

Town of Hawley  
Joint Hazard Mitigation Plan /  
Municipal Vulnerability Preparedness Plan  
**Hawley, Massachusetts**

Prepared by:  
GZA GeoEnvironmental, Inc.

Prepared For:  
The Town of Hawley, Massachusetts

June 3, 2022

2022 Joint Hazard Mitigation Plan /  
Municipal Vulnerability Preparedness Plan

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## EXECUTIVE SUMMARY

Natural Hazard Mitigation Planning is intended to provide the Town of Hawley with a risk-based approach to making planning decisions. Municipal Vulnerability Preparedness Planning is intended to support the Town's climate change resiliency planning and implementation of priority projects. This plan focuses on both hazard mitigation planning and climate adaptation and satisfies the regulatory requirements for hazard mitigation planning through the Federal Emergency Management Agency (FEMA) and climate adaptation planning through the Massachusetts Executive Office of Energy and Environmental Affairs' Municipal Vulnerability Preparedness (MVP) grant program.

### Planning Process

This joint Hazard Mitigation Plan and Municipal Vulnerability Preparedness Plan (HMP-MVP Plan) was developed through the following steps.

1. Create Local Planning Team/ Core Project Team made up of municipal department members and community stakeholders.
2. Define hazard mitigation and climate adaptation goals.
3. Develop inventory of Town assets and critical facilities.
4. Identify main natural hazards that pose risk to the Town and incorporate feedback from the Town.
5. Conduct a vulnerability and risk assessment of top natural hazards.
6. Identify Town strengths and vulnerabilities.
7. Review and update existing mitigation strategies.
8. Define and prioritize mitigation actions.
9. Develop an action and implementation strategy.

## Hazard Mitigation and Climate Adaptation Goals

The Town endorsed the following set of hazard mitigation and climate adaptation goals to protect Town assets and critical facilities.

1. To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to natural hazards.
2. Investigate, design and implement projects that will reduce and minimize the risk of flooding.
3. Investigate and implement projects that will reduce and minimize the risk of non-flooding hazards.
4. Increase the capacity of the community, including local Emergency Managers, Department of Public Works (DPW), Fire, and Health Departments to plan for and mitigate natural hazards and to enhance the community's resilience to hazard events when they occur.
5. Increase public awareness of natural hazard risks and mitigation activities available to them.
6. Improve the quality of the data for the Town and the region as it pertains to natural hazards.
7. Improve existing local policies, plans, regulations, and practices to reduce or eliminate the impacts of natural hazards.
8. Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees and boards.
9. Take into consideration the best practices and federal, state and local standards for preventing and reducing the impacts of natural hazards including impacts from climate change for future development.
10. Work with surrounding communities, regional, the Commonwealth and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.



## Vulnerability and Risk

The Town of Hawley HMP-MVP Plan assesses the potential impacts to the Town from a variety of natural hazards, including:



**FLOODING**



**WINTER WEATHER**



**EXTREME HEAT**



**SEVERE WIND**

The HMP-MVP Plan documents the exposure of Town assets and critical facilities to these natural hazards, the frequency of events, and the risk associated with each hazard.

## Hazard Mitigation and Climate Adaptation Strategy

During the planning process, the following hazard mitigation and climate adaptation actions were identified as high priority:

1. Stabilize slope at the Dugway (Route 8A).
2. Replace King Corner culvert.
3. Relocate Highway Department/ West Hawley Fire Station to a location outside of the Chickley River flood hazard.
4. Replace Sears Road culvert.
5. Evaluate, design, and permit road-stream crossing (culvert) replacements.
6. Establish a backup emergency operations center at Town Hall.
7. Educate residents and help build awareness of hazard mitigation and disaster resilience measures Hawley residents can take on their own.

8. Establish volunteers to be emergency services points of contact for each neighborhood in Hawley.
9. Trim trees and hazardous limbs along Town roadways to protect the roads and utility lines.
10. Repair and maintain state forest roads.

## Acknowledgements

This project was made possible through funding from the Massachusetts Executive Office of Energy and Environmental Affairs' Municipal Vulnerability Preparedness (MVP) Grant Program. The Town wants to thank EEA for their leadership and funds to support this effort. The Town would like to extend a special thanks to the MVP Berkshire & Hilltowns Regional MVP Coordinator, Carrienne Petrik for participating in both the workshop and public listening session.

Thank-you to the Town of Hawley community members and leaders for their commitment and dedication to this process, the Core Team Members, and Local Planning Team included.

# QUICK PLAN REFERENCE GUIDE



The following provides a Quick Reference Guide to the Town of Hawley Joint Hazard Mitigation Plan/Municipal Vulnerability Preparedness Plan:

## STEP 1: UNDERSTAND THE PLANNING PROCESS

Section 2 - Planning Process describes the planning process and identifies the members of the Local Planning Team (LPT) that participated in the Plan development. **Attachment 6** presents public outreach documentation.



## STEP 2: INVENTORY TOWN ASSETS (COMMUNITY PROFILE)

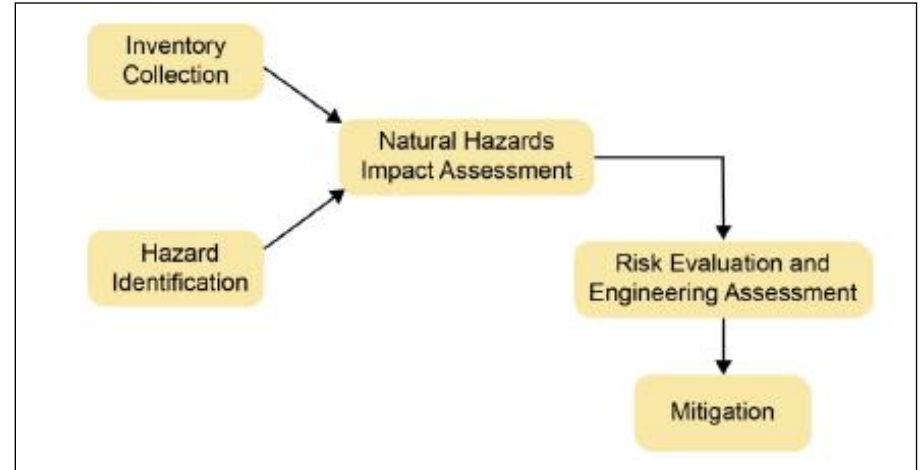
Section 3 - Community Profile presents a brief overview of the Town assets. **Attachment 1** provides a detailed description of these assets, including the Town population, and an inventory of Essential and Lifeline Systems, High Potential Loss Facilities, Transportation Infrastructure, and Town Facilities and Zoning Districts and General Building Stock.



## STEP 3: IDENTIFY NATURAL HAZARDS

Section 4 - Natural Hazard Risk identifies and summarizes the natural hazards applicable to the Town. **Attachment 2** provides the detailed description of relevant natural hazards. The hazards are characterized including past hazard events and expected probability of occurrence. Future climate-related

changes to severe weather and climate-related hazards are also presented based on the current available science.



Conceptual Steps in Assessing and Mitigating Losses due to Natural Hazards (FEMA)

## STEP 4: ASSESS NATURAL HAZARD IMPACTS AND RISK

Section 4 - Natural Hazard Risk also presents the results of an assessment of the vulnerability of the Town to the natural hazards. **Attachment 3** provides a detailed hazard vulnerability assessment. FEMA HAZUS-MH simulations were performed for Hurricane (probabilistic), Flood (1% and 0.2% Annual Exceedance Probability [AEP] floods), and Earthquake (2% in 50 years). The simulation results are presented in **Attachment 4**.



## STEP 5: MITIGATION PLAN AND IMPLEMENTATION

Sections 5, 6 and 7 present mitigation strategies and actions, regional and intercommunity considerations and plan implementation details. **Attachment 3** provides the basis for ranking natural hazard priorities. **Attachment 5** presents state and federal hazard mitigation and response grant funding sources. References and resources, and key contacts are presented in **Attachments 7 and 8**.

# UNDERSTANDING NATURAL HAZARD RISK



This Joint Hazard Mitigation Plan/Municipal Vulnerability Preparedness Plan is intended to provide the Town of Hawley with a risk-based approach to making planning decisions. In simple terms...

**Risk** = the probability of an event occurring  $\times$  the consequences of that event

Risk can be assessed qualitatively or quantitatively. The evaluation of the risks associated with Hawley's natural hazards required: 1) identifying the type of natural hazard(s) applicable to Hawley; 2) evaluating their probability of occurrence; and 3) evaluating their consequences. For example, a flood could impact Hawley resulting in damage to property, injury or death and/or other economic or natural resource impacts. Different flood conditions (water level, limit of flooding, etc.) are associated with different probabilities of occurrence and different degrees of consequences. By characterizing the hazard, evaluating its probability and evaluating the consequences, the likelihood that these consequences will be experienced is determined. Once the consequences are understood in this way, value and risk-based planning decisions can be made.

## Quantitative Risk Assessment

Quantitative assessment of natural hazard risk typically defines hazard probability in terms of Annual Exceedance Probabilities (AEP). The AEP refers to the probability that an event (e.g., a specific flood water level) will be experienced or exceeded in any given year. For example, the 1% AEP event has a 1 in 100 chance of being met or exceeded in any given year. This probability is often described in terms of a recurrence interval. The recurrence interval is also a statistical indication of the probability of an event and can be considered as the "expected" frequency of an event, on average and over a long period of time. The 100-year recurrence interval is consistent with a 1% AEP. Estimates of AEP are typically presented as "mean" values and have uncertainty represented by lower and upper bounds.

Quantitative estimates of natural hazard probabilities, to be statistically meaningful, require long periods of record of actual historical hazard data or use of other statistical methods. Certain natural hazards such as earthquakes have been defined quantitatively by the federal government (FEMA, USGS and/or the US Army Corps of Engineers), and these values have been used for this Plan. For other natural hazards (e.g., Hail), this Plan has used limited historical data to extrapolate probabilities. While not statistically valid, the extrapolated estimates are useful in categorizing likelihood of occurrence (e.g., high to very low). Even though these "quantitative" values are presented in the Plan, the reader should be aware that they are not statistically meaningful due to the limited period of record of historical data.

## Evaluating Consequences

This Joint Hazard Mitigation Plan/Municipal Vulnerability Preparedness Plan evaluates the consequences associated with natural hazards in several different ways. The FEMA HAZUS-MH software is used to calculate losses (e.g., building damage) associated with hurricanes (high winds), flooding and earthquakes. For the other natural hazards, the consequences were extrapolated from available historical data. Similar to the estimated probabilities for these hazards, this approach is not statistically valid; however, it is useful for categorizing the consequences (minor to catastrophic).

## Risk Over Time

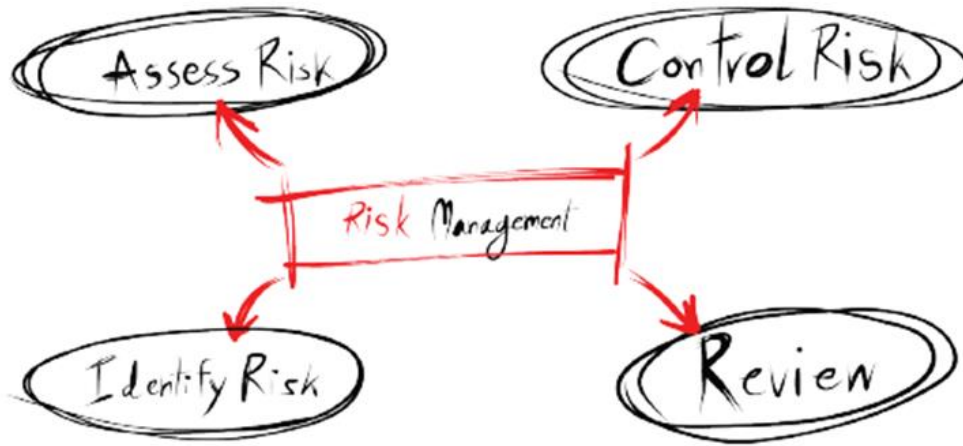
While AEPs and recurrence intervals define the annual risk (i.e., risk in any given year), the risk of experiencing that same hazard event at least once will increase when longer periods of time are considered. For example, the 1% AEP flood has a 1 in 4 chance (25%) of occurring at least once over a 30-year period.

## Climate Change

Climate change can affect the risk of severe weather and climate-related hazards. For example, a flood level that has a 1% AEP today may have a much higher probability of occurrence in the future due to increased precipitation.

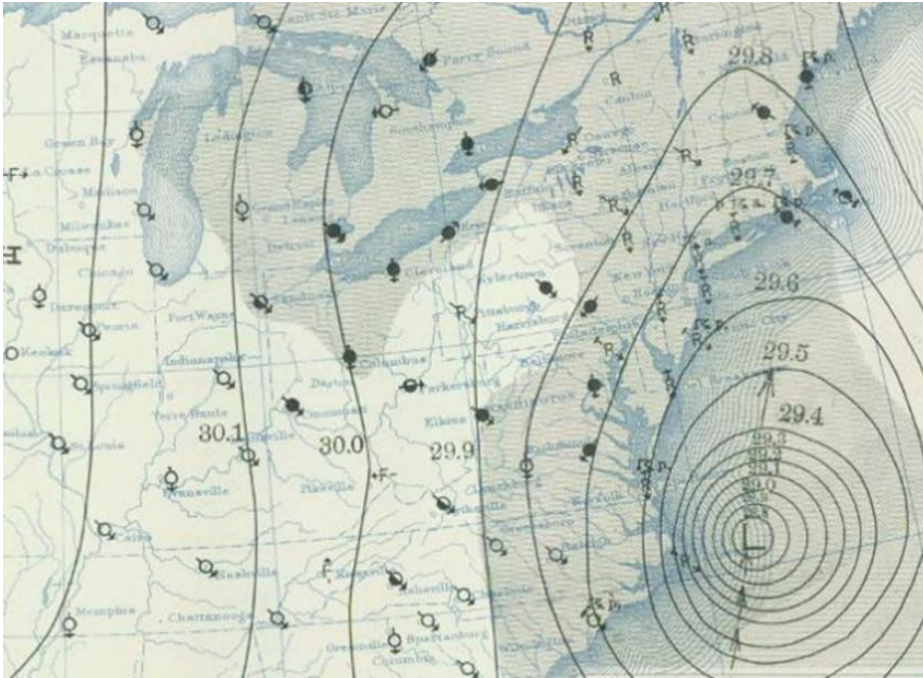
## Low Probability is not the Same as Impossible

Even though a hazard is predicted to have a low probability of occurrence, that does not mean it cannot happen. For example, a major hurricane is unlikely to occur at Hawley based on the available historical data, but it could happen - it is just predicted to be a low probability for planning purposes.



*Risk Management Planning Process*

## SECTION 1: PLAN INTRODUCTION



*Historical Surface Weather Map of the Hurricane of 1938 on September 9, 1938*

### PURPOSE OF PLAN

The following presents the Joint Hazard Mitigation Plan/Municipal Vulnerability Preparedness Plan for the Town of Hawley, Massachusetts prepared in accordance with the requirements presented in the FEMA Local Mitigation Plan Review Guide (October 2011) and the Local Mitigation Planning Handbook (FEMA, March 2013).

The Town of Hawley is a rural residential and agricultural community of about 353 residents, located in Franklin County, about 21 miles west of Greenfield.

Hawley is vulnerable to severe weather and riverine flooding along the Chickley River and Clesson Brook. The Town is also vulnerable to climate-related hazards (e.g., extreme heat and cold) and geologic hazards (e.g., earthquakes). The Town has developed this Plan to identify the risks and

vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property from future hazard events.

Ultimately, the goal of the Joint Hazard Mitigation Plan/Municipal Vulnerability Preparedness Plan is to enable action to reduce loss of life and property by lessening the impact of natural disasters.

The development of the Joint Hazard Mitigation Plan/Municipal Vulnerability Preparedness Plan enables the Town to:

- Increase education and awareness about the Town's vulnerability to natural hazards;
- Build partnerships for risk reduction involving government, organizations, businesses, and the public;
- Identify long-term, broadly-supported strategies for risk reduction;
- Align risk reduction with other state, tribal, or community objectives;
- Identify implementation approaches that focus resources on the greatest risks and vulnerabilities; and
- Communicate priorities to potential sources of funding.

### PLAN REQUIREMENT

In addition, FEMA requires state, tribal, and local governments to develop and adopt hazard mitigation plans per 44 Code of Federal Regulations (CFR) part 201.6 as a condition for receiving certain types of non-emergency disaster assistance, including funding for mitigation projects. Jurisdictions must update their hazard mitigation plans and re-submit them for FEMA approval every five years to maintain eligibility.

Previously, the Franklin Regional Council of Governments (FRCOG) assisted the Town of Hawley with a Multi-Hazard Mitigation Plan (MHMP), with a local natural hazard risk assessment for the Town to meet the requirements of the Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA). The MHMP title is The Town of Hawley 2014 Multi-Hazard Mitigation Plan, prepared by the Hawley Multi-Hazard Mitigation Planning Committee and FRCOG, and dated June 2014.

This Plan has been prepared to update and replace the 2014 Plan.

The Commonwealth of Massachusetts encourages local municipalities to take ownership of the multi-hazard mitigation planning process by pursuing and developing local multi-hazard mitigation plans (MHMP).

Over the last decade, Hawley has experienced impacts from weather-related natural hazards such as “nor’easters”, severe winter weather, severe weather, and flooding. The Town has been actively identifying the Town’s vulnerabilities from natural hazards through the development of the Town’s FEMA-approved Local Natural Hazard Mitigation Plan dated June 2014 (2014 MHMP). The recent impacts from hurricanes Sandy and Irene in New England have increased the urgency for municipalities to increase resilience to address extreme weather and climate change vulnerability. In 2011, the Hawley town garage and fire station suffered severe damage from erosion caused by flooding on the Chickley River, reportedly as a result of 8-inches of rainfall during Tropical Storm Irene. New England, including Massachusetts, is expected to experience increased frequency and intensity of rain events, increased temperatures, and other climate change-induced hazards, which will increase the Town’s natural hazard vulnerability. In consideration of these factors, the Town is taking the necessary steps to build on the results of the Town’s 2014 MHMP to develop climate adaptation and resilience priorities as outlined in this report.

As of January 2022, the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs (EEA) has funded Municipal Vulnerability Preparedness (MVP) planning grants for 330 out of a total of 351 communities. The purpose of the grant is to provide financial assistance to communities to create a comprehensive, baseline climate change vulnerability assessment and to develop prioritized actions for dealing with climate-related and natural hazards using a field-tested approach, known as the Community Resilience Building (CRB) Workshop. In July 2021, the Town received an MVP planning grant to complete a combined MVP/HMP report.

## COMMUNITY RESILIENCE BUILDING WORKSHOP

The CRB Workshop guide includes a six-step approach to conduct a vulnerability assessment and develop prioritized actions consistent with EEA requirements to become a designated “MVP Community.” Receiving MVP designation will enable the Town of Hawley to apply for future MVP Action grants and will increase its standing for future funding opportunities from the Commonwealth. Hawley’s completion of the six-step CRB process is documented in this report.

Per Executive Order 569, on March 9<sup>th</sup> and 30<sup>th</sup>, 2022 the Town of Hawley facilitated a CRB Workshop using the Nature Conservancy’s CRB guidance. In preparation for the CRB Workshop, the Core Team, with assistance from GZA GeoEnvironmental, Inc. (GZA), invited local stakeholders. These stakeholders included local and regional representatives. The Workshop’s central objectives were to:

- Define the top local natural and climate change-related hazards of concern,
- Identify hazard vulnerabilities,
- Identify existing Town capabilities,
- Develop and prioritize actions for the community, and
- Identify opportunities to collaboratively advance actions to increase resilience.

This report presents a summary of the CRB Workshop results with an emphasis on the top hazards, specific areas of concern and top priorities for climate adaptation actions.

## SECTION 2: PLANNING PROCESS

The FEMA process for hazard mitigation planning includes the following steps:

### 1. Organize the Planning Process and Resources

At the start, focus on assembling the resources needed for a successful mitigation planning process. This includes securing technical expertise, defining the planning area, and identifying key individuals, agencies, neighboring jurisdictions, businesses, and/or other stakeholders to participate in the process. The planning process for local and tribal governments must include opportunities for the public to comment on the plan.

### 2. Assess Natural Hazard Risks

Identify the characteristics and potential consequences of hazards. It is important to understand what geographic areas each hazard might impact and what people, property, or other assets might be vulnerable.

### 3. Develop Mitigation Strategies

Develop long-term strategies for avoiding or minimizing the undesired effects of disasters. The mitigation strategy addresses how the mitigation actions will be implemented and administered.

### 4. Adopt and Implement the Plan

Once FEMA has received the adoption from the governing body and approved the plan, the state, tribe, or local government can bring the mitigation plan to life in a variety of ways, ranging from implementing specific mitigation projects to changing aspects of day-to-day organizational operations. To ensure success, the plan must remain a relevant, living document through routine maintenance. The state, tribe, or local government needs to conduct periodic evaluations to assess changing risks and priorities and make revisions as needed.

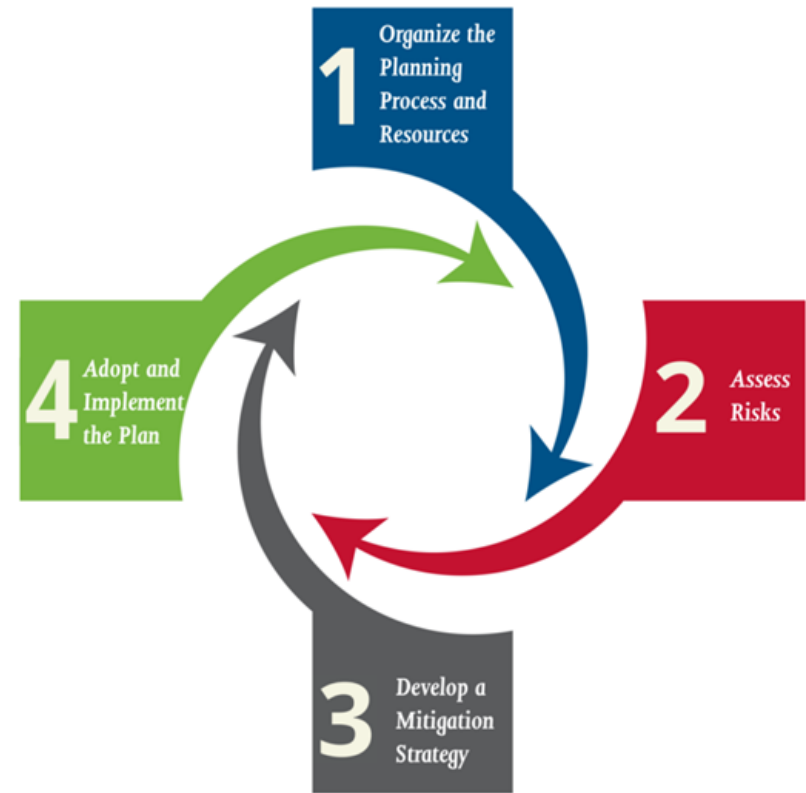


Figure credit FEMA/Jenny Burmester – Aug 21, 2017

The Town of Hawley followed this process, including:

- Organizing a diverse local planning team.
- Retaining GZA to provide technical and planning expertise.
- Providing opportunities for the public to comment on drafts of the plan prior to final plan approval.
- Providing opportunities for neighboring communities and local and regional agencies involved in natural hazard mitigation activities that



have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process.

