4.1 Infrastructure

Workshop participants identified those key infrastructural features in Hubbardston that are most vulnerable to natural hazards and climate change impacts or may be so in the future. They are:

- Williamsville Road culvert is failing and needs replacing.
- New Templeton Road culverts are undersized and need reassessment.
- Brigham Street culvert causes flooding.
- Route 62 and Evergreen bridge and culverts needs assessment and repair
- Several dams are in disrepair and need removed or rehabilitated, especially the Burnshirt Road Dam and the Brigham Pond Dam. Sedimentation and water quality related to the dams is a concern.
- Mobility within the Town Center and need for better water and sewer infrastructure.
- Public Library does not have air conditioning and is not fully ADA accessible.
- Roadways are in poor condition due to the freeze-thaw cycle and in some places the road is very narrow. Templeton Rd and Route 68 would be high priorities.
- Many roads in town need paving due to yearly freeze/thaw.
- There are 7 miles of dirt roads that require regular maintenance and are vulnerable to climate impacts from freeze/thaw.
- Hubbardston has 87 miles of roads that need considerable attention and repair
- School generator only runs lights and a refrigerator. The generator would not power showers or heat.
- Power outages are frequent during wind and winter weather. Specifically, the areas on and around Williamsville Road are more vulnerable to outages.
- None of the shelters have back up power sources.
- Slade Building containing Senior Center/Police Station/Administration offices is aging and space is limited.
- Town Center needs water supply protection and backup power to the Town Center Well PSW ID 214-0004.
- Numerous locations throughout the town do not have adequate cell or wi-fi service.
- The communication towers are aging and lack redundancies.

4.2 Societal

Workshop participants discussed the impact of climate change to vulnerable populations and essential services, which included:

- The existing plan for pets and farm animals during hazard events needs to be incorporated into a larger emergency plan.
- Lack of affordable senior housing.
- May be difficult to reach everyone in town during a hazard event.
- EEE, Lyme disease, and other vector borne diseases are a threat to public health and effect quality of life (cancellation of events and recreational activities) as well as economic development.
- Senior housing near Brigham does not have a generator.
- Reliance on volunteers, who do a great job, but increase liability.
- With any type of disruption, vulnerable populations have reduced access to grocery and medical care.
- Swift 911 participation is limited.
- Public water and sewer in the Town Center need to be addressed.
- Emergency response plan is not updated or practiced.
- No urgent care facilities, clinics, or pharmacy in town.
- There is no grocery store, but there is one in Gardner.
- There is only one gas station.
- Need more park areas that provide stormwater control and refuge from the heat.

4.3 Environmental

Workshop participants identified those key environmental features in Hubbardston that are most vulnerable to natural hazards and climate change impacts. They are:

- Street tree maintenance lacks funding.
- Lack of forest management and brush fire prevention, which will require coordination with state agencies.
- Water quality concerns with failing septic systems
- Concern over rising groundwater surfaces and impacts on septic systems
- Sediment quality is unknown behind dams
- Unknown condition of the underground storage tanks at the Cove St. property.
- Town Center small lot zoning and failing septic systems create a unique issue.
- Lack of data on gravel pit extractions and effect on environment.
- FEMA flood maps are outdated.
- Beaver dams can cause flooding.
- Invasive species and effect on the natural flora and fauna, including the Emerald Ash Borer, Wooly Adelgid, and the Asian Long Horn Beetle.

5.0 CURRENT STRENGTHS AND ASSETS

Hubbardston's infrastructure, community fabric, and environmental assets contribute to the Town's ability to successfully weather shocks to the day to day system, like extreme weather. Hubbardston is fortunate to have many volunteers and large amounts of natural space.

5.1 Infrastructure

Workshop participants identified those key infrastructural features in Hubbardston that provide strength against natural hazards and climate change impacts. They are:

- Roadways and transportation network.
- Electric grid and infrastructure
- Municipal services
- Emergency services
- Regional dispatch out of Rutland
- Grants to make infrastructure improvements
- Dry hydrants along Route 62, on Mt. Jefferson, at the Fire Department, and at DPW.
- Ongoing work to upgrade culverts
- Capital plan for roadway improvements

5.2 Societal

Workshop participants identified those key societal aspects of Hubbardston that provide strength against natural hazards and climate change impacts. They are:

- Communication network through Reverse 911, website notices, and department social media pages.
- Support from MEMA during events and their coordination with the Red Cross.
- Senior center has opened for the purpose of a cooling and warming station.
- MART van provides transportation services to the grocery store, medical appointments, and other essential destinations.
- Meals on wheels and other food programs increase food access for seniors.

5.3 Environmental

Workshop participants identified those key environmental features in Hubbardston that provide strength against natural hazards and climate change impacts. They are:

- Overall the bylaws are fairly adequate
- Currently developing a forest management plan
- Forest and recreational areas
- Landfill was capped and is approaching the end of the testing period.

6.0 TOP RECOMMENDATIONS TO IMPROVE RESILIENCE

After identifying the Town's top hazards and listing vulnerabilities and strengths, workshop participants brainstormed possible actions to address climate change impacts. Participants considered various adaptation options carefully and were asked to rank action items as a low, moderate, or high priority. There were no low priorities.