- Reviewing and incorporating applicable existing plans, studies, reports, and technical information into the plan.

The Town assembled a Local Planning Team (LPT) with critical Town leadership responsibilities. The LPT was tasked with providing oversight and guidance in developing the Plan. The LPT also served as the Core Project Team for the MVP Planning process.

### LOCAL PLANNING TEAM MEMBERS AND MEETINGS

- Highway Department – Gary Mitchell, Superintendent
- Fire Department– Greg Cox, Fire Chief
- Fireman - Brandon Root
- Team Leader – Williams Cosby, Green Community Advisor
- Chair of the Conservation Commission - Lloyd Crawford
- Community Member - Constance Emmett, Microbiologist
- Hawley Town Clerk – Liz Billings
- Emergency Management Director – Dean Desmaris
- Former Select Board Chair - John Sears
- Community Member – Sarah Ohmann

The LPT conducted two formal working group meetings to provide input and guidance in developing the plan throughout the planning process. The meetings were held on 02/17/2022 and 04/13/2022. The purpose of each working group meeting is summarized below:

- Working Group Meeting No. 1: Reviewed, discussed and finalized the inventory of Town assets as presented in Section 3 and **Attachment 1**. LPT members also provided details on previous natural hazard occurrences that impacted the Town. Reviewed and discussed natural and climate change related hazard characterizations with respect to

Hawley as presented in Section 4 and **Attachment 2**. Reviewed, discussed the HAZUS Risk Assessment results for flooding, hurricane-wind and earthquake hazards. Based on a review of the HAZUS results and hazard characterizations the LPT ranked hazards for the Town using a consistent criteria as presented in Section 4 and **Attachment 3**.

- Working Group Meeting No. 2: Discussed and prepared the hazard mitigation strategy for Hawley including goals and specific mitigation actions by hazard. Reviewed mitigation actions from prior plan. The LPT then reviewed benefit and cost approach for prioritizing local mitigation actions.

The Hawley Planning Board is the primary town agency responsible for regulating development in the town. Feedback to the Planning Board was ensured through the participation of the Town Administrator on the local hazard planning team. In addition, FRCOG, the State-designated regional planning authority for Hawley, works with all agencies that regulate development in its region, including municipal entities and state agencies, such as Department of Conservation and Recreation and MassDOT. This regular involvement ensured that during the development of the Hawley Hazard Mitigation Plan, the operational policies and any mitigation strategies or identified hazards from these entities were incorporated.

### COMMUNITY RESILIENCE BUILDING WORKSHOP

On March 9<sup>th</sup> and 30<sup>th</sup>, 2022 the Town completed the CRB Workshop virtually using Zoom. The central objectives of the CRB Workshop were to:

- Define the top local natural and climate change-related hazards of concern
- Identify hazard vulnerabilities
- Identify existing Town capabilities
- Develop and prioritize actions for the community
- Identify opportunities to collaboratively advance actions to increase resilience

This report summarizes the findings of the CRB Workshop, identifies top natural and climate change related hazards and vulnerabilities, strengths and assets, and recommendations to improve resilience for the Town of Hawley.

### Core Project Team

The Town's Core Project Team for the MVP Planning Grant includes the same members as the LPT. The Core Project Team along with technical assistance from State-Certified MVP Providers Rosalie Starvish of GZA GeoEnvironmental Inc (GZA) and assisted by Theresa Albanese of GZA, planned and facilitated the two-day workshop. GZA was responsible for preparing the CRB workshop materials, leading presentations, facilitating large group exercises and providing guidance during the small group exercises. Members from the Town's Core Team and workshop participants were responsible for facilitating and documenting key information during the group exercises.

### Workshop Participants

Nine (9) stakeholders participated in the March 6<sup>th</sup> portion of the workshop and ten (10) participated on the March 30<sup>th</sup> portion of the workshop. These stakeholders included individuals from the Selectboard, the Highway Department, the Police Department, the Fire Department, the Emergency Management Department, the Conservation Commission, and the Town Administration Office.

### CRB Workshop Process

The CRB workshop was held in two half-day sessions on March 9<sup>th</sup> and 30<sup>th</sup>, 2022. The first workshop was presented by GZA and started with a welcome message, an overview of the MVP program, and an overview of natural hazards and vulnerabilities. After the presentations, GZA led a group discussion to prioritize the top four hazards for the Town of Hawley. The hazards were prioritized based on group voting; and the setting was small enough to use hand counts.

The exercise was followed by a session during which stakeholders completed the risk matrix as a group to identify specific Town vulnerabilities and strengths.

The second workshop, also presented by GZA, focused on identifying and prioritizing community actions for improving climate resilience.

The presentation and workshop handouts (see Attachment 9 through Attachment 11) included the following:

- MVP Program Overview
- CRB Workshop Process/Small Group Breakout Instructions
- Risk Matrix Overview
- CRB Workshop Guide
- Overview of Natural Hazards and Climate Change
- MVP Action Grant Project Examples

### Public Listening Session

Hawley hosted a public listening session online on April 27<sup>th</sup>, 2022. At the listening session, the Town and GZA provided the public with the chance to learn about the CRB Workshop with an overview of the Draft Summary of Findings including the priority actions that resulted from the workshop. Participants had the opportunity to ask questions and provide written feedback in response to the details provided in both the presentation and responses to questions during the second half of the session. **Appendix D** includes the details of the listening session presentation, public comments and the list of attendees.

At the end of the public listening session the Town made the Draft joint Hazard Mitigation Plan and Municipal Vulnerability Preparedness Plan available for public comment. Feedback provided by community members and leaders on the Draft Plan is included in **Appendix D**. Many comments provided in response to both the public listening session and Draft Report highlighted and supported priorities outlined in both the presentation and Draft Report. Based on the additional public feedback presented in **Appendix D** the table presented in section 7.1 outlines additional community priorities for inclusion in this Final Report.

## EXISTING PLAN REVIEW

Several existing plans, reports and regulatory programs were reviewed by GZA and relevant details were incorporated as part of this Natural Hazard Mitigation Plan, including:

- Massachusetts State Hazard Mitigation and Climate Adaptation Plan, September 2018
- The Town of Hawley 2014 Multi-Hazard Mitigation Plan, June 2014
- Resilient MA Resiliency planning and policy documents
- National Flood Insurance Program

## SECTION 3: COMMUNITY PROFILE

### COMMUNITY PROFILE OVERVIEW

The Town of Hawley is a rural residential community of about 353 residents, located in Franklin County, about 20 miles west of Greenfield (see **Figure 1**). As described in The Town of Hawley 2014 Multi-Hazard Mitigation Plan (MHMP), Franklin County is located in northwestern Massachusetts, and is characterized by the Berkshire Hills along its western border with Berkshire County and its northern border with Vermont. The middle portion of the County is characterized by the Connecticut River and Pioneer Valley. Interstate Route 91 runs north south through the County, and State Route 2 provides east west travel into the County. The Town is bordered to the north by Claremont, to the west by Savoy, to the south by Plainfield, and to the east by Buckland and Ashfield. The Town has a total area of 30.9 square miles with approximately 0.06% of that area being water. Hawley was incorporated as a Town in 1792.

The Town is governed by an elected three-member Board of Selectmen, Town Administrator and traditional New England Open Town Meeting. The Town is also one of twenty-six cities and towns within the Franklin Regional Council of Governments (FRCOG), supporting regional land use, transportation, economic development, public health, and natural resources planning, as well as emergency preparedness, partnership for youth, and town accounting.

**Attachment 1** provides a detailed description of Town's community profile including population, building stock, essential facilities and lifeline systems and natural resources. The following pages provide a brief overview.

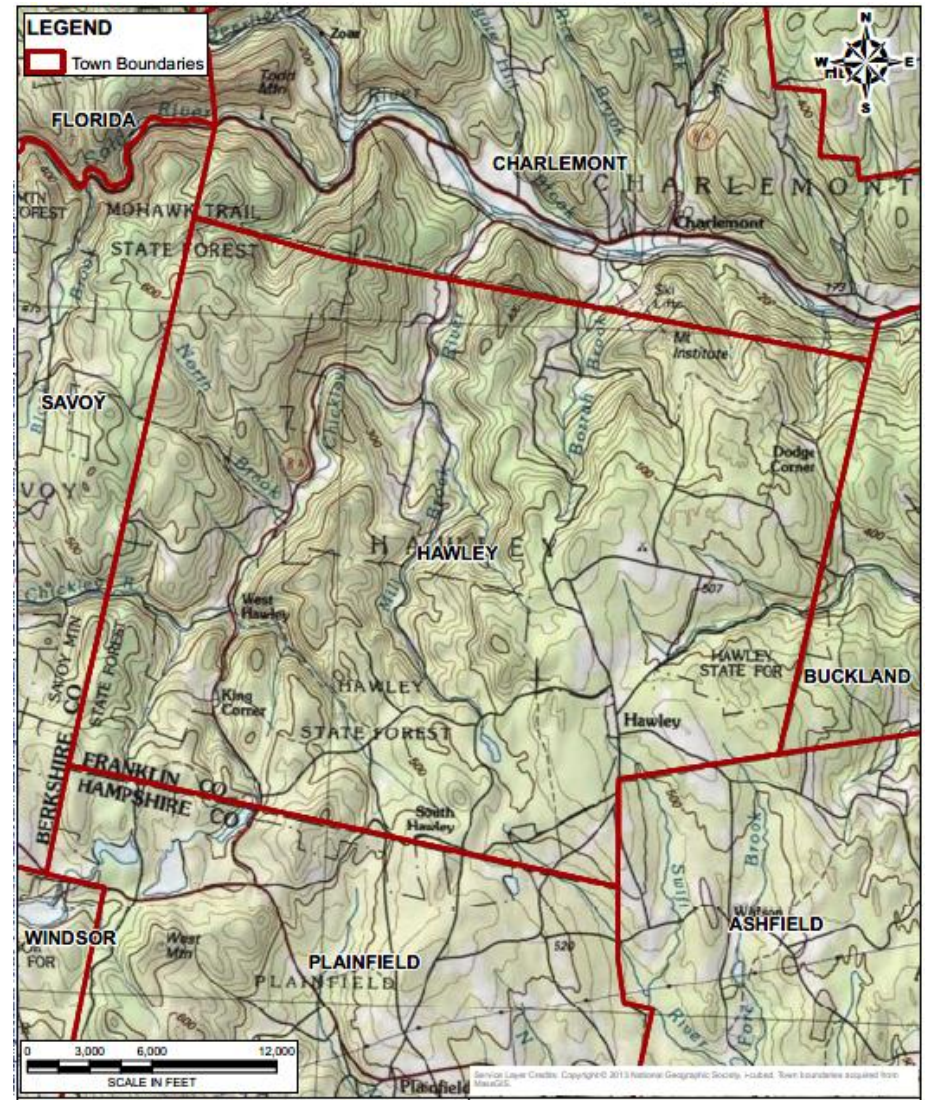


Figure 1: Site Locus

## CURRENT STRENGTHS AND VULNERABILITIES IN THE TOWN OF HAWLEY

Based on the results of the small group discussions in evaluating community assets and hazards, the workshop participants identified many infrastructural, societal, and environmental strengths in Hawley.

### Infrastructural

- Stakeholders identified the Town Garage, also the West Hawley Fire station, as both a strength and a vulnerability. It was highly damaged during Hurricane Irene and is located near a river and vulnerable to flooding. It is also a strength because it stores equipment and is needed to respond to all hazards.
- Stakeholders noted roadway embankments and specific roads including: East Hawley Road, Labelle Road, East Road, and Forge Hill Road as vulnerabilities. There is limited access into and across the Town, so loss of access to a roadway could be devastating.
  - East Hawley Road has ditches on either side of the hairpin turn, which can experience undermining during heavy precipitation events.
  - Labelle Road is very close to Clesson Brook and when culverts do not function, the roadway tends to become washed out.
  - East Road was badly damaged during Hurricane Irene and does not shed water effectively.
  - Forge Hill Road was washed out during Hurricane Irene.
- Stakeholders also identified the Dugway area- state highway Hawley Road as a vulnerability, as there is a very steep hillside at the edge of the road with no shoulder, and a river on the other side of the road.
- Stakeholders identified undersized or degraded culverts as a vulnerability, as feeder stream culverts are hydraulically inadequate, and subject to clogging. Kings Corner Culvert, which passes Kings Brook under Route 8, was specifically noted.

- Stakeholders expressed concern with Fullerville Dam, as a dam failure could lead to damages to Route 8A, residences neighboring Kings Brook to Chickley River, and Savoy Road; this is a vulnerability.
- Stakeholders identified the Hawley Fire Department, which houses one of two radio communications for the Town as a strength.
- Stakeholders noted East Hawley Meeting House, which is used by Sons and Daughters of Hawley, and listed on the 1848 National Register as a strength.

### Societal

- Stakeholders identified the absence of emergency shelters in the Town as a vulnerability, but noted that Town Offices could be used as short-term centers for small amounts of residents.
- Stakeholders expressed concern for the high population over the age of 60, with many individuals having medical vulnerabilities.
- Stakeholders identified fragile communications infrastructure, limited cellular service, and a dependence on landlines as a vulnerability.
- Stakeholders expressed strengths of the Town including that there are many self-sufficient residents who are neighborly and capable of volunteering.
- Additionally, stakeholders expressed strengths of the Sons and Daughters of Hawley, who also provide volunteer work to the Town and maintain East Hawley Meeting House.

### Environmental

- Stakeholders noted that there are no town-owned recreational areas, which is a vulnerability.
- Stakeholders identified beaver dams, which can lead to flooding of roadways if they fail, as a vulnerability. Beaver dams were also noted as a strength, because they can provide habitat and ecological benefits, and promote wetlands in remote headwater areas which reduce downstream peak flows along a waterway.

- Stakeholders noted the abundance of state forest area, which provides abundant tree canopy as a strength.
- Stakeholders noted Chickley River for recreation as a strength.
- Stakeholders noted the Old Town Common as a strength.

## COMMUNITY PROFILE SNAPSHOT

Per the United States Census Bureau 2020 Census (2020):

### Age and Sex:

Population: 353  
 Population change since 2010\*: 16 (+4.7%)  
 \*Hawley population of 337 listed in 2010 Census Data

Percent female / male\*: 48% / 52%  
 \*From American Community Survey 5-Year Estimate 2019

### Age:

persons <18 years: 20.2%  
 persons 18 to 64 years: 59.2%  
 persons ≥ 65 years: 25.7%

### Race:

White alone: 88.4%  
 Black or African Amer. alone: 0.3%  
 Amer. Indian or Alaska Native alone: 0.6%  
 Asian alone: 0.8%  
 Two or more races: 9.3%  
 Some other Race: 0.6%  
 Hispanic or Latino: 2.8%

White alone, not Hispanic or Latino: 87.5%

### Education:

High school graduate or higher: 90.8%  
 Bachelor's degree or higher: 41.1%

### Economy:

In civilian labor force, total, greater 16 years: 55.0%  
 (2020 ACS Estimate)

In civilian labor force, female, greater 16 years: 79.5%  
 (2020 ACS Estimate)

### Income and Poverty:

Median household income: \$60,833

Per capita income: \$41,439

Persons in poverty: 14.6%

### Family and Living Arrangements:

Households: 136

Persons per Household: 2.84

Language spoken at home other than English,  
 greater than 5 years: 6.3%

Median house cost\*: \$246,700

Percent owner-occupied\*: 93.4%

Population Density: 11.6/sq. mile

### Social Vulnerability Index:

Hawley's Overall Social Vulnerability: Low to Moderate Vulnerability; The Social Vulnerability Index is moderate to high level of vulnerability for

Household Composition/Disability. Hawley's socioeconomic level is low to moderate.

Building Stock: 2,704 Buildings

- 82.5% Residential (building exposure: \$529.7M)
- 9.0% Commercial (building exposure: \$57.71M)
- 3.9% Industrial (building exposure: \$24.87M)
- 2.6% Education (building exposure: \$16.2M)
- 0.8% Agriculture (building exposure: \$5.098M)
- 0.8% Government (building exposure: \$5.026M)
- 0.6% Religion (building exposure: \$3.59M)
- Total building exposure: \$642.2M (see Attachment 4 for more details)

Support, High Occupancy and Vulnerable Population Facilities:

- Council on Aging meets at the Town Office

Land Use/Land Cover (MassGIS; 362 Parcels), % by area:

- 0.2% Residential
- 0.56% Other Impervious/Right of Way
- 91.2% Undeveloped/Forest
- 4.51% Agricultural
- 1.12% Developed Open Space
- 1.5% Vacant Land
- 0.7% Non-forested Wetland
- 0.3% Water

Districts:

- Rural

Future Development:

- No future developments currently planned

Historic Districts:

- 21 properties and 1 historic district on National Register of Historic Places

Transportation Infrastructure:

- State Route 8A
- Town Roads
- 15 MassDOT Bridges
- No Rail

Essential Facilities:

- Emergency Management
- Police
- Fire and Rescue
- Highway Department

Lifeline Systems:

- No public water supply system (private wells)
- Private on-site septic
- Electricity (National Grid)
- Telecommunications (Verizon)

High Potential Loss Facilities:

- Hallockville Pond Dam- Significant Hazard Dam

Natural Resources:

- Two regional watersheds (Deerfield and Westfield)
- Natural Heritage and Endangered Species (MA NHESP)
- Over 19,500 acres dedicated open space / recreational lands



## SECTION 4: NATURAL HAZARD RISK


### NATURAL HAZARD RISK OVERVIEW

GZA conducted a Natural Hazard Risk Assessment to evaluate the potential consequences of natural hazards to the people, economy, and built and natural environments of the Town of Hawley. The FEMA Multi-Hazard HAZUS-MH program was used to evaluate economic losses due to seismic, flood and hurricane hazards. The HAZUS-MH simulation results are presented in **Attachment 4**. The FEMA National Risk Index was used to score the natural hazards based on the expected annual for each hazard, as well as the community resilience and social vulnerability for each community (see **Table 1**)

The details of the risk assessment and how the hazards were ranked are presented in **Attachments 2 and 3**.

The top 3 ranked hazards include:

- Ice Storms/ Severe Winter Weather  **1**  
An Ice Storm is a freezing rain situation with significant ice accumulations of 0.25 inches or greater. Severe winter weather (including greater than 10-inches snowfall) most frequently occur during Nor'easters, coincident with high winds, cold temperatures and blizzard conditions. They present risks due to transportation impacts (limited use of roadways), cold temperatures (including wind chill) and the potential for structure damage (roof failures). Winter weather has a high annualized frequency and ice storms have a high historic loss ratio.
- Flooding  **2**  
Riverine flooding is highly-ranked, especially in areas along the Chickley River, Mill Brook, and Clesson Brook due to: 1) high economic losses associated with damages to buildings within the floodplain; and 2) impacts to transportation infrastructure. Flooding caused by poor drainage or beaver dams may pose a hazard in other areas not necessarily impacted by riverine flooding.

- Strong Wind/ Tornadoes  **3**

Severe wind due to hurricanes and tropical storms, nor'easters, thunderstorms, and tornadoes is ranked high. Damages due to strong wind include tree damage which can lead to power outages and structure damage.

**Table 1: Hawley Natural Hazard Ranking based on the hazard frequency of occurrence, severity and extent of impact area.**

Severe Weather Hazards:	Hazard Index	Hazard Rating
Strong Wind	17.04	Relatively Low
Tornadoes	18.69	Relatively Low
Hurricanes/Tropical Storms	10.18	Relatively Low
Lightning	16.70	Relatively Low
Hail	4.52	Very Low
Flooding	19.75	Relatively Moderate
Severe Winter Weather	8.47	Relatively Low
Ice Storms	20.16	Relatively Moderate
<b>Climate-Related Hazards:</b>		
Heat Wave/ Extreme Heat	0	No Rating
Cold Wave/ Extreme Cold	9.67	Relatively Low
Drought	0	No Rating
Wildfire	3.40	Relatively Low
<b>Geologic Hazards:</b>		
Earthquake	6.28	Very Low
Landslides	5.94	Relatively Moderate

**Table 2** presents a summary of the predicted hazard likelihood of occurrence/frequency, severity/magnitude and impact area for each natural hazard that is relevant to Hawley. The hazard probability of occurrence (frequency) is characterized as:



**Frequency:**

**Very Low:** Events that occur less frequently than once in 1,000 years (less than 0.1% per year).

**Low:** Events that occur from once in 100 years to once in 1,000 years (0.1% to 1% per year)

**Medium:** Events that occur from once in 10 years to once in 100 years (1% to 10% per year).

**High:** Events that occur more frequently than once in 10 years (greater than 10% per year).

The hazard impact in part is characterized as follows:

**Severity:**

**Minor:** Limited and scattered property damage; no damage to public infrastructure (roads, bridges, trains, airports, public parks, etc.); contained geographic area (i.e., 1 or 2 communities); essential services (utilities, hospitals, schools, etc.) not interrupted; no injuries or fatalities.

**Serious:** Scattered major property damage (more than 50% destroyed); some minor infrastructure damage; wider geographic area (several communities); essential services are briefly interrupted; some injuries and/or fatalities.

**Extensive:** Consistent major property damage; major damage to public infrastructure (up to several days for repairs); essential services are interrupted from several hours to several days; many injuries and fatalities.

**Catastrophic:** Property and public infrastructure destroyed; essential services stopped, thousands of injuries and fatalities.

predictable. The impact of other effects such as the increase in the frequency and duration of Heat Waves are less predictable. However, these Climate-Related hazards are predicted to become a high priority for Hawley over the next decade.

Climate change will have an effect on Severe Weather Hazards and Climate-Related Hazards. **Table 3** compares key components of Hawley's climate today to changes predicted by the year 2050. The impact of certain climate change effects on the Town such as precipitation increases and flooding are

**Table 2: Hawley Natural Hazard Overview**

Natural Hazard	Likelihood/Frequency	Severity/Magnitude	Impact Area
<b>SEVERE WEATHER HAZARDS</b>			
<b>Severe Wind:</b>			
Hurricanes/Tropical Storms/Nor'easters	· Hurricane Wind Warning (>74mph): 6% AEP (18-year recurrence interval); <b>Medium</b>	Serious to Catastrophic depending on the type of wind event	Town-wide
Thunderstorms (wind >58 mph)	· 71% AEP or minimum of 1.4-year recurrence interval; <b>High</b>	Serious	Town-wide or portions of Town
Tornadoes	· Tornadoes within Franklin County: 28% AEP or 3.6-year recurrence interval; <b>High</b> · Major tornado (EF4 and larger) within Franklin County: 0% AEP or no recurrence interval; <b>Low</b>	Serious	Town-wide or portions of Town
<b>Lightning</b>	· Events resulting in fatality, injury and/or damage within Franklin County: 52% AEP or 2-year recurrence interval; <b>High</b>	Minor (fatality risk is very low)	Town-wide or portions of Town
<b>Intense Rainfall</b>	· 19% AEP or 5-year recurrence; <b>High</b>	Minor	Town-wide or portions of Town

Natural Hazard	Likelihood/Frequency	Severity/Magnitude	Impact Area
Hail (≥ 3/4 inch)	· 40% AEP or 2.5 year recurrence interval; <b>High</b>	Minor	Town-wide or portions of Town
<b>Flooding:</b>			
Riverine Flooding	· 58% AEP or 1.7-year recurrence interval; <b>High</b>	Serious	Portions of Town
Flash Flooding	· 38% AEP or 2.6-year recurrence; <b>High</b>	Serious	Portions of Town
<b>SEVERE WEATHER HAZARDS</b>			
<b>Severe Winter Weather:</b>			
Snowfall	· 92% AEP or 1-year recurrence interval Heavy Snowfall; <b>High</b>	Serious	Town-wide
Ice Storms	· 17% AEP or 6-year recurrence interval Ice Storms; <b>High</b>	Serious	Town-wide or portions of Town

Natural Hazard	Likelihood/Frequency	Severity/Magnitude	Impact Area
<b>CLIMATE-RELATED HAZARDS</b>			
<b>Extreme Temperatures:</b>			
Heat	· Excessive Heat: 4.5% AEP or 22-year recurrence interval. <b>Medium</b>	Minor	Town-wide
Cold	· Extreme Cold/Wind Chill: 28% AEP or 3.5 year recurrence interval; <b>High</b>	Minor	Town-wide
<b>Drought</b>	· Drought near Hawley (Franklin County): 5% AEP or 20-year recurrence interval; <b>Medium</b> · Massachusetts experiences extended, multi-year droughts about every 20 years; <b>Medium</b>	Minor (could be Serious if affects Water Supply)	Town-wide
<b>Wildfire</b>	· The historical data indicates that the probability of wildfire within Hawley is low. Quantitative probabilities of occurrence are not available. Likelihood may coincide with drought. <b>Low</b>	Serious	Portions of Town 84% of Town area is forest

Natural Hazard	Likelihood/Frequency	Severity/Magnitude	Impact Area
<b>GEOLOGIC HAZARDS</b>			
<b>Earthquake</b>	· The occurrence of historic earthquakes, PGA, and Site Class indicate that the seismic risk at Hawley is low; <b>Low</b>	Serious	Town-wide
<b>Landslide</b>	· According to the FEMA National Risk Index, there have been no occurrences of Landslides within Hawley during the period of record; <b>Low</b>	Minor	Town-wide

**Town climate considerations:**

Periods of colder temperatures occur at Hawley and can cause wind chill conditions. Wind chill conditions example:

- 0° F and 25 mph sustained wind speeds, 30-minute exposure
- 5° F and 55 mph sustained wind speeds, 30-minute exposure

The severity and magnitude of extreme heat events at Hawley is, in part, dependent upon: 1) demographics; and 2) the capability of residents to get cool (e.g. air conditioners in homes). Hawley’s demographic data indicates that certain sectors of the population may be at a greater than average vulnerability:

- 25.7% of Hawley’s population is older than 65 years
- 14.6% of Hawley’s population is at the poverty level

**About earthquakes in Hawley**

1. The direct earthquake risk to Hawley is due to the ground motion that results during the earthquake. The 10% in 50 years (500-year recurrence interval) ground motion would be experienced as light to moderate perceived shaking and no to very light damage. The 2% in 50 years (2,500-year recurrence interval) ground motion would be experienced as very strong perceived shaking and moderate damage. Based on HAZUS-MH simulations of census tract 040100 which includes Hawley, 205 buildings are predicted to experience damage, ranging from slight to extensive, from the 2,500-year (2% in 50 years) recurrence interval earthquake. The estimated economic losses are about \$3.84 million for the 2,500-year event.

## CLIMATE CHANGE

**Table 3: Climate Change and Hawley**

Hawley Climate Today	Hawley Climate 2050
<p>Temperature: The average annual temperature is about 44.6°F.</p> <ul style="list-style-type: none"> <li>The average minimum temperature in Winter (December, January and February) ranges from 7.5°F to 18.6°F</li> <li>The average maximum temperature in Summer (June, July and August) ranges from 71.5°F to 84°F</li> <li>Average annual days above 90°F (based on Deerfield Basin data): 4.5</li> </ul>	<p>Temperature: The average annual temperature could be between 4.4°F and 7.7°F higher than today.</p> <ul style="list-style-type: none"> <li>Average Summer temperature (based on Deerfield Basin data): could be between 4.6°F and 8.5°F higher than today.</li> <li>Days above 90°F (based on Deerfield Basin data): 11 to 28.2 days</li> <li>Spring will arrive sooner, summers will grow hotter, and the weather will become more extreme with swings between above-average winter temperatures to extreme cold with large snowfall events.</li> </ul>
<p>Intense Precipitation:</p> <ul style="list-style-type: none"> <li>The 25-year recurrence interval, 24-hour rainfall at Hawley: 6.33 inches (NOAA Atlas 14)</li> </ul>	<p>Intense Precipitation:</p> <p>Within the Northeast U.S., from 1996 to 2014, the amount of intense rainfall (heaviest 1% of all daily events) was about 50% higher than the period of 1901 to 1995. The frequency and intensity of intense rainfall is expected to increase.</p>

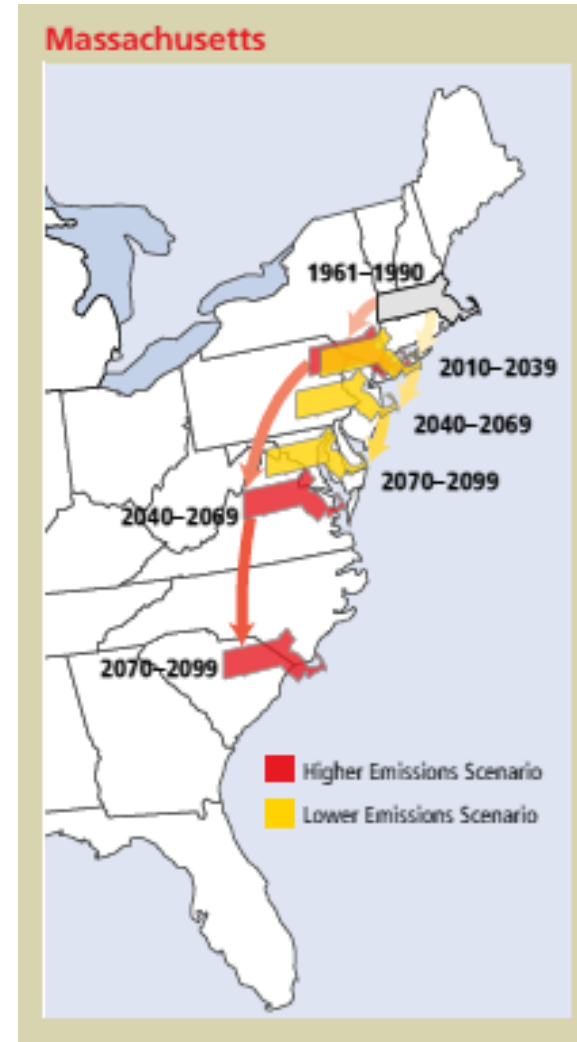


Figure 2: Latitudinal Changes in Regional Climate (source Union of Concerned Scientists)

## TOP NATURAL AND CLIMATE-RELATED HAZARDS

The hazards overview was presented at the CRB workshop and participants discussed and identified the top natural hazards and climate change interactions for the Town of Hawley. The four hazards that were prioritized as the top hazards to be included in the CRB matrix were:

- Extreme Temperatures/ Drought
- Extreme Precipitation
- High Winds
- Severe Winter Storms

## CURRENT CONCERNS AND CHALLENGES PRESENTED BY NATURAL HAZARDS

To assist the workshop in identifying the top natural hazards of concern, GZA presented the primary hazards identified in the 2014 Multi-Hazard Mitigation Plan, and compared them to the Hazard Index Rating based on GZA's 2022 Risk Assessment. Additionally, the top five hazards from the 2018 State Hazard Mitigation and Climate Adaptation Plan were discussed. Further, potential impacts of climate change on the hazards was discussed, including climate change interactions with extreme temperature, precipitation intensity and frequency of heavy precipitation, snowfall, and flooding frequency.

Stakeholders expressed concern on impacts that severe winter storms pose to transportation infrastructure. Stakeholders noted that the budget for winter road maintenance which includes road salt, sand, and fuel, has increased, and is the largest expenditure for the Town during the winter.

Stakeholders also expressed concern on the impact of extreme temperatures. High temperatures impact roadway surfaces, and temperature fluctuations that impact freeze/thaw cycles impact roadways and increase roadway maintenance.

Stakeholders expressed concerns on impacts that extreme precipitation has on transportation infrastructure. Several road locations have been washed out or flooded during heavy precipitation events. Further, flash flooding can overwhelm or lead to clogged culverts, which results in roadway flooding.

For specific categories of concerns and challenges identified by Stakeholders during the small work group sessions relative to Hawley's infrastructure, societal, and environmental features, refer to the vulnerabilities listed in **Section 3** under Current Strengths and Vulnerabilities in the Town of Hawley.

## SECTION 5: NATURAL HAZARD MITIGATION STRATEGIES

### HAZARD RISK MITIGATION GOALS

The Hawley Local Planning Team (LPT) met on April 13, 2022 to review proposed hazard mitigation goals. The following ten goals were endorsed by the team.

#### Mitigation Goals

1. To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to natural hazards.
2. Investigate, design and implement projects that will reduce and minimize the risk of flooding.
3. Investigate and implement projects that will reduce and minimize the risk of non-flooding hazards.
4. Increase the capacity of the community, including local Emergency Managers, DPWs, Fire, and Health Departments to plan for and mitigate natural hazards and to enhance the community's resilience to hazard events when they occur.
5. Increase public awareness of natural hazard risks and mitigation activities available to them.
6. Improve the quality of the data for the Town and the region as it pertains to natural hazards.
7. Improve existing local policies, plans, regulations, and practices to reduce or eliminate the impacts of natural hazards.
8. Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees and boards.

9. Take into consideration the best practices and federal, state and local standards for preventing and reducing the impacts of natural hazards including impacts from climate change for future development.
10. Work with surrounding communities, regional, the Commonwealth and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.

Hawley has an organizational structure in-place to plan for and respond to natural disasters (see Key Contacts in **Attachment 8**). The Town of Hawley currently makes use of most available locally-controlled tools to mitigate the consequences of natural hazards: subdivision rules and regulations, zoning bylaws, and state and federal codes. The Town does not participate in federal programs such as StormReady certification Firewise or Community Rating System, it does plan to research the utility of more public awareness and education programs as a result of this planning process.

Hawley has most of the no-cost or low-cost hazard mitigation capabilities in place, such as land use zoning, subdivision regulations and an array of specific policies and regulations that include hazard mitigation best practices, such as limitations on development in floodplains, stormwater management, tree maintenance, etc. Hawley also has appropriate staff dedicated to hazard mitigation-related work for a community of its size, including a Town Administrator, an Emergency Management Director, and a professionally run Highway Department. Hawley has several relevant plans in place, including a Comprehensive Emergency Management Plan. Not only does Hawley have these capabilities in place, but they are also deployed for hazard mitigation, as appropriate. The Town also has very committed and dedicated volunteers who serve on Boards, Commissions and Committees and in other volunteer positions. The Town collaborates closely with surrounding communities through its Emergency Management Director and Town Administrator.

Hawley is also an active member community of the Franklin Regional Council of Governments (FRCOG) and can take advantage of local technical assistances as needed provided by the professional planning staff at FRCOG.

**Table 4** presented on the following pages summarizes existing town-wide hazard mitigation measures already in place in Hawley and which were



presented in the Town of Hawley 2014 Multi-Hazard Mitigation Plan.

The LPT reviewed this list and identified that there have been no significant changes to these measures. **Table 4** includes a brief description of each activity as well as a subjective evaluation of its effectiveness and the area covered by the activity. **Table 5** lists the mitigation measures that were identified in the Town of Hawley 2014 Multi-Hazard Mitigation Plan, other than existing town-wide mitigation. **Table 6** lists the mitigation measures from the 2014 Hawley Preparedness and Response Action Plan, which was a component of the Town of Hawley 2014 Multi-Hazard Mitigation Plan. The tables were presented to the LPT on April 13, 2022 to review the status of each mitigation measure to document the progress made since 2014 and to determine if it was deemed still applicable for this Joint Hazard Mitigation Plan/Municipal Vulnerability Preparedness Plan, as documented in the table.

## HAZARD RISK MITIGATION MEASURES

### Identification

During the second CRB workshop there were three group exercises with the goal of stakeholders developing actions to bolster the Town's existing strengths and to improve/mitigate the vulnerabilities. During the first group exercise, stakeholders defined mitigation actions. Actions were prioritized in the second group exercise using the framework described below, and then during the third exercise, top action priorities were finalized. Ten (10) total Priority Actions to natural and climate-related hazards were identified, consisting of five (5) High Priority Actions, three (3) Medium Priority Actions, and two (2) Low Priority Actions, described in **Table 7**. Additionally, hazard mitigation measures identified by the LPT are included in **Table 7**, along with a priority ranking.

### Prioritization

During the LPT Working Group Meeting on April 13, 2022, mitigation measures were prioritized based on a benefit/cost review process based on local knowledge of the hazard areas, cost information, timeline estimate for implementation and an assessment of benefits and costs.

The LPT evaluated various approaches for prioritizing local mitigation actions including those outlined in FEMA's March 2013 *Local Mitigation Planning*

Handbook, other local plans and FEMA's STAPLEE method. The LPT developed an approach based on FEMA's March 2013 *Local Mitigation Planning Handbook* (that includes elements derived from the City of Portland Oregon's 2016 Mitigation Action Plan). This approach utilizes a qualitative benefit/cost analysis (although less detailed than used for FEMA's Hazard Mitigation Assistance (HMA) Grants Programs). The approach qualitatively rates benefit and costs in terms of: high, medium and low, as follows:

### Benefits

- **High:** Action will support compliance with a legal mandate or, once completed, will have an immediate impact on the reduction of risk exposure to life and property.
- **Medium:** Once completed, action will have a long-term impact on the reduction of risk exposure to life and property, has a substantial life safety component, or project will provide an immediate reduction in the risk exposure to property.
- **Low:** Long-term benefits of the action are difficult to quantify in the short term.

### Costs

- **High (over \$80,000):** Would require an increase in revenue via an alternative source (i.e., municipal bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
- **Medium (\$10,000—\$80,000):** Could budget for under existing capital budget but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- **Low (Less than \$10,000):** Possible to fund under existing budget. Project is or can be part of an existing ongoing program or would not require substantial effort to initiate or appropriate funds.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly. To support the benefit/cost

review, the LPT also estimated the length of time for each mitigation action as follows:

### Estimated Timeline

For actions where funding is already available the action or strategy is identified as “ongoing.” Since most of the actions were identified as a part of preparing this initial plan, most do not currently have funding. Therefore, length of time for implementation of each mitigation action is based on the amount of time it would take upon receiving funding. The estimated timeframes included:

- 1-2 years,
- 3-5 years,
- 5+ years, and
- Ongoing

### MITIGATION ACTION PRIORITIZATION

Based on an evaluation of the results of the benefit/cost review, the LPT prioritized each mitigation action and strategy using the following qualitative rating system of high, medium and low.

**High Priority:** An action that has benefits that exceed cost, has funding secured or is an ongoing project. High priority actions can be completed in the short-term or mid-term (1 to 5 years) or are projects that are long-term projects that can be initiated in the short-term and will have large positive impacts once completed.

**Medium Priority:** An action that has benefits that exceed costs, and for which funding has not yet been secured, but is eligible for funding. Actions can be completed in the short- or mid-term, once funding is secured, or are projects that are long-term projects that can be initiated in the short-term and will have large positive impacts once completed.

**Low Priority:** An action that will mitigate the risk of a hazard that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for grant funding, and for which the time line for completion is long-term or uncertain. Low priority actions may be eligible for grant funding from other programs that have not yet been identified. Financing is unknown, and they can be completed over the long term.

The LPT prioritized the mitigation action plan based on the results of the benefit/cost review of the proposed actions as presented in **Table 7** on the following pages. In addition to the benefit/cost review results based on the elements outlined above, **Table 7** provides details for each action relative to the agencies responsible for leading and coordinating the implementation of each action and potential funding sources.

**Table 4: Existing Hazard Mitigation Capabilities presented in the *Town of Hawley 2014 Multi-Hazard Mitigation Plan***

Existing Capability	Description	Area Covered	Effectiveness
<b>Existing Flood Hazard Mitigation Measures</b>			
<b>Subdivision Rules and Regulations</b>			
Definitive Plan – Filing Procedures	One set of overlays shall be prepared at the same scale as the Definitive Plan Map illustrating the following features: #1 – One hundred year floodplains, wetlands, aquifer recharge areas; #2 – Soils (including soil types), slopes greater than 25%; #3 – Vegetation types.	Entire Town	Somewhat effective for mitigating or preventing localized flooding of roads and other infrastructure.
Definitive Plan – Contents.	Show watercourses, one hundred year floodplains, wetlands, ponds, marshes, rock outcrop, stone walls, trees over eight (8) inches in diameter, (unless otherwise specified by the Board) and other significant natural features.	Entire Town	Somewhat effective for controlling impacts from stormwater runoff.
Definitive Plan – Contents.	A storm drainage system including invert and rim elevations of all catch basins and man-holes together w/ surface elevations of all waterways within the subdivision at one hundred (100) foot intervals and approximate depths of the water at these points. Surface elevation and approximate depth of water at the annual high water line shown at each point where the drainage pipe ends at a waterway. Drainage calculations prepared by the applicant’s engineer, including design criteria used, drainage area and other information sufficient for the Board to check the size of any proposed drain, culvert or bridge.	Entire Town	Somewhat effective for controlling impacts from stormwater runoff.
Definitive Plan – Contents.	Show existing storm sewers. Profiles showing vertical location of existing and proposed drainage lines and other utility crossings as well as required new waterways. Sizes of all pipes, slopes of all storm and sanitary lines, invert and rim elevation of each manhole and catch basin shall be shown.	Entire Town	Somewhat effective.
Definitive Plan – Contents.	Details for catch basins, manholes, endwalls, and all other components or features, with specific references to the appropriate sections of the State Construction Standards.	Entire Town	Somewhat effective.

Existing Capability	Description	Area Covered	Effectiveness
Definitive Plan – Contents.	Drainage trench and waterway relocation section.	Entire Town	Somewhat effective.
Definitive Plan – Contents.	The Definitive Plan ensures developers cover the cost of construction and improvements for subdivision projects.	Entire Town	Somewhat effective for mitigating or preventing local- sized flooding of roads and other infrastructure.
Definitive Plan – Contents.	Storm drainage system shall be designed based upon good engineering practice.	Entire Town	Somewhat effective for controlling impacts from stormwater runoff.
Definitive Plan – Contents.	Curb and curb inlets in new subdivisions will be installed according to specifications as outlined.	Entire Town	Somewhat effective.
Definitive Plan – Contents.	A complete drainage system must be installed according to specifications set by the Select Board.	Entire Town	
Utilities	If located within a one-hundred-year flood plain, transformers, switching equipment, and all other components shall be flood proofed.	Entire town.	Effective.
<b>Zoning Bylaws</b>			
Exceptions for Cluster Development Procedures	The Overall Development Plan shall indicate location and boundaries of the site, proposed land and building uses, location and boundaries of common open space, existing topography, grading plan, location and width of streets and ways, parking, areas of proposed and retained vegetation, distinctions between upland and wetland, drainage, sewerage, water, and use and location of proposed structures. The plan shall have been prepared by a registered landscape architect, architect, civil engineer, or land surveyor.	Entire Town	Not effective for controlling localized flooding. It does not specifically address the potential for localized flooding that cluster development could cause.
Exceptions for Cluster Development Requirements	The basic number of units allowed in a Cluster Development shall equal the number of dwellings which could otherwise be constructed under this bylaw by means of a conventional development plan considering the whole parcel, exclusive of water bodies, slopes greater than 25%, wetlands, floodplain, and land prohibited from development by legally enforceable restrictions, easements or covenants, and other constraints dictated by the Hawley Protective Bylaws, Title V, Inland Wetlands Protective Act, and other relevant laws.	Entire Town	Somewhat effective.