Many of the municipal buildings are in the Town Center, which has aging septic systems and water supply concerns. Building a resilient Town Center will likely be a long-term strategy but has several short-term steps that can be taken. There is no FEMA designated shelter in Hubbardston and several possibly priorities were identified as solutions. Climate resilience in Hubbardston will contribute to the economic development goals and quality of life of its residents.

6.1 High Priorities

Municipal Buildings and Properties

- Make the school a designated shelter by evaluating septic system and improving energy resilience.
- Upgrade access lift at Public Library and add air conditioner.
- Feasibility study of where upgrades to buildings are needed and most important or necessary.
- Development of a new municipal building that could support community gatherings and municipal operations (possibly serve as a shelter) with resilience features.
- Install backup power at the Senior Center.
- Improve park resources with stormwater features, shade trees or other shade relief, splash pads, and walking and biking trails.

Town Center

- Build redundancies and interconnections for the public water supply well (214-0004) in the Town Center.
- Devise a long-term plan to provide a decentralized waste water treatment system, especially in the Town Center.

Communication

- Expand outreach to sign up for Reverse 911.
- Build a new communication tower or rehabilitate the existing unused tower.
- Develop, practice, and communicate emergency response plan.
- Increase cell reception.

Supporting Vulnerable Populations

- Conduct outreach to daycares about developing an emergency response plan and keep an updated list to ensure daycares have emergency procedures.
- Increase transit services.
- Increase the number of affordable senior housing units.

Public Health

- Develop a formal policy and procedure for instituting curfews and restrictions related to vector borne diseases.
- Explore joining a mosquito control district.
- Expanded outreach and signage at recreational trailheads on tick education and other vector borne diseases.

Natural Resource Management

- Develop a comprehensive forest or tree management plan to include a brush fire prevention component, guidelines for maintaining trees near powerlines, and maintaining a health and diverse tree canopy.
- Work with vet clinic, agricultural commission, animal control officer to develop a response plan for caring for animals.
- Assess the vulnerabilities associated with gravel extraction to groundwater.
- Restore abandoned gravel pits with vegetation.
- Increase the beaver control management program.

Built Environment

- Upgrade and upsize culverts and stormwater infrastructure to account for climate change.
- Implement roadway priorities after reviewing the outcomes of the MVP Action Grant project in the Hill Towns of Western Massachusetts.
- Assess vulnerable electric corridor for redundancies and fortification options and improve tree management.

Regulations and Bylaws

- Update Floodplain Overlay Bylaw, Wetland Bylaw, Groundwater Protection Regulations, and FEMA maps.

6.2 Moderate Priorities

Dams

- Assess options to repair or rebuild the dams, especially Burnshirt Road Dam and Brigham Pond Dam.

Underground Storage Tanks

- Investigate the condition and age of underground storage tanks.

Regulations and Bylaws

- Review Subdivision Regulations regularly.
- Update Zoning Bylaws to align with master plan and includes climate resilience.

Natural Resource Management

- Increase the beaver control management program.

Built Environment

- Develop a relationship with the railroad and find out what the emergency response plans are.

7.0 ADDITIONAL INFORMATION

7.1 CRB Workshop Participants

The CRB Workshop participants included the Core Team, Town staff, Town Boards and Committees, local organizations, and regional partners. Representatives from adjacent communities were invited but were unable to attend. The full list of CRB Workshop invites is included in the sections below.

7.1.1 Core Team

- Ryan McLane, Town Administrator
- Travis Brown, DPW Director
- Dennis Perron, Police Chief
- Robert Hayes, Fire Chief
- Dennis O'Donnell, Emergency Management Director

7.1.2 Additional Town Staff

- Christina Sutcliffe, Planning Board Assistant
- Mallory Seamon, Board of Health Assistant

7.1.3 Local Boards and Committees

- Daniel Galante, Board of Selectmen Chairman
- Cathy Hansgate, Board of Health Chairman
- Alice Livdahl, Planning Board Chairman

7.2 Citation

Town of Hubbardston. (2020). Community Resilience Building Workshop Summary of Findings. Prepared by the Montachusett Regional Planning Commission and Weston & Sampson.

7.3 CRB Workshop Project Team

Key Staff:

- Ryan McLane, Town Administrator
- Core Team Members as noted above

Facilitators from MRPC:

- Karen Chapman
- Jonathan Vos

Facilitators from Weston & Sampson:

- Amanda Kohn

- Steve Roy

7.4 Acknowledgements

The project team would lie to recognize Hubbardston's Core Team members for leading by example throughout the MVP planning process. The team would also like to acknowledge Ryan McLane for his dedication to spearheading and coordinating this project. A special thanks to the Massachusetts Executive Office of Energy and Environmental Affairs for providing the grant funding to conduct the MVP Planning process, and to the Nature Conservancy for providing the Community resilience Building Guidebook. An additional thanks to all the CRB Workshop and Listening Session participants, and to the Project Team for facilitating successful events.

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APPENDIX A

Core Team Meeting Materials

APPENDIX B

Community Building Workshop Materials

APPENDIX C

Participant Risk Matrices

APPENDIX D

Public Listening Session Materials