Existing Capability	Description	Area Covered	Effectiveness
Exceptions for Cluster Development Requirements	Applicants must provide the following: A plan signed by a registered professional engineer for the Common Driveway showing grades, subsurface preparation, drainage and surface materials.		Somewhat effective.
Presently Existing Uses, Structures and Lots – Erosion Control	The Board of Appeals may review any proposed development to ensure that site design, building design, and construction process is suitable to protect soil from erosion or excessively uncontrolled surface water runoff.	Entire Town	Effective for mitigating or preventing localized flooding of roads or infrastructure.
Presently Existing Uses, Structures and Lots – Erosion Control	No grading or construction shall take place on slopes in excess of 25 percent grade, except under Special Permit from the Board of Appeals, which shall be granted only upon demonstration that adequate provisions have been made to protect against erosion, soil instability, uncontrolled surface water runoff, or other environmental degradation.	Entire town.	Effective for controlling impacts from stormwater runoff.
Presently Existing Uses, Structures and Lots – Erosion Control	The Board of Appeals may require topographic data prior to acting upon an application for a permit.	Entire Town	Somewhat effective.
Floodplain Protection Bylaw	Will regulate encroachments in the floodplain, including new construction of structures.	FEMA 100-year floodplain	Effective.
<b>Other Protections</b>			
Participation in the National Flood Insurance Program	The Town of Hawley does participate in the National Flood Insurance Program. There are residential or other significant land uses within the 100-year floodplain.	Entire Town	Effective in helping the Town clean up and secure funding in a disaster.
<b>Existing Severe Winter Storms Hazard Mitigation Measures</b>			
<b>Zoning Bylaws</b>			
Erosion Control	The Board of Appeals may review any proposed development to ensure that site design, building design, and construction process is suitable to protect soil from erosion or excessively uncontrolled surface water runoff.	Entire town.	Somewhat effective for mitigating or preventing localized erosion.
Erosion Control	No grading or construction shall take place on slopes in excess of 25 percent grade, except under Special Permit from the Board of Appeals.	Entire town.	Somewhat effective for controlling impacts from stormwater runoff.

Existing Capability	Description	Area Covered	Effectiveness
Erosion Control	A storm drainage system shown including invert and rim elevations of all catch basins and manholes together with surface elevations of all waterways within the subdivision at one hundred (100) foot intervals and approximate depth of water at these points.	Entire Town	Somewhat effective for mitigating or preventing flooding/icing of roads and other structures.
Erosion Control	Existing storm sewerage should be shown.	Entire Town	Somewhat effective for controlling impacts from stormwater runoff.
Erosion Control	Wherever a sidewalk or bicycle path intersects a roadway, curb cuts shall be provided.	Entire Town	Somewhat effective for controlling impacts from stormwater runoff.
Erosion Control	Roadways, berms, curbs, curb cuts, and shoulders will be constructed in accordance with State Construction Standards.	Entire Town	Somewhat effective for controlling impacts from stormwater runoff.
Erosion Control	Design storm intensity for surface runoff shall be calculated according to the methodology set forth in Technical Release Number 55, entitled "Urban Hydrology for Small Watersheds," by the Soil Conservation Service of the US Department of Agriculture, or such other methodology as the Board may, in its discretion, approve.	Entire town.	Somewhat effective for controlling impacts from stormwater runoff.
Erosion Control	All gas, telephone, electricity, cable antenna, television, and other utility lines shall be installed underground.	Entire town.	Effective.
<b>Other Protections</b>			
State Building Code	Hawley is a member of the Franklin County Cooperative Building Inspection Program, which follows the Massachusetts State Building Code.	Entire town.	Effective.
<b>Existing Severe Wind-Related Hazard Mitigation Measures</b>			
Zoning Regulations – Mobile Homes	There are no zoning ordinances for mobile homes or mobile home parks.	Entire town.	Somewhat effective.
Subdivision Regulations – Utilities	All gas, telephone, electricity, cable antenna, television, and other utility lines shall be installed underground in any new subdivision.	Entire town.	Somewhat effective.
State Building Code	The Town of Hawley uses the inspection services provided by the FC Cooperative Inspection Program and follows the Massachusetts State Building Code.	Entire town.	Effective.
Debris Management Plan	A debris management plan could be developed	Entire town.	Effective.

Existing Capability	Description	Area Covered	Effectiveness
Shelters	In the event of a hurricane, the designated shelter for residents of Hawley is Mohawk Regional High School in Buckland and Stump Sprouts Lodge on West Hill Road in Hawley. There are no designated shelters in the event of a tornado.	Entire town.	Somewhat effective.
<b>Existing Wildfire/Brushfire Hazard Mitigation Measures</b>			
Burn Permits	Residents are not permitted to obtain burn permits over the phone. Written permits must be obtained, in person, from the Fire Chief.	Entire town.	Effective.
Subdivision Review	Subdivision Rules and Regulations do not require fire department's review of subdivision plans.	Entire town.	Not effective.
Public Education/Outreach	The fire department does not have a public education/outreach program.	Entire town.	Not effective.
<b>Existing Earthquake Hazard Mitigation Measures</b>			
State Building Code	The Town of Hawley uses the inspection services provided by the Franklin County Cooperative Inspection Program and follows the 8 <sup>th</sup> Edition of the State Building Code.	Entire town but applies to new construction only.	Effective for new buildings only.
Debris Management Plan	A debris management plan could be developed.	Entire town.	Effective.
Shelters	The Mohawk Regional High School in Buckland has been identified as the shelter for victims of earthquakes in Hawley.	Entire town.	Effective.
<b>Existing Dam Failure Hazard Mitigation Measures</b>			
Permits required for new dam construction	State law requires a permit for the construction of any dam.	Entire town.	Effective. Ensures dams are adequately designed.
Dam Inspections	DCR has an inspection schedule that is based on the hazard rating of the dam (low, significant, high hazard).	Entire town.	Low. The DCR does not have adequate staff and resources to inspect dams according to the required schedule.
Dam Inspections	FERC requires Emergency Action Plans for all high hazard dams it oversees.		
Evacuation Plans	Comprehensive evacuation plans would ensure the safety of the citizens in the event of dam failure.	Inundation areas in town.	Low.
<b>Existing Mitigation Measures for Manmade Hazards</b>			
<b>Zoning Bylaws</b>			
Section 42.4 and 42.5	Prohibits the storage and disposal of radioactive and hazardous wastes within the Town.	Entire Town.	Effective.

Table 5: Update to Mitigation Measures from 2014 Hawley Multi-Hazard Mitigation Prioritized Action Plan (Table adapted from Table 4-11 of *Town of Hawley 2014 Multi-Hazard Mitigation Plan*, prepared by the Hawley Multi-Hazard Mitigation Planning Committee and FRCOG, and dated June 2014)

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/ Medium/ Low	Comments
<b>HAZARDS IDENTIFIED AS MOST IMPORTANT TO THE TOWN OF HAWLEY</b>											
The priority for implementation of each Action Item is ranked as <b>High, Medium or Low</b>											
<b>MULTIPLE HAZARDS</b>											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to natural hazards.</i>											
		Develop a formal system for departments to record costs and property damages from natural hazard events. Encourage businesses and residents to report property damages, and farmers to report crop damages.	Emergency Management Director, Department of Public Works, Town Administrator, Fire Chief, Police	B, N, P, I	Town, Volunteer time	Year 2	<b>Medium</b> /New Action Item.	<b>Partial</b>	<b>Y</b>	<b>Medium</b>	
		Develop and implement an annual program to improve household disaster preparedness. Use available pamphlets and other information to educate the public on how to prepare for hazards and disaster, including encouraging residents to prepare by stocking up the necessary items and planning for how family members how to respond during a disaster.	Fire Department	P	Town, Volunteers	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	<b>High/</b> This action has been implemented. Updated and carried over from 2007 plan. Still relevant. The town provides emergency preparedness information through the town email list.	<b>Y</b>	<b>Y</b>	<b>Medium</b>	<b>Ongoing</b>
<b>FLOODING</b>											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to flooding.</i>											



Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/ Medium/ Low	Comments
		Reduce the risk of flooding and fluvial erosion hazards by undertaking a study to identify Fluvial Erosion Hazards for the Chickley River watershed and develop a prioritized list of flood hazard mitigation projects. The assessment would provide a map of Fluvial Erosion Hazards for the watershed and a prioritized list of flood hazard mitigation projects which may be eligible for the FEMA Hazard Mitigation Grant Program.	Select Board, Franklin Regional Council of Governments	B, N, P, I	604b Water Quality Management Planning Grant, FEMA	Target of Year 2 or when funding becomes available.	High/New Action Item.	N	Y	High	Overlaps with MVP Program Priorities
		Investigate and install appropriate debris-flow measures to stabilize slopes, and control and dissipate high flows to reduce flooding damage and debris accumulation in tributary watersheds of the Chickley River.	Emergency Management Director, Select Board	B, N, P, I	Town, volunteer, FEMA	Target of Year 3 or when funding becomes available.	High/New Action Item.	N	Y	High	
		Obtain necessary environmental permits and remove debris from tributary watersheds, culverts and other drainage structures after major storms to prevent the damage that debris can cause when picked up by flood waters.	Emergency Management Director, Fire Department	B, N, P, I	Town, volunteer	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	High/New Action Item.	N	N	N/A	Conservation Commission to issue emergency permit as needed for public safety.
		Ensure that Hawley maintains compliance with the NFIP so that property owners can purchase insurance protection against flood losses.	Select Board	B, P	Town	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	High/This action has been implemented. Updated and carried over from 2007 plan. Still relevant.	Y	Y	High	Bylaws amendment passed.

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/ Medium/ Low	Comments
		Update and amend the town's Subdivision Rules and Regulations to include provisions, like low impact development techniques, erosion and sedimentation control requirements, and land clearing limits that reduce the risk of flooding and damage to infrastructure and natural resources from uncontrolled stormwater runoff.	Planning Board	B, P, I	Town, Volunteers	Year 4	Medium/ Updated and carried over from 2007 plan. Still relevant.	Y	Y	Medium	Ongoing
		To prevent roadway damage and traffic interruptions on West Hawley Road, work with MassDOT to relocate a portion of the road in the "Dugway" area to reduce flooding and erosion hazards posed by the Chickley River to the east. As an alternative, apply bank stabilization measures to prevent undermining of the road by the river. See related action item under Landslides.	Emergency Management Director, Select Board, Highway Department	B, N, P, I	FEMA, MassDOT, 319 Nonpoint Source Pollution Grant program administered by MassDEP	Target of Year 4 or as funding becomes available.	High/New Action Item.	Y	Y	High	Ongoing, Overlaps with MVP Program Priorities; Re-routing may be infeasible- focus on bank stabilization
		To reduce the risk of erosion due to flooding at the base of the steep slope along Hawks Brook below East Road, apply drainage improvements and bank stabilization techniques.	Emergency Management Director, Select Board, Highway Department	B, N, P, I	FEMA, MassDOT, 319 Nonpoint Source Pollution Grant program administered by MassDEP	Target of Year 3 or as funding becomes available.	High/New Action Item.	Y	N	N/A	Completed
		To reduce the risk to important town infrastructure from flooding – Town Garage/Fire Station and Salt Shed – install flood barriers/bank stabilization measures to prevent undermining of the bank by the Chickley River	Emergency Management Director, Select Board, Highway Department	B, N, P, I	FEMA, MassDOT, 319 Nonpoint Source Pollution Grant program administered by MassDEP	Target of Year 2 or as funding becomes available.	High/New Action Item.	Y	N	N/A	Completed

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/Medium/Low	Comments
					red by MassDEP						
		Inventory and conduct a hydraulic analysis of the drainage structures on Route 8A, Buckland Road and Forge Hill Road to determine optimal capacity and necessary upgrades to prevent plugging by rock an debris during flood events.	Emergency Management Director, Select Board, Highway Department	B, N, P, I	FEMA, MassDOT	Target of Year 2 or as funding becomes available.	Low/New Action Item.	Partial	Y	Medium	Partially covered by Buckland MVP action grant.
<b>SEVERE WINTER STORMS</b>											
	<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to severe winter storms.</i>										
		Work with utility companies to establish and implement an annual tree pruning program to reduce risk to infrastructure from severe winter storms.	Select Board	P, I	Town, Volunteers	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	High/This action has been implemented. Updated and carried over from 2007 plan. Still relevant.	Partial	Y		Work continues to be completed annually.
		Update and amend the town's Subdivision Rules and Regulations to include a provision that sets a maximum standard for street grade regulations of between seven to nine percent to reduce the risk of transportation accidents from ice/snow buildup.	Planning Board	B, P, I	Town, Volunteers with technical assistance from FRCOG funded by District Local Technical Assistance (DLTA) <sup>1</sup>	Year 3	Medium/ Updated and carried over from 2007 plan. Still relevant.	Y	Y	Medium	Ongoing

<sup>1</sup> DLTA stands for District Local Technical Assistance. It was created under Massachusetts General Law in 2006. DLTA funding helps promote regional collaboration, economic development, better land use and zoning, and environmental protection across the Commonwealth.

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/Medium/Low	Comments
<b>LANDSLIDES</b>											
<i>To minimize the loss of life, damage to property, infrastructure and natural resources, and the disruption of governmental services and general business activities due to an landslide.</i>											
		To prevent roadway damage and traffic interruptions due to landslides on East Road, Forge Hill Road, West Hawley Road, and Buckland Road, apply appropriate soil stabilization measures, such as bioengineering, and install drainage structures to stabilize steep slopes.	Emergency Management Director, Select Board, Highway Department	B, N, P, I	FEMA, MassDOT	Target of Year 5 or as funding becomes available for each site or group of sites.	<b>High/New Action Item.</b>	<b>Y</b>	<b>Y</b>	<b>Medium</b>	<b>Ongoing, Monitor/ upgrade priority if situation develops</b>
		Update and amend the town's Zoning Bylaws and Subdivision Rules and Regulations to include a provision that sets limits on land clearing to maintain stable slopes to reduce the risk of landslides.	Planning Board	B, N, P, I	Town, Volunteers, with technical assistance from FRCOG funded by District Local Technical Assistance (DLTA).	Year 4	<b>Medium/New Action Item.</b>	<b>Y</b>	<b>Y</b>	<b>Medium</b>	<b>Ongoing, Bylaws amended related to management of grades of 25% or greater.</b>
		To prevent roadway damage and traffic interruptions on Forge Hill Road and East Road, investigate feasibility of relocating sections of the road that are near steep slopes that are vulnerable to landslides.	Emergency Management Director, Select Board, Highway Department	B, N, P, I	FEMA, MassDOT	Target of Year 4 or as funding becomes available.	<b>High/New Action Item.</b>	<b>Y</b>	<b>N</b>	<b>N/A</b>	<b>Completed</b>
		To prevent roadway damage and traffic interruptions on West Hawley Road, work with MassDot to relocate a portion of the road in the "Dugway" area to avoid damage from landslides down the steep slopes located west of the road.	Emergency Management Director, Select Board, Highway Department	B, N, P, I	FEMA, MassDOT	Target of Year 4 or as funding becomes available.	<b>High/New Action Item.</b>	<b>N</b>	<b>N</b>	<b>N/A</b>	<b>This item is redundant.</b>
<b>HIGH PRIORITY (≥4.5 Weighted Hazard Index)</b>											

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/Medium/Low	Comments
<b>HURRICANES AND TROPICAL STORMS (WIND RELATED) see also action items listed under FLOODING</b>											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to high winds associated with hurricanes and tropical storms.</i>											
		Work with utility companies to establish standards for an annual tree pruning program to reduce risk to infrastructure from high wind events.	Select Board	P, I	Town, Volunteers	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	<b>High</b> /This action has been implemented. Updated and carried over from 2007 plan. Still relevant.	<b>Y</b>	<b>Y</b>	<b>High</b>	<b>Ongoing</b>
		Improve public awareness of the risk of high wind events. <ul style="list-style-type: none"> <li>Provide information to property owners on how to properly install temporary window coverings before a storm and appropriate wind retrofits for existing buildings.</li> </ul>	Emergency Management Director	B, P, I	Town, Volunteer Time	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	<b>Medium</b> /New Action Item.	<b>N</b>	<b>N</b>	<b>N/A</b>	<b>This action was determined to not be possible</b>
<b>DAM FAILURE</b>											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to dam failure.</i>											
		In order to reduce the risk and potential loss of life from dam failure, prepare a map of significant hazard dams and their potential inundation areas. Include all dams in the town and immediately upstream of the town's borders and the areas that are likely to be flooded in the event of a dam failure. Distribute map to public safety officials in Hawley.	Select Board, Franklin Regional Council of Governments	B, N, P, I	Town, Volunteers	Target of Year 3 or when funding becomes available.	<b>Medium</b> /Updated and carried over from 2007 plan. Still relevant.	<b>Partial</b>	<b>N</b>	<b>N/A</b>	<b>Propose to replace this measure with actions pertaining to specific dams (Cox Dam, Hallockville Dam).</b>

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/Medium/Low	Comments
		<p>In order to reduce the risk and potential loss of life from dam failure, distribute information to dam owners in town on the Dam and Seawall Repair and Removal Fund, which was established in 2013 by the Massachusetts Legislature to promote public health, public safety, and ecological restoration. Under the authority created by M.G.L. c. 29, §2III and regulations issued under 301 CMR 15.00, EEA will enter into contracts with qualified organizations to implement projects for the repair and removal of dams, levees, seawalls, and other forms of flood control.</p> <p><a href="https://www.mass.gov/service-details/dam-and-seawall-repair-or-removal-program-grants-and-funds#:~:text=The%20Dam%20and%20Seawall%20Repair%20or%20Removal%20Fund%20was%20established,in%20the%20EEA%20Environmental%20Bond">https://www.mass.gov/service-details/dam-and-seawall-repair-or-removal-program-grants-and-funds#:~:text=The%20Dam%20and%20Seawall%20Repair%20or%20Removal%20Fund%20was%20established,in%20the%20EEA%20Environmental%20Bond</a></p>	Select Board	B, N, P, I	Town, Volunteers	Year 0-1	Medium/Updated and carried over from 2007 plan. Still relevant.	N	Y	Medium	
<b>MICROBURSTS AND THUNDERSTORMS (WIND RELATED) see also action items listed under FLOODING</b>											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to the high winds associated with microbursts and thunderstorms.</i>											
		Work with utility companies to establish and implement an annual tree pruning program to reduce risk to infrastructure from high winds associated with microbursts and thunderstorms.	Select Board	P, I	Town, Volunteers	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	High/This action has been implemented. Updated and carried over from 2007 plan. Still relevant.	Y	Y	High	Ongoing

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/Medium/Low	Comments
MEDIUM PRIORITY (3.0 – 4.4 Weighted Hazard Index)											
<b>WILDFIRES AND BRUSHFIRES</b>											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to wildfires and brushfires.</i>											
		Educate homeowners about the risk of wildfires and brushfires and how to reduce the risk by adopting general fire safety techniques.	Fire Department	B, N, P, I	Town, Volunteers	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	<b>High</b> /This action has been implemented. Updated and carried over from 2007 plan. Still relevant.	<b>Partial</b>	<b>N</b>	<b>N/A</b>	<b>Ongoing</b>
LOW PRIORITY (< 3.0 Weighted Hazard Index)											
<b>ICE JAMS</b>											
<i>To minimize the loss of life, damage to property, infrastructure and natural resources, and the disruption of governmental services and general business activities due to ice jams and associated flooding.</i>											

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/ Status	Action Has Been Implemented/Completed ? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/Medium/Low	Comments
		See related Action Items listed under Flooding.									
<b>TORNADOS</b>											
		<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to high winds associated with tornados.</i>									
		See Action Items for high wind events listed under Hurricanes and Tropical Storms.									
<b>EARTHQUAKES</b>											
		<i>To minimize the loss of life, damage to property, infrastructure and natural resources, and the disruption of governmental services and general business activities due to earthquakes.</i>									
		No Action Items were identified to mitigate the impacts of earthquakes.									

Table 6: Update to Mitigation Measures from 2014 Hawley Preparedness and Response Action Plan



Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Status	Action Has Been Implemented/Completed? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/ Medium/ Low	Comments
HIGH PRIORITY (≥ 4.5 Weighted Hazard Index)											
MULTIPLE HAZARDS											
<i>To provide adequate shelter, water, food and basic first aid to displaced residents in the event of a natural disaster and to provide adequate notification and information regarding evacuation procedures, etc., to residents in the event of a natural disaster.</i>											
		Maintain an inventory of supplies at existing shelters and develop a needs list and storage requirements. Continue to stock meals at the Fire Station for use during a disaster.	Emergency Management Director, Fire Department	P	Town, Volunteers	Year 2	Carried over from 2007 plan. Still relevant.	Partial	N	N/A	Ongoing
		Update the town phone list, email list, and special needs list.	Emergency Management Director, Fire Department	P	Town, Volunteers	Year 2	Carried over from 2007 plan. Still relevant.	Partial	N	N/A	Ongoing
<i>To provide adequate access for emergency vehicles to the interior of the Dubuque State Forest in the event of a wildfire or accident that requires rescue of people and to provide east-west access within Hawley in the event of a natural disaster that requires evacuation of residents.</i>											
		Lobby state legislators and DCR to fund the repair of Hunt Road and Middle Road in the Dubuque State Forest.	Emergency Management Director, Select Board	N, P	DCR	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 2-5), as appropriate.	New Action Item.	Y	N	N/A	Completed
HURRICANES AND TROPICAL STORMS											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to high winds associated with hurricanes and tropical storms.</i>											
		Consider implementing the Franklin County Regional Debris Management Plan (2014).	Select Board	B, N, P, I	FEMA	Year 0-1	Carried over from 2007 plan. Still relevant.	Y	Y	Low	

Hazard	Goal	Action Item	Responsible Department / Board	Benefits What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Status	Action Has Been Implemented/Completed? Y/N/Partial	Include in Updated Plan? Y/N	Priority: High/ Medium/ Low	Comments
<b>MANMADE HAZARDS</b>											
		Continue to participate in the Franklin County Regional Emergency Planning Committee. Keep up-to-date emergency response guides for different chemical spill scenarios.	Emergency Management Director	P	Town, Volunteers, FEMA	This action has been implemented and will continue over the next 5 years.	New Action Item.	Partial	N	N/A	Ongoing
<b>MEDIUM PRIORITY (3.0 – 4.4 Weighted Hazard Index)</b>											
<b>FLOODING</b>											
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to flooding.</i>											
		Encourage FEMA to fund the Updating of the 100-Year Floodplain Maps.	Select Board, Conservation Commission, and Emergency Management Director.	B, N, P, I	Town, Volunteers	This action has been implemented and will continue over the next 5 years.	Carried over from 2007 plan. Still relevant.	Partial	N	N/A	Ongoing

**Table 7: Natural Hazard Mitigation Action Matrix & Prioritization**

MITIGATION ACTIONS	Benefits (High/ Medium/ Low)	Costs (High/ Medium/ Low)	Timeline (1-2/3-5/5+ yrs/ ongoing)	Priority (High/ Medium/ Low)	Responsible Agencies	Potential Funding Sources
<b>MULTIPLE HAZARDS</b>						
Have a backup emergency operations center at town hall: Establish the Town Office in West Hawley as a back-up secondary EOC and or as a localized command headquarters for the western portion of town.	Medium	Low	1-2 yrs	High	Hawley Board of Selectmen	Town of Hawley
Local Warning System: Develop an alert system that could work on local infrastructure without backhaul to the outside Internet and consider using the wireless broadband network as the vehicle for accomplishing this. Such a system might, in addition to reaching out to pre-programmed phone numbers, potentially be synchronized to a PA system with sirens and loudspeakers positioned in parts of Hawley of high concern, such as beneath the Hallockville dam and along the Chickley River.	Medium	Low	3-5 yrs	Medium	Hawley Board of Selectmen, Emergency Management	Town of Hawley
Resident education on disaster resilience: Hawley uses its Annual Town Report (which is widely disseminated to residents), as well as packet mailings (to all residents) and emails (for those residents to subscriber to our email list), to help build awareness of hazard mitigation and disaster resilience measures Hawley residents can take on their own.	Medium	Low	Ongoing	High	Hawley Board of Selectmen	Town of Hawley
Designate points of contact within specific areas: Establish volunteers to be emergency services points of contact for each neighborhood in Hawley; especially in areas likely to be cut off by a flood or downed trees. These individuals would be given radios capable of talking to local Emergency Services leadership and would facilitate collection of damage information, as well as dissemination of critical information to residents, in the event conventional travel routes and communications were compromised.	Medium	Low	Ongoing	High	Emergency Management	Town of Hawley

MITIGATION ACTIONS	Benefits (High/ Medium/ Low)	Costs (High/ Medium/ Low)	Timeline (1-2/3-5/5+ yrs/ ongoing)	Priority (High/ Medium/ Low)	Responsible Agencies	Potential Funding Sources
Tree trimming along roadways: Utilizing Highway Department resources to trim trees and hazardous limbs along Town roadways, in order to protect the roads and utility lines. Also, cooperating with utility providers, like Verizon and National Grid in their efforts to do the same.	Medium	Low	Ongoing	High	Hawley Highway Department, Utility companies	Town of Hawley
Repair and maintain state forest roads: In 2017 and 2018, the Massachusetts Department of Conservation and Recreation (DCR), repaired Hunt Road and Middle Road in the Dubuque State Forest, which had gradually slipped into disrepair since the 1980s, and had been severely damaged during Tropical Storm Irene in 2011. Due to this repair work, it is now possible to travel between East and West Hawley in an ordinary vehicle without leaving Town in the summer months. The roads are left unplowed for use by snowmobiles in the winter and closed (except to emergency vehicles) during the mud season, to prevent damage to the roads and deleterious affects upon local endangered species. As part of the repair process, Hawley signed a Memorandum of Agreement with DCR to undertake ordinary maintenance and care for the roads.	Medium	Low	Ongoing	High	Hawley Highway Department, MA DCR	Town of Hawley, MA DCR
Emergency Shelters: Conduct feasibility study to develop emergency shelters in Hawley.	Medium	Medium	1-2 yrs	Medium	Hawley Board of Selectmen, Emergency Management	MA Municipal Vulnerability Preparedness Program
Develop a formal system for departments to record costs and property damages from natural hazard events. Encourage businesses and residents to report property damages, and farmers to report crop damages.	High	Low	Ongoing	Medium	Emergency Management, Highway Department, Fire Department, Police Department	Town of Hawley, Volunteers

<b>MITIGATION ACTIONS</b>	<b>Benefits (High/ Medium/ Low)</b>	<b>Costs (High/ Medium/ Low)</b>	<b>Timeline (1-2/3-5/5+ yrs/ ongoing)</b>	<b>Priority (High/ Medium/ Low)</b>	<b>Responsible Agencies</b>	<b>Potential Funding Sources</b>
Develop and implement an annual program to improve household disaster preparedness. Use available pamphlets and other information to educate the public on how to prepare for hazards and disaster, including encouraging residents to prepare by stocking up the necessary items and planning for how family members how to respond during a disaster.	Medium	Low	Ongoing	Medium	Fire Department	Town of Hawley, Volunteers
<b>FLOOD HAZARDS</b>						
Replace King Corner culvert.	High	High	1-2 yrs	High	Hawley Board of Selectmen	MA Division of Ecological Restoration
Replace Sears Road culvert.	High	High	3-5 yrs	Medium	Hawley Board of Selectmen	MA Division of Ecological Restoration
Relocate Highway Department/ West Hawley Fire Station to a location outside of the Chickley River flood hazard: Analysis of risk of slope failure along Chickley River behind the Town garage, identify parcels for relocation, develop emergency action plan in the short term for continued function of the Highway Department in the event of a flood.	High	High	3-5 yrs	Medium	Hawley Board of Selectmen, Hawley Highway Department, Hawley Fire Department	MA Municipal Vulnerability Preparedness Program
Town-wide culvert assessment: Building upon previous culvert assessments performed for the Town, prioritize culverts for design and permitting of replacements; with potential focus on the Chickley River watershed.	High	Medium	1-2 yrs	Medium	Hawley Board of Selectmen	MA Municipal Vulnerability Preparedness Program
Cox Pond beaver dam: Evaluate options to reduce flood risks that may be caused by the beaver dam located between Cox Pond and the Pond Road culvert.	High	Medium	1-2 yrs	Medium	Hawley Board of Selectmen	MA Municipal Vulnerability Preparedness Program
Investigate and install appropriate debris-flow measures to stabilize slopes, and control and dissipate high flows to reduce flooding damage and debris accumulation in tributary watersheds of the Chickley River.	High	High	3-5 yrs	High	Emergency Management, Hawley Board of Selectmen	Town of Hawley, Volunteers



MITIGATION ACTIONS	Benefits (High/ Medium/ Low)	Costs (High/ Medium/ Low)	Timeline (1-2/3-5/5+ yrs/ ongoing)	Priority (High/ Medium/ Low)	Responsible Agencies	Potential Funding Sources
Reduce the risk of flooding and fluvial erosion hazards by undertaking a study to identify Fluvial Erosion Hazards for the Chickley River watershed and develop a prioritized list of flood hazard mitigation projects. The assessment would provide a map of Fluvial Erosion Hazards for the watershed and a prioritized list of flood hazard mitigation projects which may be eligible for the FEMA Hazard Mitigation Grant Program.	High	High	1-2 yrs	High	Hawley Board of Selectmen, Franklin Regional Council of Governments	604b Water Quality Management Planning Grant, FEMA
Ensure that Hawley maintains compliance with the NFIP so that property owners can purchase insurance protection against flood losses.	High	Low	1-2 yrs	High	Hawley Board of Selectmen	Town of Hawley
Update and amend the town's Subdivision Rules and Regulations to include provisions, like low impact development techniques, erosion and sedimentation control requirements, and land clearing limits that reduce the risk of flooding and damage to infrastructure and natural resources from uncontrolled stormwater runoff.	Medium	Low	3-5 yrs	Medium	Hawley Planning Board	Town of Hawley, Volunteers
To prevent roadway damage and traffic interruptions on West Hawley Road, work with MassDOT to stabilize the slope along a portion of the road in the "Dugway" area to reduce erosion and landslide hazards posed by heavy rains on the steep slope. See related action item under Landslides.	High	High	3-5 yrs	High	Emergency Management, Hawley Board of Selectmen, Highway Department	FEMA, MassDOT, 319 Nonpoint Source Pollution Grant program administered by MassDEP
Inventory and conduct a hydraulic analysis of the drainage structures on Route 8A, Buckland Road and Forge Hill Road to determine optimal capacity and necessary upgrades to prevent plugging by rock and debris during flood events.	High	Medium	1-2 yrs	Medium	Emergency Management, Hawley Board of Selectment, Highway Department	FEMA, MassDOT

<b>MITIGATION ACTIONS</b>	<b>Benefits (High/ Medium/ Low)</b>	<b>Costs (High/ Medium/ Low)</b>	<b>Timeline (1-2/3-5/5+ yrs/ ongoing)</b>	<b>Priority (High/ Medium/ Low)</b>	<b>Responsible Agencies</b>	<b>Potential Funding Sources</b>
<b>SEVERE WINTER STORMS</b>						
Work with utility companies to establish and implement an annual tree pruning program to reduce risk to infrastructure from severe winter storms.	Medium	Low	Ongoing	Medium	Hawley Board of Selectmen	Town of Hawley, Volunteers
Update and amend the town's Subdivision Rules and Regulations to include a provision that sets a maximum standard for street grade regulations of between seven to nine percent to reduce the risk of transportation accidents from ice/snow buildup.	Medium	Low	Ongoing	Medium	Planning Board	Town, Volunteers with technical assistance from FRCOG funded by District Local Technical Assistance (DLTA) <sup>1</sup>
<b>HURRICANES AND TROPICAL STORMS (WIND RELATED)</b>						
Work with utility companies to establish standards for an annual tree pruning program to reduce risk to infrastructure from high wind events.	Medium	Low	Ongoing	Medium	Hawley Board of Selectmen	Town of Hawley, Volunteers
Consider implementing the Franklin County Regional Debris Management Plan (2014).	Medium	Low	1-2 yrs	Low	Hawley Board of Selectmen	FEMA
<b>MICROBURSTS AND THUNDERSTORMS (WIND RELATED)</b>						
Work with utility companies to establish and implement an annual tree pruning program to reduce risk to infrastructure from high winds associated with microbursts and thunderstorms.	Medium	Low	Ongoing	Medium	Hawley Board of Selectmen	Town of Hawley, Volunteers
<b>CLIMATE RELATED HAZARDS: DROUGHT</b>						
Construct Fire Ponds.	Medium	Medium	1-2 yrs	Low	Hawley Fire Department	Town of Hawley
<b>GEOLOGIC HAZARDS: LANDSLIDE</b>						

<b>MITIGATION ACTIONS</b>	<b>Benefits (High/ Medium/ Low)</b>	<b>Costs (High/ Medium/ Low)</b>	<b>Timeline (1-2/3-5/5+ yrs/ ongoing)</b>	<b>Priority (High/ Medium/ Low)</b>	<b>Responsible Agencies</b>	<b>Potential Funding Sources</b>
Stabilize slope at the Dugway (Route 8A)	High	High	3-5 yrs	Medium	Hawley Board of Selectmen	Mass DOT, MEMA/FEMA, MA Municipal Vulnerability Preparedness Program
To prevent roadway damage and traffic interruptions due to landslides on East Road, Forge Hill Road, West Hawley Road, and Buckland Road, apply appropriate soil stabilization measures, such as bioengineering, and install drainage structures to stabilize steep slopes.	High	High	Ongoing	Medium	Emergency Management, Hawley Board of Selectmen, Highway Department	FEMA, MassDOT
Update and amend the town's Zoning Bylaws and Subdivision Rules and Regulations to include a provision that sets limits on land clearing to maintain stable slopes to reduce the risk of landslides.	High	Low	Ongoing	Medium	Planning Board	Town, Volunteers with technical assistance from FRCOG funded by DLTA <sup>1</sup> .
<b>SECONDARY HAZARDS: LIGHTNING/ CORONAL MASS EJECTION (CME/ SOLAR FLARE)</b>						
Install lightning rods on Town buildings.	High	Low	1-2 yrs	Medium	Hawley Board of Selectmen	Town of Hawley
Establish spare communications equipment, laptops, machinery kept unplugged at Town buildings.	Low	Low	1-2 yrs	Low	Hawley Board of Selectmen	Town of Hawley
Plan protocol for reacting to early warning of CME.	Medium	Low	1-2 yrs	Low	Hawley Board of Selectmen	Town of Hawley
<b>DAM FAILURE</b>						



MITIGATION ACTIONS	Benefits (High/ Medium/ Low)	Costs (High/ Medium/ Low)	Timeline (1-2/3-5/5+ yrs/ ongoing)	Priority (High/ Medium/ Low)	Responsible Agencies	Potential Funding Sources
To reduce the risk and potential loss of life from dam failure, distribute information to dam owners in town on the Dam and Seawall Repair and Removal Fund, which was established in 2013 by the Massachusetts Legislature to promote public health, public safety, and ecological restoration. Under the authority created by M.G.L. c. 29, §21III and regulations issued under 301 CMR 15.00, EEA will enter into contracts with qualified organizations to implement projects for the repair and removal of dams, levees, seawalls, and other forms of flood control.	Medium	Low	1-2 yrs	Medium	Hawley Board of Selectmen	Town of Hawley, Volunteers

<sup>1</sup> DLTAs stands for District Local Technical Assistance. It was created under Massachusetts General Law in 2006. DLTAs funding helps promote regional collaboration, economic development, better land use and zoning, and environmental protection across the Commonwealth.

## **SECTION 6: REGIONAL AND INTER-COMMUNITY RELATIONSHIPS**

Some hazard mitigation issues are strictly local. The problem originates primarily within the municipality and can be solved at the municipal level. Other issues are inter-community issues that involve cooperation between two or more municipalities. There is a third level of mitigation which is regional; involving a state, regional or federal agency or an issue that involves three or more municipalities.

The Hawley Planning Board is the primary Town agency responsible for regulating development in town. As a part of developing this updated natural hazard mitigation plan, the Town coordinated with the Massachusetts Department of Conservation and Recreation to update pertinent repetitive loss property and NFIP claims related details for the Town. Local, regional and state entities were provided an opportunity to provide input via the online posting of the draft plan. The Town will continue to collaborate with local, regional and state agencies as a part of the implementation of actions outlined in this plan. Below is a more detailed overview of the regional and intercommunity considerations for this plan.

### **REGIONAL PARTNERS**

As one of the smallest towns in Massachusetts, based on population, Hawley relies on regional partners and neighboring municipalities to provide or supplement a variety of services. The Town has mutual aid agreements with area municipalities for the provision of police and emergency management services. The Town's police chief utilizes the neighboring Town of Charlemont's police station. Additionally, the Town utilizes the state police Shelburne Falls barracks emergency services. The Franklin Regional Council of Governments (FRCOG) offers services to its member Towns, including Hawley, supporting regional land use, transportation, economic development, public health, and natural resources planning, as well as emergency preparedness, partnership for youth, and town accounting. Hawley is also a member of the Franklin County Regional Emergency Planning Committee.

### **REGIONAL FACILITIES WITHIN HAWLEY**

Over half of the Town is state forest managed by DCR. Other recreational attractions include Stump Sprouts Ski Touring Center, Berkshire East Mountain Resort, and Hawley Bog.

### **INTERCOMMUNITY CONSIDERATIONS**

Hawley is dependent on access to neighboring towns for services such as schools, childcare, emergency, hospital and medical services, and grocery shopping. Elementary school students attend Hawlemont Regional School in Charlemont and high school students attend Mohawk Trail Regional High School in Buckland or one of three vocational high schools; Franklin County Technical School in Turners Falls, McCann Technical School in Adams, or Smith Vocational School in Northampton.

## SECTION 7: PLAN ADOPTION AND IMPLEMENTATION

Adopting, implementing, monitoring, evaluating, and updating the Town's Local Natural Hazard Mitigation Plan are necessary steps to sustaining a viable plan that will assist the community in becoming more resilient to natural hazards long into the future. An overview of how the Town will carry out each of these tasks is outlined in the following sections.

### PLAN ADOPTION

Hawley hosted a public listening session online on April 27th, 2022. The Draft Plan was provided to the Town on June 3, 2022 for review and distribution to the public, and local, regional and state stakeholders. The Town posted the Draft Plan on the Town website June xx, 2022 for public review and input. No feedback was received from the public. The Town then submitted the Draft Plan to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency (FEMA) for review. Upon receiving conditional approval of the plan by FEMA, the plan was presented and approved by the Hawley Board of Selectmen on xx, 2022. A copy of the plan adoption letter is included in the front of this plan.

### PLAN IMPLEMENTATION

The implementation of the Plan commences upon its formal adoption by the Board of Selectmen and official approval by MEMA and FEMA. Section 5 details the mitigation strategy that prioritizes the various actions identified to reduce the impacts from future natural hazards. A local hazard mitigation working group (including the LPT) will be responsible for overseeing the implementation of the plan.

In addition, the Local Planning Team (LPT), that includes Town officials as presented in Section 2, will identify existing planning documents and regulations where relevant policies and actions outlined in this Plan may be incorporated to improve the potential for the implementation of mitigation actions across related programs and agencies. Relevant programs, policies, and/or regulations may include updates to existing polices and regulations, or those to be developed, such as the following:

- Updates to the Local Building Code based on changes outlined in the new 9<sup>th</sup> Edition of the Massachusetts Building Code
- 2010 Hawley Comprehensive Emergency Management Plan
- Hallockville Pond Dam Emergency Action Plan
- Town Bylaws, Open Burning Regulations
- Town Floodplain Bylaws

### PLAN MONITORING AND EVALUATION

The Town of Hawley has taken steps to implement findings from the 2014 Multi-Hazard Mitigation Plan into the following policy, programmatic areas and plans: development of program to improve disaster preparedness, implementation of flood risk protection, and improvement of emergency preparedness.

On an annual basis, the LPT led by the Town Administrator or Select Board, will coordinate a meeting to review the Plan progress over the prior year. This Plan review will include an evaluation of hazard mitigation activities such as ongoing projects, changes in developing new mitigation actions resulting from a natural disaster event, changes in local, State and federal regulations that may impact the implementation of future projects, and modification of existing actions. As a part of this process, the working group will evaluate and assess the effectiveness the action items outlined in the plan have been in achieving the plan goals and objectives. The results of this evaluation will be posted to the Town website to gather public input on the progress of the Plan as well as to provide the public with the opportunity to provide additional mitigation activities for the working group's consideration. Additionally, the Core Project Team must provide an annual report to the Executive Office of Energy and Environmental Affairs to update on the Town's progress regarding the Municipal Vulnerability Preparedness Program.

A review, evaluation and update of the Town's Plan will be conducted on a 5-year basis in compliance with the 2000 Disaster Mitigation Act and Part 201.6 of 44 Code of Federal Regulations (CFR). In the event of a major disaster event impacting the Town of Hawley, the Town may update the plan at that time with actions to address unexpected impacts resulting from the damages to the community, if needed.



## FEDERAL AND STATE FUNDING SOURCES

Several of the proposed hazard mitigation projects and actions may be eligible activities for funding under the three FEMA Hazard Mitigation Assistance (HMA) Grant Programs. The FEMA HMA Grant Programs include two non-disaster mitigation grant programs that include the Flood Mitigation Assistance (FMA) grant and the Building Resilient Infrastructure and Communities (BRIC) grant programs, and one post-disaster mitigation grant program that is the Hazard Mitigation Grant Program (HMGP). The Municipal Vulnerability Preparedness (MVP) Action Grant offers financial resources to municipalities that are seeking to advance priority climate adaptation actions to address climate change impacts resulting from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate impacts. State and federal Funding source details are presented in **Attachment 5**.

# ATTACHMENT 1: COMMUNITY PROFILE

## Community Profile Overview

This section of the Plan presents details about the Town assets which categorically include:

- People
- Support, High Occupancy and Vulnerable Population facilities;
- Essential Facilities including emergency response, police, fire, hospitals, etc.;
- Lifeline Systems including water, wastewater, electrical power, etc.;
- High Potential Loss Facilities, including high hazard dams; and
- Transportation Infrastructure.

## Demographic Overview

Per the United States Census Bureau 2020 Census (2020):

### Age and Sex:

Population: 353  
Population change since 2010\*: 16 (+4.7%)  
*\*Hawley population of 337 listed in 2010 Census Data*

Percent female / male\*: 48% / 52%  
*\*From American Community Survey 5-Year Estimate 2019*

### Age:

persons <18 years: 20.2%  
persons 18 to 64: 59.2%  
persons ≥ 65 years: 25.7%

### Race:

White alone: 88.4%  
Black or African Amer. alone: 0.3%  
Amer. Indian or Alaska Native alone: 0.6%  
Asian alone: 0.8%

Two or more races: 9.3%  
Some other Race: 0.6%  
Hispanic or Latino: 2.8%  
White alone, not Hispanic or Latino: 87.5%

### Education:

High school graduate or higher: 90.8%  
Bachelor's degree or higher: 41.1%

### Economy:

In civilian labor force, total, greater 16 years\*: 55.0%  
In civilian labor force, female, 20-64 years\*: 79.5%  
*\*From American Community Survey 5-Year Estimate 2020*

### Income and Poverty:

Median household income: \$60,833  
Per capita income: \$41,439  
Persons in poverty: 14.6%

### Family and Living Arrangements:

Households: 136  
Persons per Household: 2.84  
Language spoken at home other than English, greater than 5 years: 6.3%  
Median house cost\*: \$246,700  
Percent owner-occupied\*: 93.4%

**Population Density:** 11.6/sq. mile

The Town has a total area of approximately 30.5 square miles that includes 30.5 square miles of land and 0.04 square miles of water. It is a rural, residential community that is largely forested area with some agricultural land.

### Demographics

Based on the U.S. Census Bureau (2020) Decennial Census, the population per square mile is 11.6, which is lower than the average for Massachusetts as a whole (901.4) and Franklin County (101.6). (Figure 1-1)

The number of residents has increased from 337 in the 2010 US Census to 353 in 2020. Hawley includes a largely white population, representing about 88.4% of all residents. Hispanics or Latinos make up the largest, single minority group at 2.8% of all residents.

The population includes 20.2% of residents under the age of 18, 59.2% between the ages of 18 to 64, and 25.7% who are 65 years or older.

There are 136 households, with an average household size of 2.84. Hawley has 24.5% of its housing units classified as vacant, which is almost triple the percentage in Franklin County (8.8%). A housing unit is classified as vacant by the U.S. Census if no one is living in it at the time of the interview, or if the unit is entirely occupied by persons who have a usual residence elsewhere (seasonal housing units).

The median household income in Hawley was \$60,833, which is below the median average of \$85,843 for the Commonwealth and slightly above the median average of \$60,018 for Franklin County. Poverty is at 14.6% which is higher than both the Commonwealth rate of 9.4% and the County rate of 8.4%.

Housing costs are \$246,700 for the median value, owner-occupied housing unit compared to the Commonwealth at \$381,600 and Franklin County at \$244,600. 93.4% of the housing units are owner-occupied compared to 62.4% for Massachusetts and 65.9% for Franklin County.

### Social Vulnerability

The term Social Vulnerability describes how resilient a community is to external stresses, such as natural hazards, on human health. The Social Vulnerability Index (SVI) employs U.S. Census Bureau variables to identify

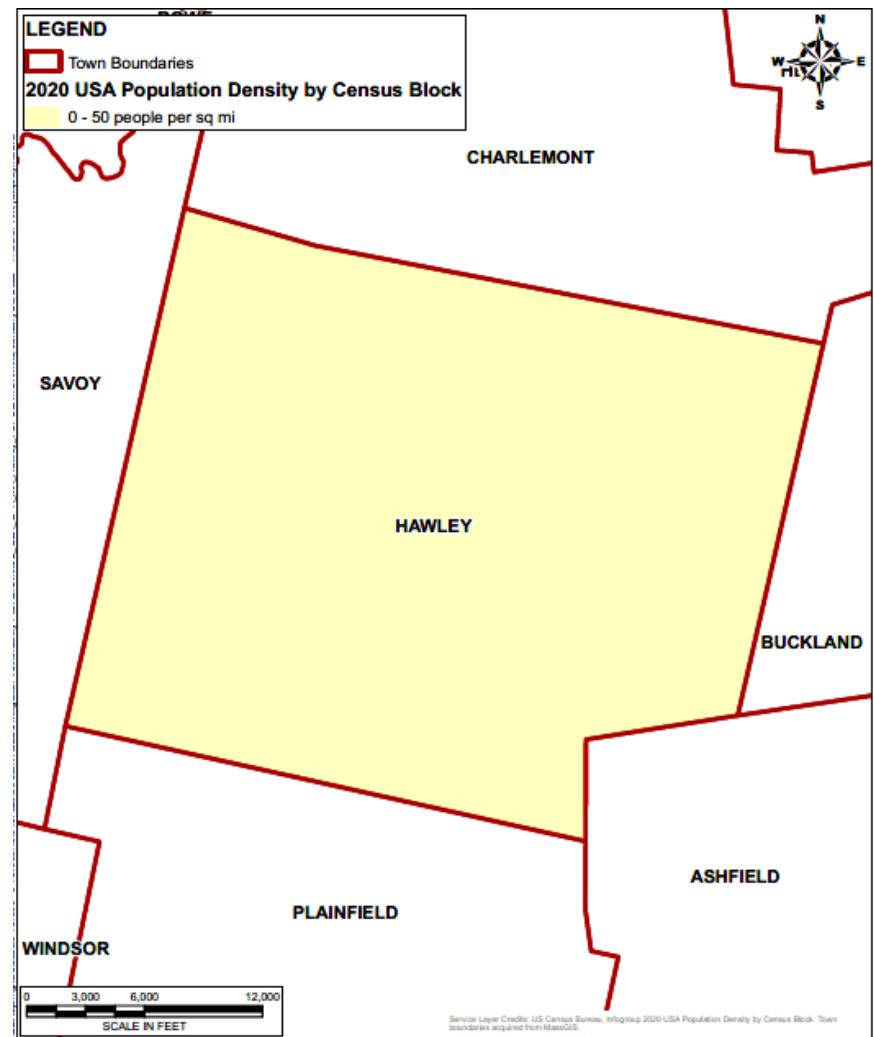


Figure 1-1: Population Density

neighborhoods that may need additional support in preparing for hazards or recovering from disasters, and is a useful tool for emergency response planners and public health officials. U.S. Census Bureau data to determine the social vulnerability of every census tract (census tracts are subdivisions of counties for which the Census Bureau collects statistical data). The SVI ranks each tract on 15 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four

related themes: 1) Socioeconomic status; 2) Household Composition/Disability; 3) Minority status and language; and 4) English language proficiency, housing, and transportation. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking.

Census Tract 040100 includes Hawley and the neighboring Towns of Charlemont, Heath, Rowe, Colrain, and Monroe.

The SOVI for the entire census tract is categorized as Low to Moderate, as shown in **Figure 1-2**.

The ranking for each of the four themes listed above was identified using the SVI Interactive Map for SVI Year 2018 (<https://svi.cdc.gov/map.html>). The rankings are summarized in **Table 1-1**.

**Table 1-1: Hawley Social Vulnerability Profile Analysis**

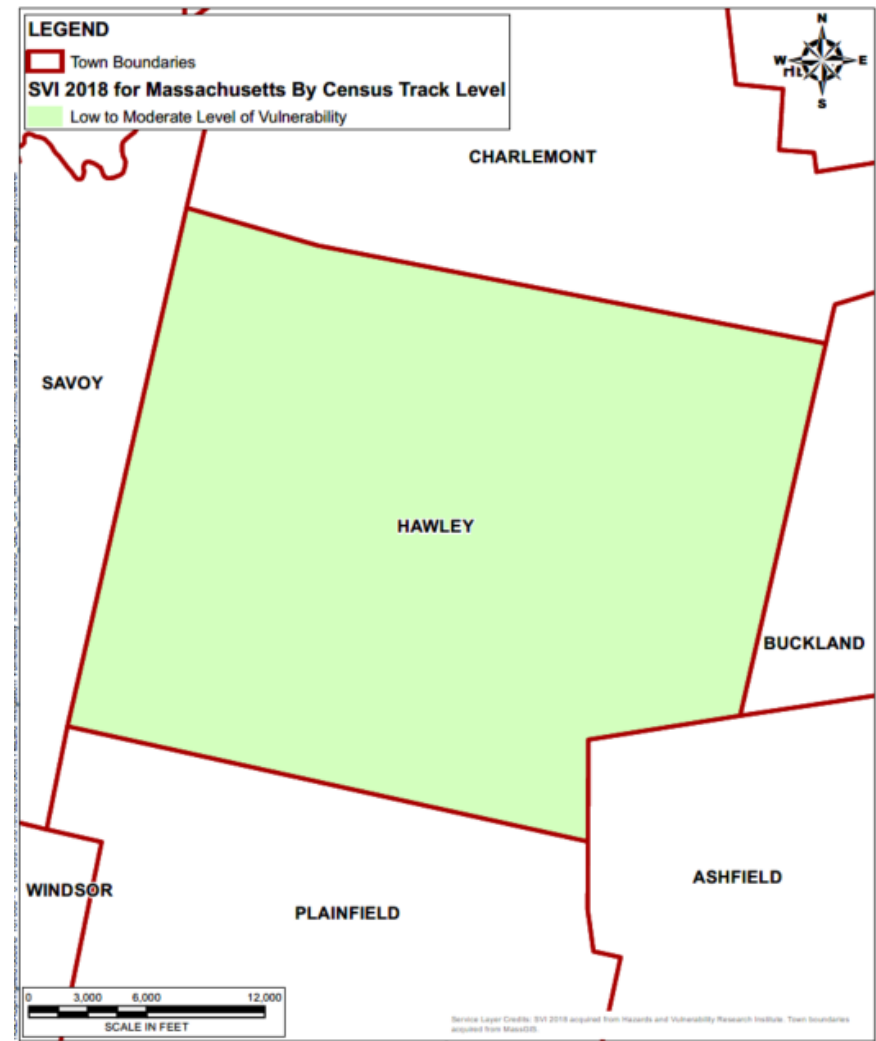
Theme	SVI	Description
Socioeconomic	0.25 – 0.5	Slightly Elevated
Household Composition / Disability	0.5-0.75	Elevated
Minority / Language	0 – 0.25	Lowest Vulnerability
Housing / Transportation	0.5 – 0.75	Elevated

<https://svi.cdc.gov/map.html>

Centers for Disease Control and Prevention/ Agency for Toxic Substances and Disease Registry/ Geospatial Research, Analysis, and Services Program. Social Vulnerability Index 2018 Database Massachusetts.

### Support, High Occupancy and Vulnerable Populations

There are very few Support, High Occupancy, and Vulnerable Populations in Hawley. Elementary school students attend Hawlemont Regional School in Charlemont and high school students attend Mohawk Trail Regional High School in Buckland (**Figure 1-3**) or one of three vocational high schools; Franklin County Technical School in Turners Falls, McCann Technical School in Adams, or Smith Vocational School in Northampton. The nearest hospitals are Baystate Franklin in Greenfield, Cooley Dickenson in Northampton, and Berkshire Medical Center in North



**Figure 1-2: Social Vulnerability Index**

Centers for Disease Control and Prevention/ Agency for Toxic Substances and Disease Registry/ Geospatial Research, Analysis, and Services Program. Social Vulnerability Index 2018 Database Massachusetts. [data-and-tools-download.html](https://svi.cdc.gov/data-and-tools-download.html). Accessed on 1/28/2022.

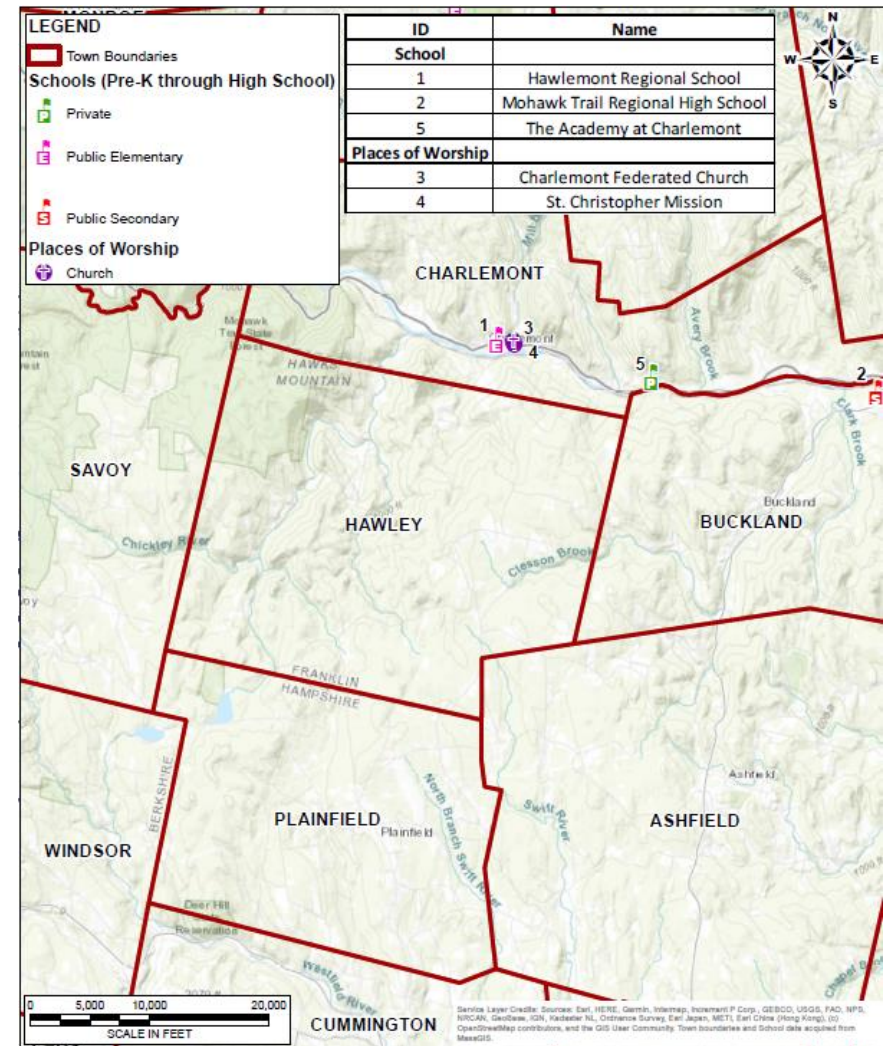
Adams and Pittsfield. Elderly housing and assisted living residences are located in the nearby Towns of Shelburne and Greenfield. The Town has a Council on Aging which meets at the Town Office and provides rides to doctors' visits and monthly lunches.

## Land Use (Existing)

According to MassGIS data, Hawley has 19,543 acres of land, broken down by general land use category as shown in **Table 1-2** and presented in **Figure 1-4**. Only about 0.2% (by area) of land in the Town is identified as residential. About 4.51% and 1.2% (by area) of land is identified as agricultural and grassland, respectively. The largest portions of land cover in Hawley are deciduous and evergreen forest, covering about 48.9% and 40.8% (by area) respectively. Additionally, forested wetlands cover approximately 1.28% of the area. Development is scattered throughout the Town, generally within agricultural land. The rest of the Town is densely forested.

**Open Space:** Most open space lands in the Town is owned by the state DCR, as shown in **Figure 1-5**. The Kenneth Dubuque Memorial State Forest is the largest open space lands in the Town, with over 6,000 acres of open space. The only open space lands owned by the Town are cemeteries in the Town: Pudding Hollow Cemetery, Hawley Cemetery, and West Hawley Cemetery, and the Old Town Common, which have a combined total area of approximately 5.5 acres.

Notable open space and recreational lands within the Town of Hawley are presented on **Table 1-3**.



**Figure 1-3: Support, High Occupancy and Vulnerable Population Facilities**



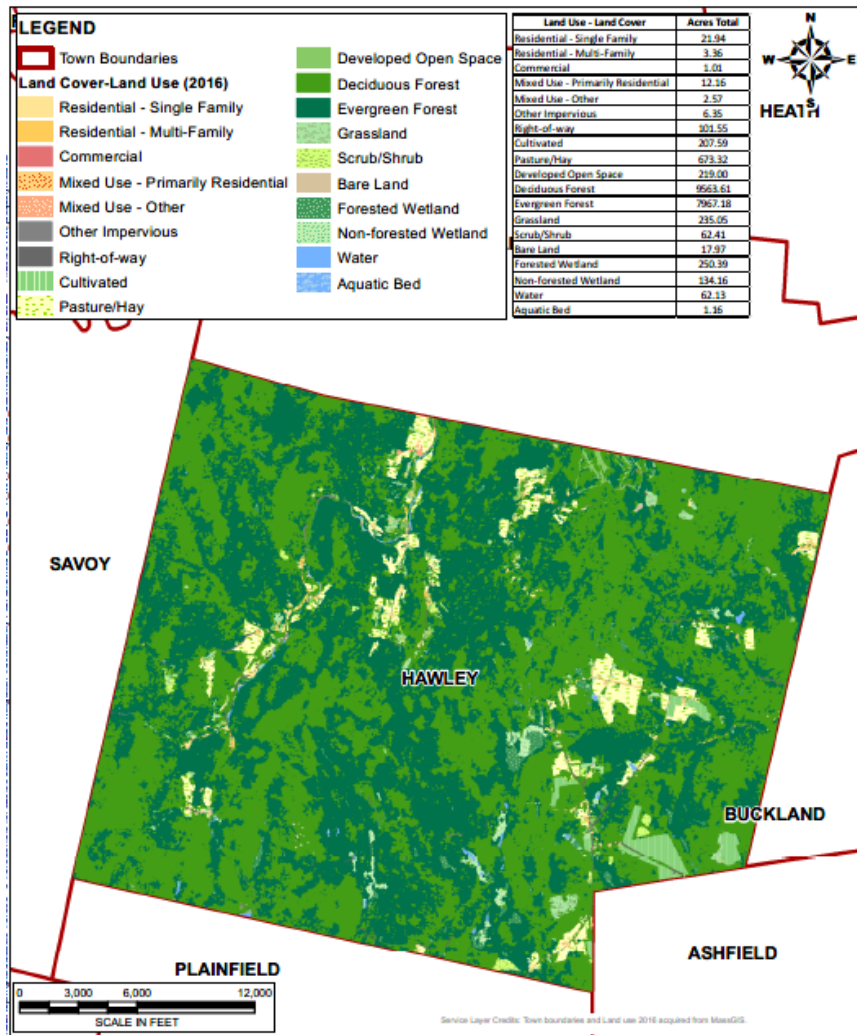


Figure 1-4: Existing Land Use

Table 1-2 Land Use / Land Cover (MassGIS)

Land Use / Land Cover	Acres Total	Acres (%)
Residential:		
Single-Family	21.94	0.11%
Multi-Family	3.36	0.02%
Mixed Use - Other	2.57	0.01%
Mixed Use—Primarily Residential	12.16	0.06%
Commercial	1.01	0.01%
Other Impervious	6.35	0.03%
Right-of-Way	101.55	0.52%
Agricultural	880.91	4.51%
Developed Open Space	219.00	1.12%
Forest:		
Deciduous Forest	9563.61	48.94%
Evergreen Forest	7967.18	40.77%
Forested Wetland	250.39	1.28%
Vacant Land:		
Grassland	235.05	1.20%
Scrub/Shrub	62.41	0.32%
Bare Land	17.97	0.09%
Non-forested Wetland	134.16	0.69%
Water	62.13	0.32%
Aquatic Bed	1.16	0.01%
<b>TOTAL</b>	<b>19542.91</b>	<b>100.0%</b>

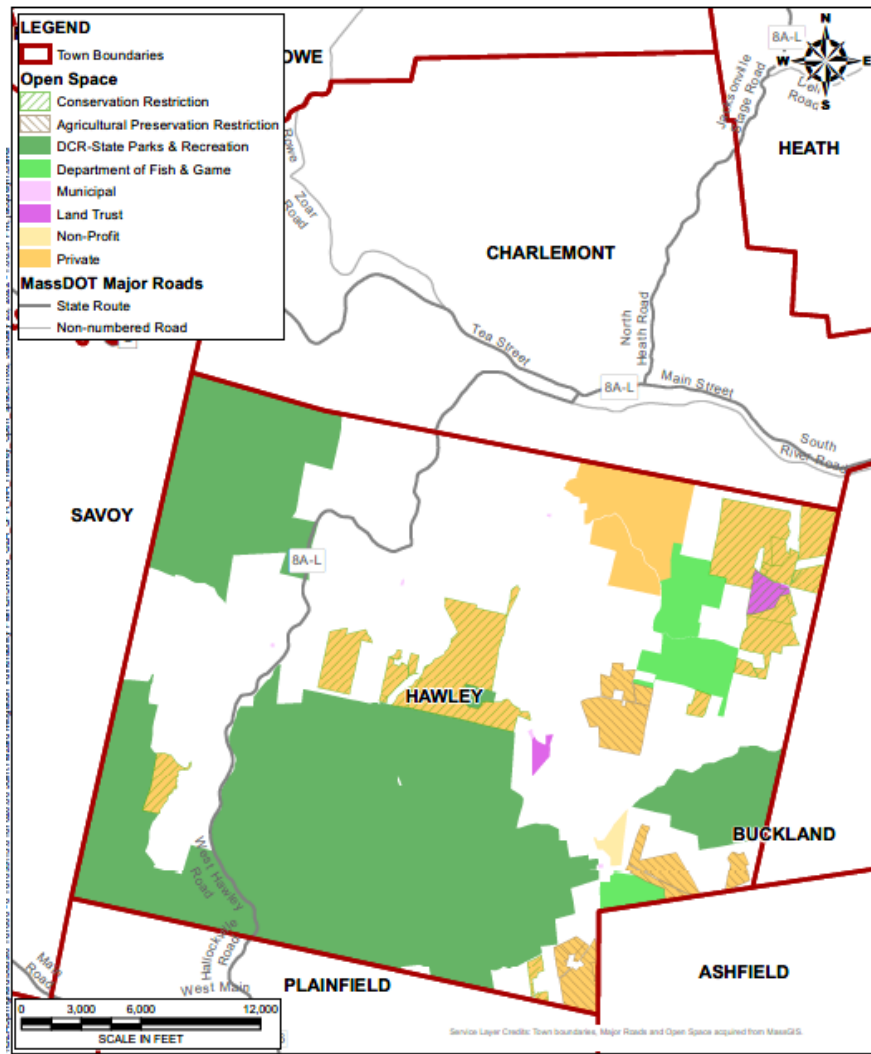


Figure 1-5: Open Space

Table 1-3 Open Space /Recreational Lands in Hawley

Site	Acres	Owner Type
Kenneth Dubuque Memorial State Forest	6,278	State
Mohawk Trail State Forest	1,570	State
Berkshire East Ski Area	609	Private
Singing Brook Farm	560	Private
Niemela CR	259	Private
Hawks Brook Wildlife Management Area	488	State
Hawley Bog	27	Land Trust
Franklin Land Trust	63	Land Trust
Old Town Common	2	Municipal
Town of Hawley Cemeteries	3.5	Municipal

### Land Use (Existing) (Cont.)

The Town of Hawley is entirely zoned as a Rural District, as shown in **Figure 1-6**. According to current Hawley bylaws, this prohibits the construction, enlargement, or conversion of a building to create a multi-family dwelling, with the exception of cluster development. The Town also includes one overlay district, the Floodplain District. The Floodplain District includes all special flood hazard areas designated on the Hawley Flood Insurance Rate Map (FIRM) issued in 1985.

### Land Use (Future)

There are not currently any plans for future land use change or development in Hawley. Over half of the Town is conservation area and unlikely to change in the future. Further, the Franklin Regional Council of Governments (FRCOG) 2018 Annual Report does not include land use planning for Hawley.

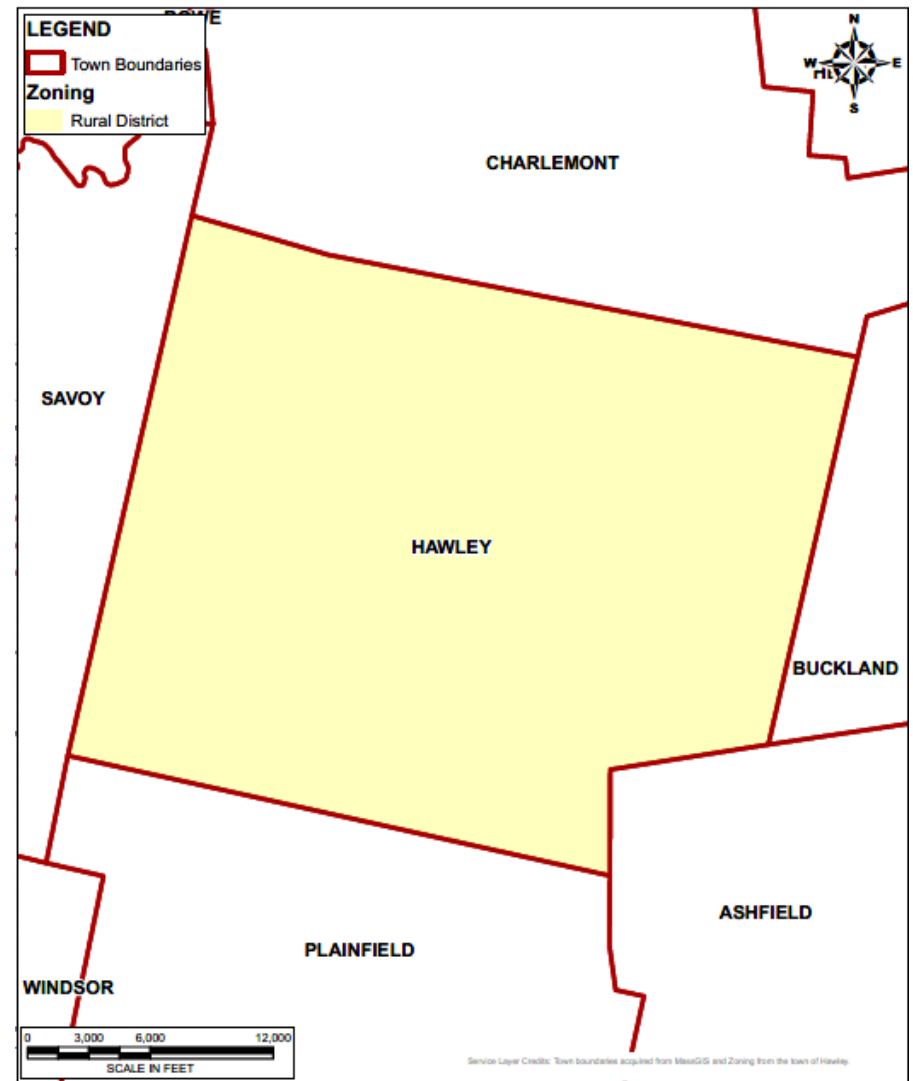


Figure 1-6: Zoning

## Transportation Infrastructure

According to the MassDOT Road Inventory Municipal Data Viewer, there are 49.11 miles of roads in Hawley, with 41.24 miles (84%) under the jurisdiction of the Town. The remaining roadways are DCR, State Park, or unaccepted, but there are no roadway miles under the jurisdiction of MassDOT.

Hawley is mainly accessible by West Hawley Road (Rout 8A), which runs north-south through the western portion of Hawley, and connected to Route 2 in neighboring Charlemont. Other main roads in Hawley include: East Hawley Road, Middle Road, Hunt Road, and Clesson Brook Road.

The Hawley Council on Aging offers transportation for seniors for doctor appointments.

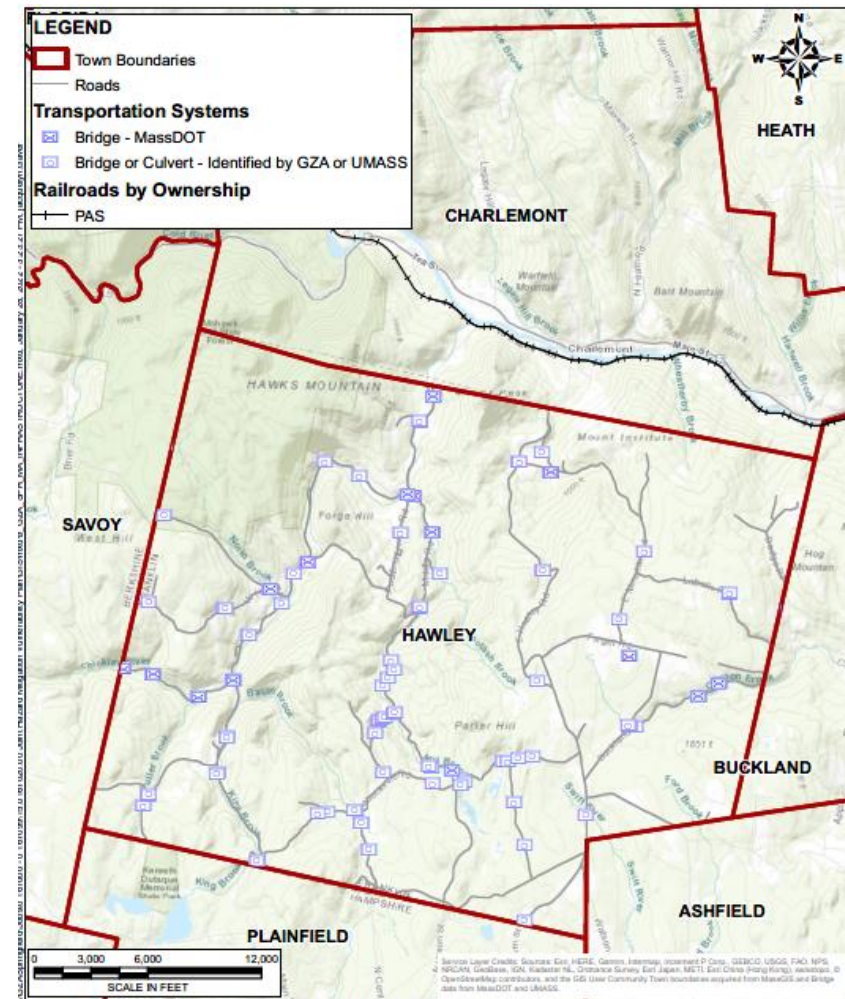
Numerous bridges and culverts are located within Town, as shown on **Figure 1-7**. Major (MassDOT) bridges are listed as follows in **Table 1-4**.

**Table 1-4 MassDOT Bridges in Hawley**

Bridge Name
Putding Hollow Road - Over Chickley River
West Hill Road - Over North Brook
Forge Hill Road - Over Chickley River
Savoy Road - Over Chickley River
Savoy Road - Over Chickley River
East Road - Over Bozrah Brook
Middle Road - Over Mill Brook
Middle Road - Over Mill Brook
East Road - Over Bozrah Brook
Buckland Road – Over Branch of Clesson Brook
Middle Road – Over Mill Brook
Buckland Road – Over Clesson Brook
Pond Road- Over Clesson Brook
ST 8A/West Hawley Road – Over Chickley River
ST 8A/West Hawley Road – Over Chickley River
Savoy Road – Over Chickley River

No rail systems currently provide commuter or other types of freight service to Hawley. Rail passenger service is offered by AMTRAK daily on its “Lakeshore Limited” route from Boston to Chicago through Pittsfield and on its “Valley Flyer” route from New Haven to Greenfield through Greenfield.

The nearest airports to Hawley are the Harriman & West Airport in North Adams to the west, and Turners Falls Airport in Turners Falls to the east. The nearest international airport is Bradley International Airport in Windsor Locks, Connecticut.



**Figure 1-7: Transportation Infrastructure**

## Essential Facilities and Lifeline Systems

Essential Facilities and Lifeline Systems in Hawley are presented in **Figure 1-8**. Essential facilities include facilities that provide critical services including public safety (e.g. police, fire, emergency shelters), health care, and town and regional services necessary for response during and after natural disasters. More information about these services are described below. Lifeline Systems include power generation and transmission, communication systems, potable water supply and sanitary wastewater treatment.

### Public Safety and Health Care

Public safety within the Town of Hawley is the responsibility of the local Police Department, Fire Department, Emergency Management, and Highway Department. The Hawley Police Department is located at the Town Office at 8 Pudding Hollow Road in Hawley. The Fire Department and Highway Department are located at 247 West Hawley Road, in Hawley, and a second fire station is located at 16 Plainfield Road in East Hawley. Hawley's police chief is also the police chief for the neighboring Town of Charlemont. The Massachusetts State Police in Shelburne Falls also services Hawley.

The Highway Department is responsible for maintaining the Town's roadways and trimming trees along roadways.

The Town has mutual aid agreements with area municipalities for the provision of public health, fire, police, and emergency management services.

There are no designated emergency shelters, but Town Offices could be used as short-term centers for small amounts of residents

### Utilities

Gas service in Franklin County is provided by Berkshire Gas. Electricity is provided by National Grid, and phone service is provided by Verizon.

## Water Supply

Hawley does not have a municipal water supply system. There are no Public Water Systems in Hawley. Drinking water is provided to residents and Town facilities via private wells or springs.

## Water Pollution Control

Wastewater from residential and Town properties in Hawley is managed by on-site septic systems.

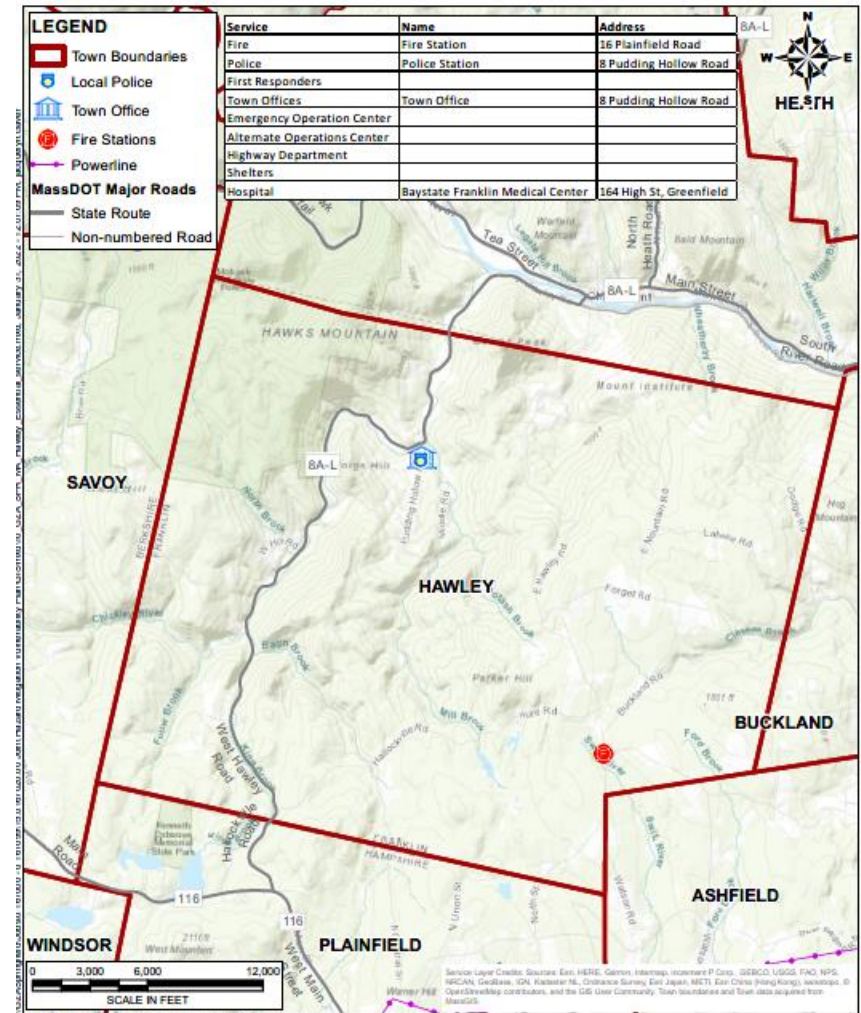


Figure 1-8: Essential Facilities

## High Potential Loss Facilities: Dams

There are a total of five (5) dams located within Hawley. Dams are generally classified as either high, significant, or low hazard (**Figure 1-10**). The dams listed as N/A are non-jurisdictional and do not have a hazard classification. There is only one (1) significant hazard dam in the Town.

**Hallockville Pond Dam:** A Significant Hazard dam is located on the southern edge of the Town, off of State Forest Headquarters Road, off of State Route 8A/West Hawley Road. This dam is owned by the Department of Conservation and Recreation. Hallockville Pond Dam, shown below, is in the southwestern portion of Hawley, on the border with the Town of Plainfield.



Figure 1-9: Hallockville Pond Dam

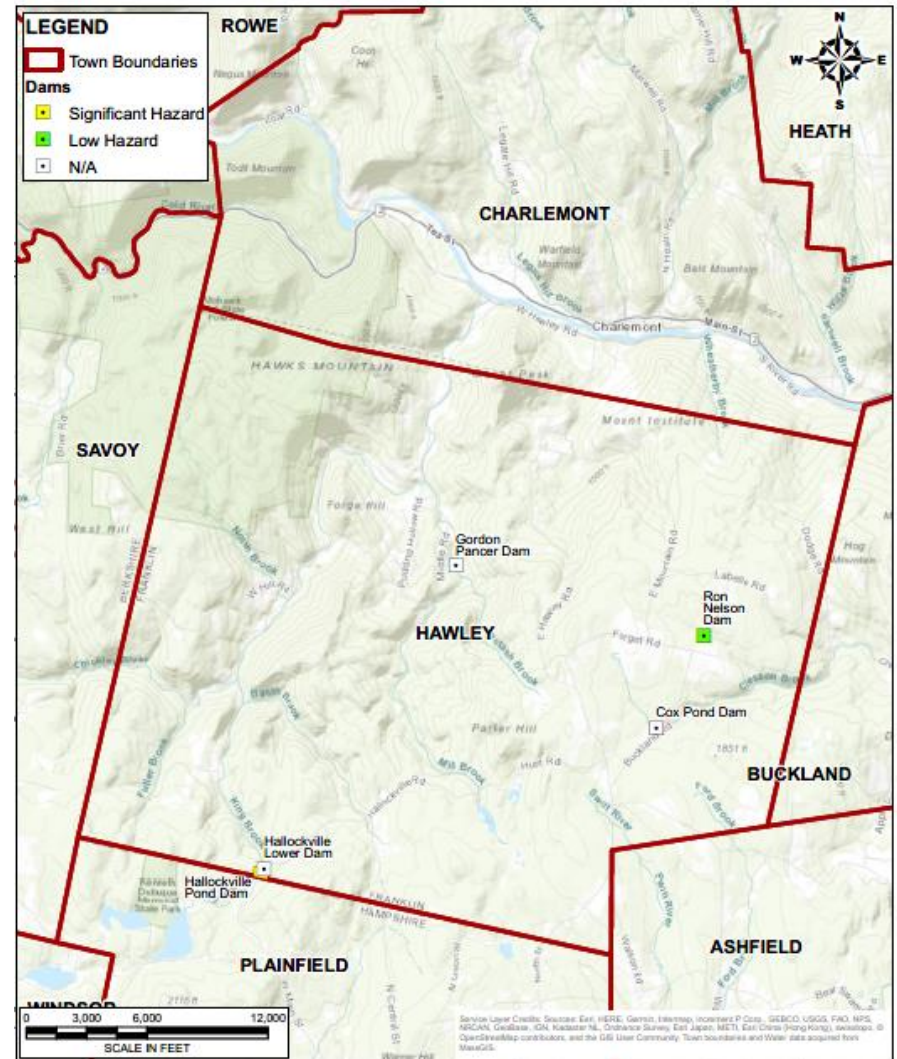


Figure 1-10: Dams in Hawley

## Stormwater Management

There were no catch basins identified in the Town, however there are over 400 culverts throughout the town used to convey stormwater runoff.

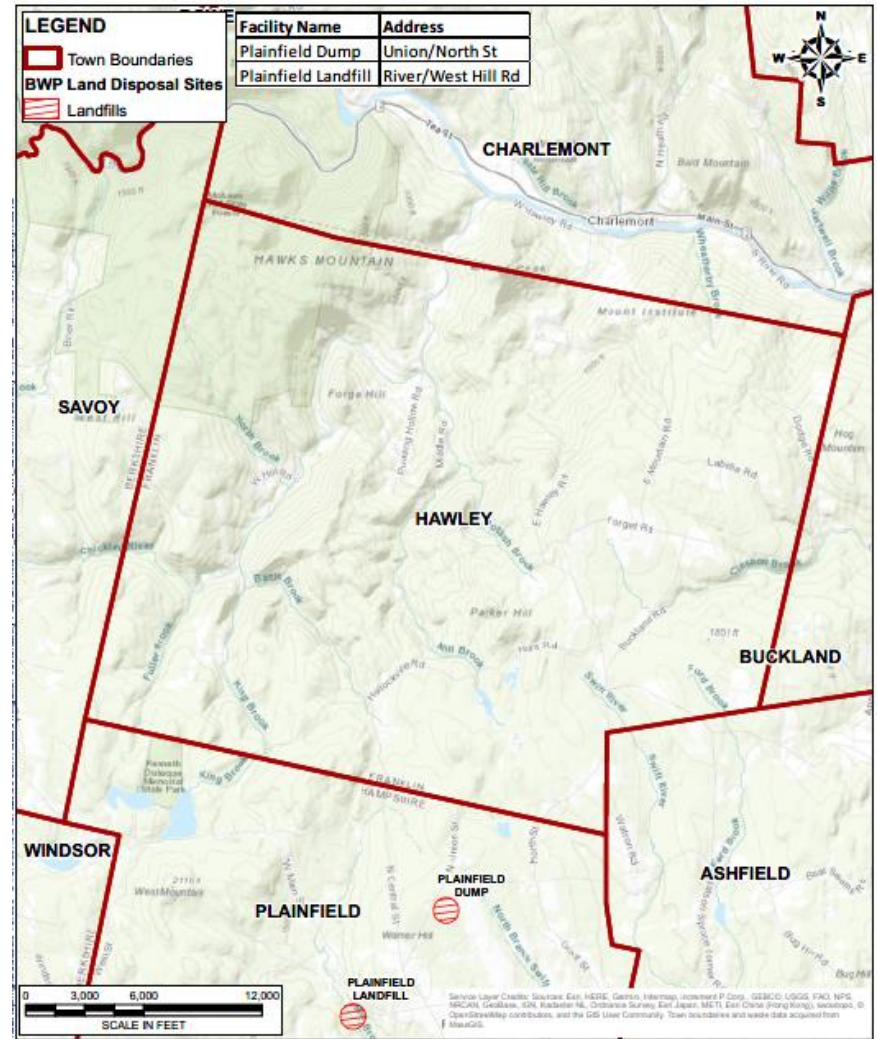
## Hazardous Materials Facilities and Landfills

There are no facilities regulated by MassDEP’s Bureau of Air and Waste, formerly the Bureau of Waste Prevention (DEP BWP Major Facilities) located in Hawley as shown in **Figure 1-11**.

## Natural Resources

Hawley lies primarily within the Deerfield watershed, with a small portion in the Westfield watershed (see **Figure 1-12**). Chickley River is one of the major waterways in the Town and flows roughly parallel to State Route 8A in a northerly direction. Other streams include Potash Brook, Mill Brook, Clesson Brook, and Hawks Brook. The water bodies include Beaver Pond and Cox Pond

Endangered and Priority Habitats associated with the Massachusetts Natural Heritage and Endangered Species Program (MA NHESP) are associated primarily with Chickley River and groupings of certified vernal pools, as shown on **Figure 1-13**. Priority Habitat is based on the known geographical extent of habitat for all state-listed rare species, both plants and animals, and is codified under the Massachusetts Endangered Species Act (MESA). Habitat alteration within Priority Habitats may result in a take of a state-listed species and is subject to regulatory review by the Natural Heritage & Endangered Species Program. Estimated Habitats are a sub-set of the Priority Habitats, are based on the geographical extent of habitat of state-listed rare wetlands wildlife and is codified under the Wetlands Protection Act (WPA), which does not protect plants. State-listed wetland wildlife species are protected under the Massachusetts Endangered Species Act as well as the Wetlands Protection Act.



**Figure 1-11: Hazardous Materials Facilities and Landfills**

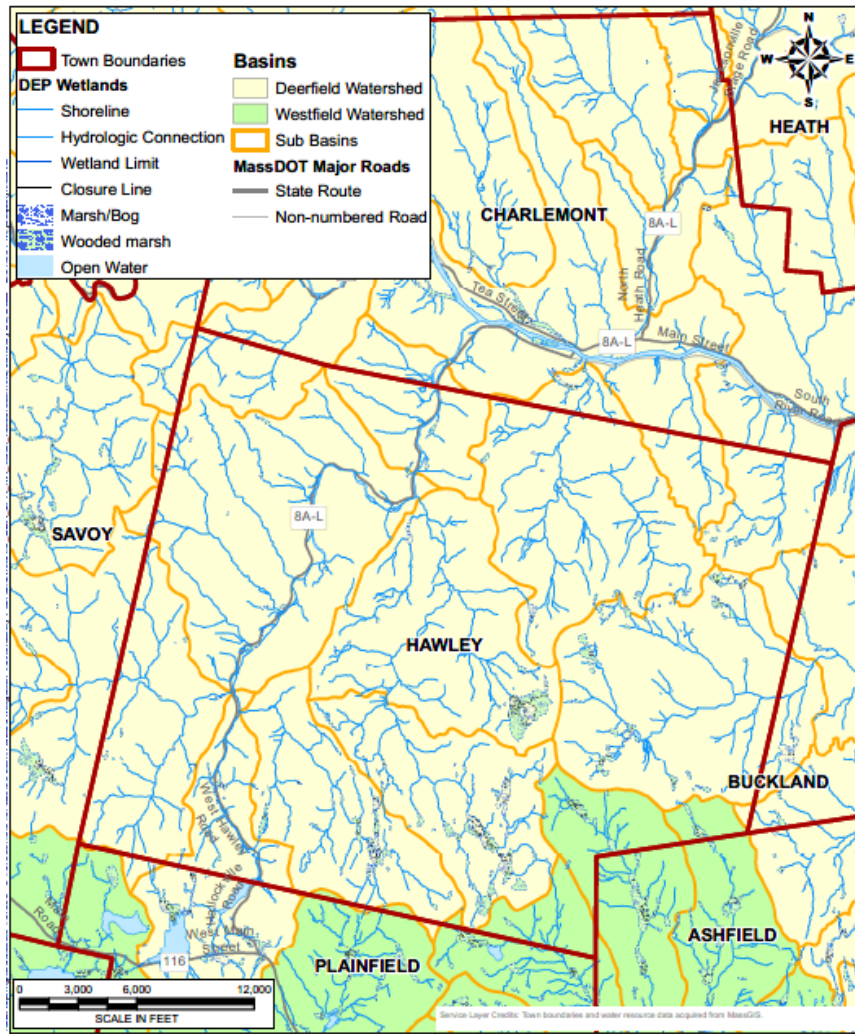


Figure 1-12: Water Resources

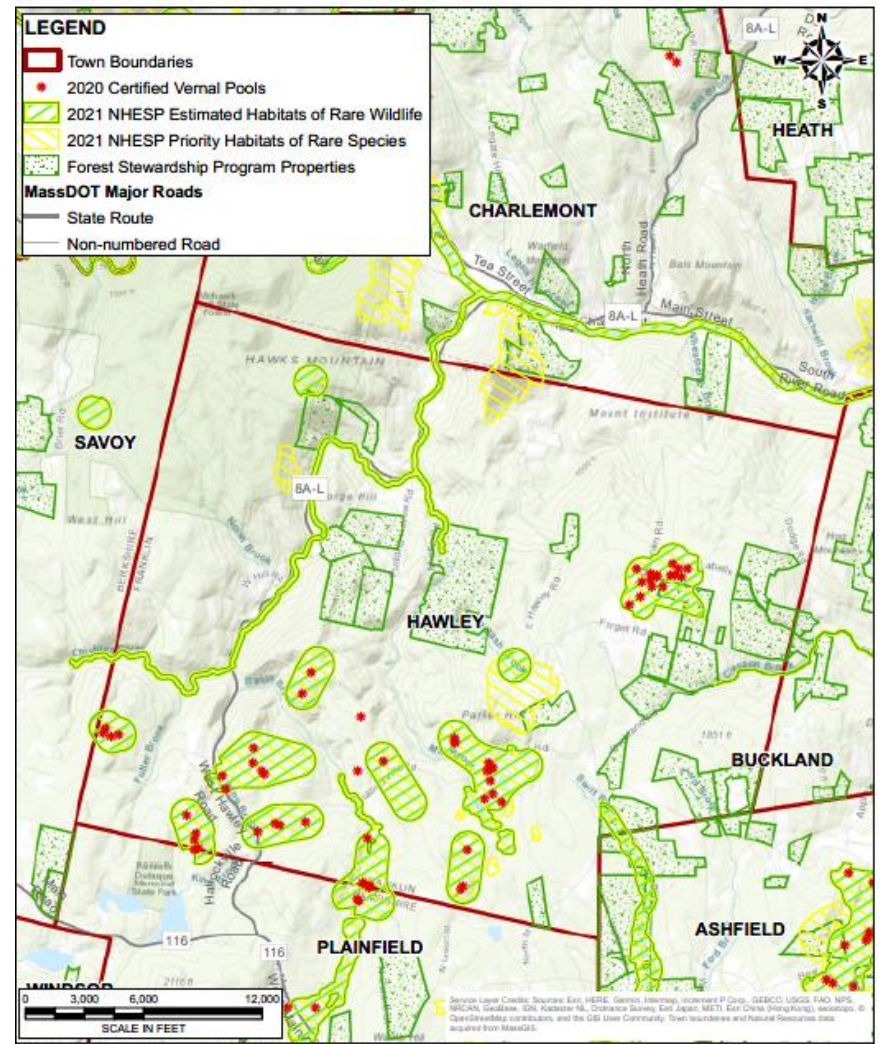


Figure 1-13: Natural Resources/ Endangered Species



## Cultural and Historic Sites

There are several inventoried areas from the MassHistoric Commission Inventory, as shown in **Figure 1-14**. There are a total of eight (8) different property areas which include: West Hawley- West Hill, King Corner-Hallockville- Fullerville, East Hawley, Doane District- Poverty Square, South Hawley, Pudding Hollow, Boazrah, and Dodge Corner. Within these historic areas, there are 32 individual inventoried properties from the MassHistoric Commission Inventory. Properties include several historic houses and cemeteries.

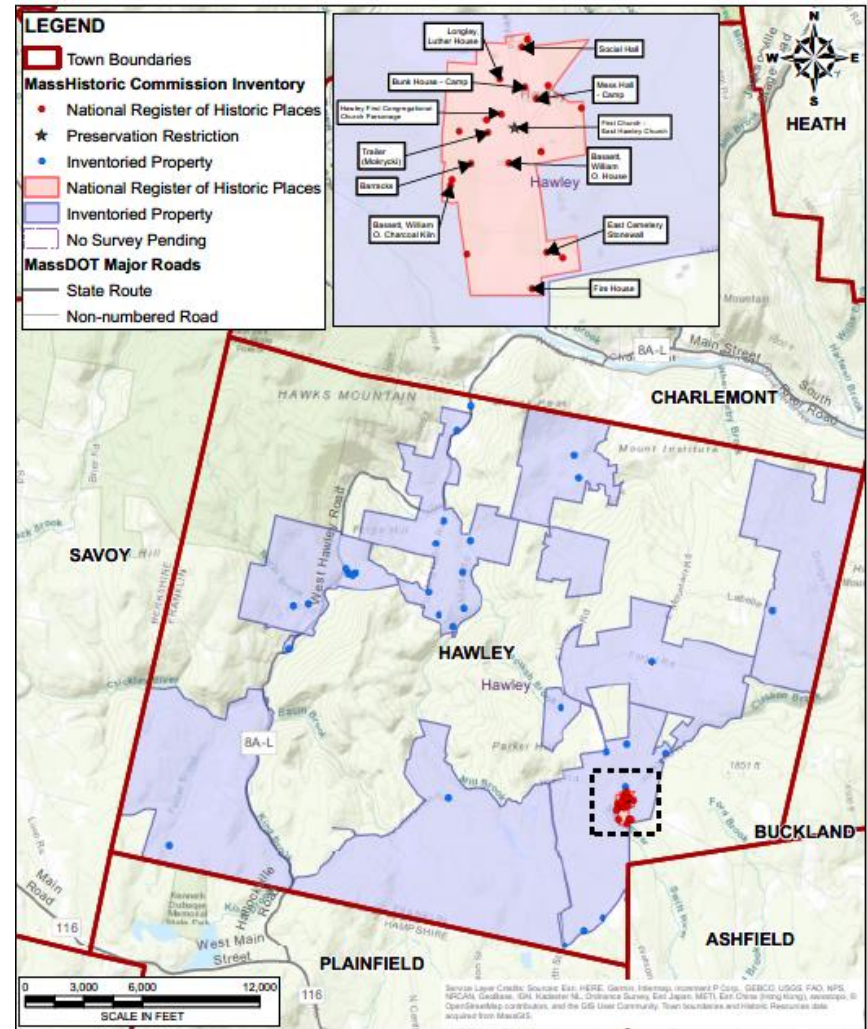
From the National Register of Historic Places, there is one historic area: the East Hawley Center Historic District. Within this historic district, there are 16 individual inventoried properties (**Figure 1-14**). The National Register of Historic Places properties include: the East Hawley Meeting House, Hawley First Congregational Church Parsonage (pictured below), East Hawley Cemetery, First Church- East Hawley Grove, Barracks, several Stonewalls, Social Hall, Hawley Grove, Fire House, William O. Bassett Charcoal Kiln and House, and Luther Longley House.



**Congregational Church, East Hawley MA**

Credit: By John Phelan - Own work, CC BY 3.0,

<https://commons.wikimedia.org/w/index.php?curid=9781836>



**Figure 1-14: Historic Resources**

## ATTACHMENT 2: NATURAL HAZARDS

### NATURAL HAZARDS OVERVIEW

**Natural hazards** are **natural events** that threaten lives, property, and other assets. Within Massachusetts, natural hazards typically include:

- Severe Weather Hazards such as Hurricanes and Tropical Storms, Nor'easters, Lightning, Intense Rainfall, Hail, Heavy Snowfall and Ice Storms.
- Climate-Related Hazards such as extreme heat and cold, drought and wildfire.
- Geologic Hazards such as earthquakes, landslides and tsunamis.

Severe weather hazards, including hurricanes, tropical storms and nor'easters can result in high winds and flooding. These flood events will become worse in the future due to climate-related changes to storm frequency and intensity. Flooding can result in the secondary hazards of erosion and bridge or culvert failure. Severe weather hazards can also result in high winds, lightning, hail, intense rainfall and tornadoes.

Localized intense rainfall can result in urban flooding where existing stormwater management capacity is exceeded. It can also result in flash flooding of streams and rivers and exceedance of water reservoir dam capacity.

### Hazard Probability

Natural hazards can often be predicted, including predicting their likelihood of occurrence. The probability of a specific natural hazard occurring is typically defined in terms of its annual exceedance probability (AEP). This refers to the probability that a hazard condition will be met or exceeded in any given year. In lieu of the AEP, the term recurrence interval (in years) is often used.

### Climate Change

















Climate change, a result of increased greenhouse gas emissions and secondary effects, will significantly impact certain natural hazards. Storm

intensity may increase, resulting in increased flood elevations. There is high scientific consensus that climate change will result in increased rainfall intensity within Massachusetts as well as increased frequency of extreme rainfall events. There is also scientific consensus that climate change will result in extended periods of extreme heat (heat waves) and cold.

### HAWLEY NATURAL HAZARDS

GZA performed an analysis of multiple natural hazards and identified those hazards that are relevant to the Town of Hawley. These are presented in **Table 2-1**. These hazards are characterized in detail in the following pages.

**Table 2-1: Natural Hazards applicable to Hawley**

<b>Severe Weather Hazards:</b>	
Severe Wind:	
	 Hurricanes/Tropical Storms
	 Thunderstorms
	 Tornadoes
Lightning	
Intense Rainfall	
Hail	
Flood:	
	 Riverine/Overbank Flooding
	 Dam Failure/Beaver Dams
	 Poor Drainage Flooding
Severe Winter Weather:	
	 Snowfall
	 Ice Storms
<b>Climate-Related Hazards:</b>	
Extreme Temperature:	
	 Extreme Heat
	 Extreme Cold
Drought	
Wildfire	
<b>Geologic Hazards:</b>	
Earthquake	

## SEVERE WEATHER HAZARDS: SEVERE WIND

### SEVERE WIND



Severe wind (including high to extreme wind) will typically occur in the Town as a result of: 1) tropical storms and hurricanes; 2) extratropical nor'easters; 3) severe thunderstorms; and 4) tornadoes. Severe thunderstorms and tornadoes are convective weather events. Extreme "straight line" convective wind events include microbursts, macrobursts and derechos. Derechos are widespread, long-lived, and violent convectively-induced "straight-line" windstorms associated with a fast moving band of severe thunderstorms,. "Thunderstorm winds", arising from convection are winds with speeds greater than 58 mph or winds of any speed producing, damage, injury or fatality.

Severe wind poses a threat to life, building structures, and essential facilities (e.g., electrical utilities) due to the effects of wind loads, flying debris, and/or downed trees and power lines. Severe wind will typically cause the greatest damage to lightly-constructed structures, in particular manufactured homes. Downed tree limbs can also cause property and vehicle damage, impact roadways, and in rare instances, cause loss of life. These storms may be accompanied by lightning, which can spark fires. During hurricanes and tropical storms, high winds can also occur coincident with intense rainfall and during nor'easters, high winds can occur coincident with snow (blizzards), rain and a snow/rain mix.

Wind speeds are categorized by the National Weather Service (NWS) based on potential for structure damage and public health risk, with a distinction between sustained (1-minute duration) wind speeds and gust (3 second duration) wind speeds:

- Wind Advisory: 1) sustained winds of 31 to 39 mph for an hour or more; and/or 2) wind gusts of 46 to 57 mph for any duration.
- High Wind Watch/Warning: 1) sustained winds of 40 mph for one hour or more; or 2) wind gusts of 58 mph or higher for any duration.
- Hurricane Warning: sustained winds of 74 mph or higher or frequent (for more than 2 hours) gusts of 74 mph or greater associated with a tropical cyclone.

- Extreme Wind: 1) surface winds of 115 mph or greater associated with a derecho or sustained hurricane winds.
- Severe Thunderstorm Watch/Warning: winds of 58 mph or higher and/or hail 1-inch in diameter or larger.

The 9th edition of the Massachusetts State Building Code (using ASCE 7-10) utilizes wind gusts as the basis for structure design (**Table 2-2**). Design Wind Speeds for Buildings and Other Structures

The 9th edition of the Massachusetts State Building Code wind speed design requirements (in terms of 3-second gust) are:

- Risk Category I: 126 mph - 300 year recurrence interval;
- Risk Category II: 136 mph - 700 year recurrence interval; and
- Risk Categories III-IV: 147 mph - 1,700 year recurrence interval.

**Table 2-2: ASCE 7-10 Wind speed Mean Recurrence Intervals (3-second peak gust in mph)**

Mean Recurrence Interval (yrs)	3-second Gust (mph)
10	80
25	91
50	100
100	110
300	126
700	136
1,700	147

### Climate Change Effects and Severe Wind Occurrence

The attribution of high wind events to climate change is uncertain. There is moderate scientific consensus, that the intensity and frequency of intense hurricanes could increase within southern New England due primarily to the increase in sea water temperature along the East Coast. There is lower confidence, and less understanding, in the attribution of increased extratropical nor'easters and thunderstorms frequency and intensity to climate change.

### Historical Occurrence at Hawley and Vicinity

During 1996 through 2021, Franklin County experienced 16 days of High Wind events with estimated gusts of about 58 to 69 mph resulting in about \$307,000 in property damage, 1 death, and 1 injury. Between 1950 and 2021, Franklin County had 169 days with Thunderstorm winds resulting in 1 death, 3 injuries and \$4.646M damage. (Source: NOAA Storm Events Database <https://www.ncdc.noaa.gov/stormevents/>)

### Estimated Probability of Occurrence at and near Hawley

The results indicate the following High Winds probability at and near Hawley:

- High Winds within Franklin County: 64% AEP or minimum of 1-year to 2-year recurrence interval (11 years with 1 or more events over 25 years)

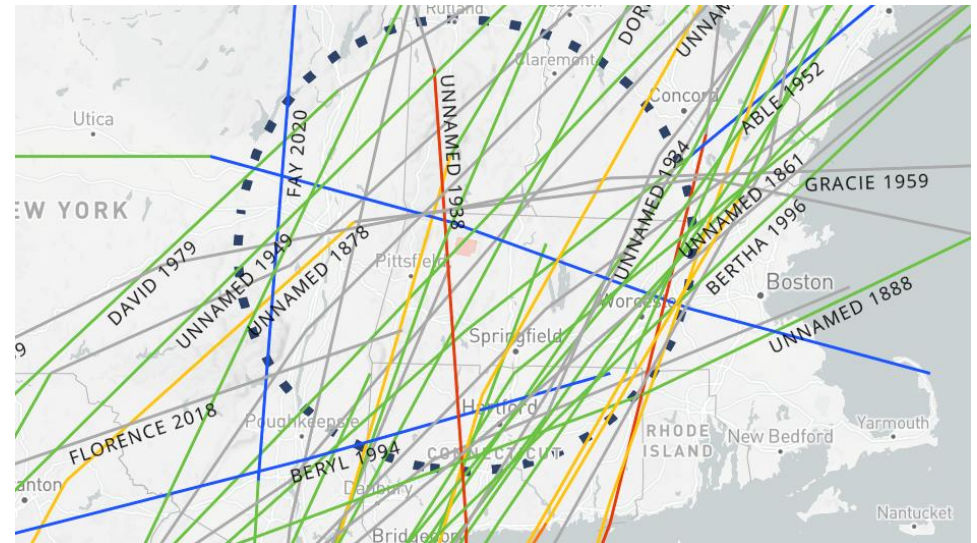
## HURRICANES

Hurricanes, tropical storms and tropical depressions are tropical cyclones - rotating low pressure weather systems that have organized thunderstorms but no pressure fronts (a boundary separating two air masses of different densities). Tropical cyclones with maximum sustained surface winds of less than 39 miles per hour (mph) are called tropical depressions. Those with maximum sustained winds between 39 mph and 73 mph are tropical storms. Hurricanes are tropical cyclones with sustained wind speeds of 74 mph or higher.

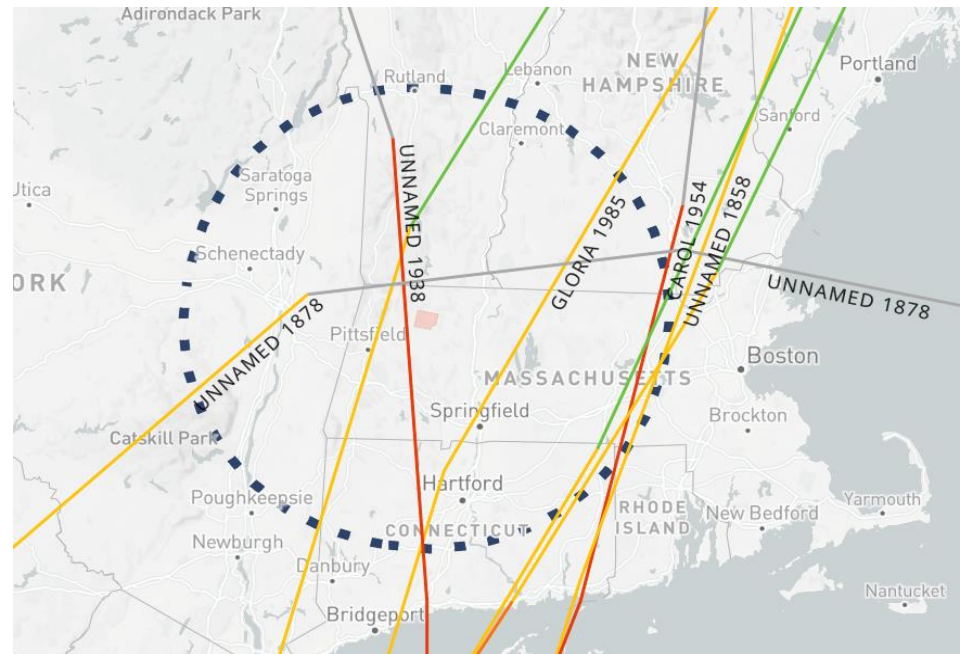
East Coast hurricanes originate in the Atlantic basin, which includes the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. A six-year rotating list of names, updated and maintained by the World Meteorological Organization, is used to identify these storms. "Hurricane Season" begins on June 1 and ends on November 30, although hurricanes can, and have, occurred outside of this time frame (NOAA National Ocean Service).

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating, or category, based on a hurricane's maximum sustained winds. The higher the category, the greater the hurricane's potential for property damage (NOAA National Ocean Service). A major hurricane (Categories 3, 4 and 5) has sustained wind speeds of 111 mph or higher on the Saffir-Simpson Hurricane Wind Scale.

Historic hurricane and tropical storm tracks which have passed within 100 nautical miles of Hawley are presented in **Figure 2-1**. Historic hurricane tracks which have passed within 100 nautical miles of Hawley are presented in **Figure 2-2**. The Hurricane of 1938 was a Category 3 hurricane with wind speeds of about 115 to 70 mph as it weakened while tracking through Massachusetts. Tropical Storm Irene tracked very closely to Hawley and caused notable damage consisting of culvert failures and severe erosion throughout Western Massachusetts and Vermont. Four hurricanes have tracked within 50 miles of Hawley during NOAA's period of record. Nine hurricanes or tropical storms have tracked within 20 miles of Hawley, including:



**Figure 2-1: Hurricanes and Tropical Storms within 100 nautical miles of Hawley**  
(Source: NOAA Historical Hurricane Tracks mapping tool <https://oceanservice.noaa.gov/news/historical-hurricanes/>)



**Figure 2-2: Hurricanes within 100 nautical miles of Hawley**

**Table 2-3: Hurricane tracks within 20 miles of Hawley**

Irene, 2011; Tropical Storm at landfall	Hurricane of '38; 1938; Cat 3 at landfall
Doria, 1971: Tropical Storm at landfall	Two unnamed tropical storms during 1968
Able, 1952; Cat 2 at landfall	Three unnamed hurricanes between 1867 and 1893; All Cat 3 at landfall

Hurricane recurrence intervals reflect the frequency at which hurricanes can be expected to occur within a given distance of a given location. The total number of hurricane strikes along the southern New England coastline between 1900 and 2010 is about 2 to 3 (Figure 2-3). Figures 2-4 and 2-5 shows hurricane recurrence intervals (aka return periods) for hurricanes passing within 50 miles of various locations. In the vicinity of Hawley, the hurricane passing recurrence interval is about 18 years. In simpler terms, this means that a hurricane is likely to pass near Hawley, on average, about 5 times per 100 years. In the vicinity of Hawley, the recurrence interval for major hurricanes striking or passing near (Cat 3 and above) is about 70 to 75 years. Figure 2-6 shows the zones of origin and tracks for different months during the hurricane season. These figures depict average conditions. Hurricanes can originate in different locations and travel much different paths from the average. Regardless, they provide a good sense of the general pattern of hurricane tracks. The likelihood of a hurricane tracking near Hawley is much greater during the months of August through October.

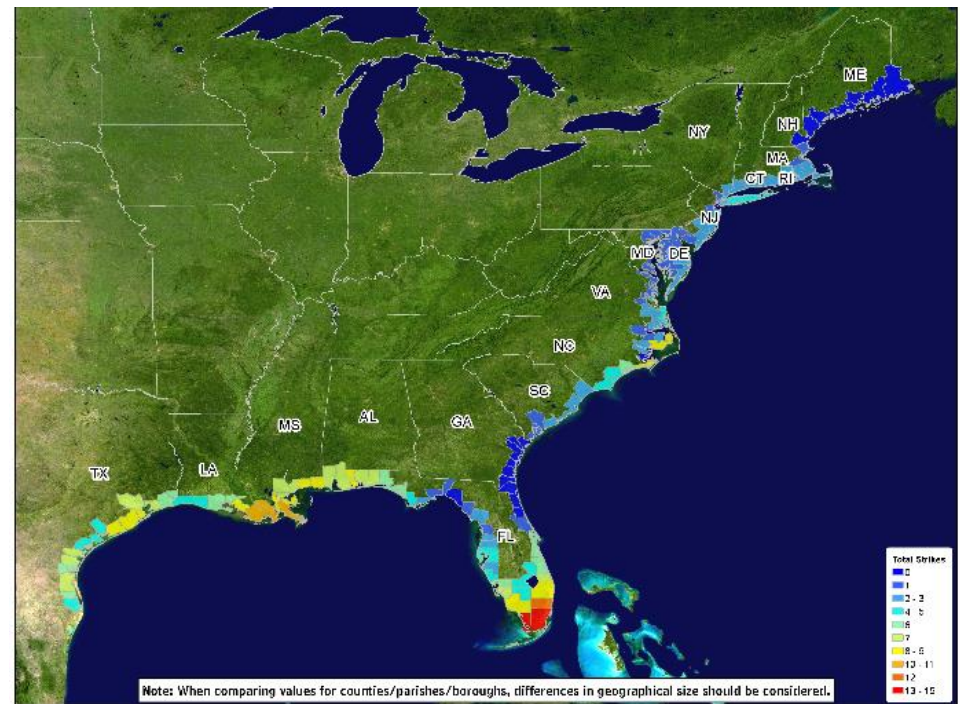
**Historical Occurrence at Hawley and Vicinity**

The recurrence interval of a hurricane passing in the vicinity of Hawley is about 18 years, for hurricanes that might strike between New Jersey and Connecticut, based on Figure 2-5. In the vicinity of Hawley, the recurrence interval for major hurricanes (Cat 3 and above) is about 70 to 75 years, for hurricanes that might strike between New Jersey and Connecticut, based on Figure 2-5.

**Estimated Probability of Occurrence at and near Hawley**

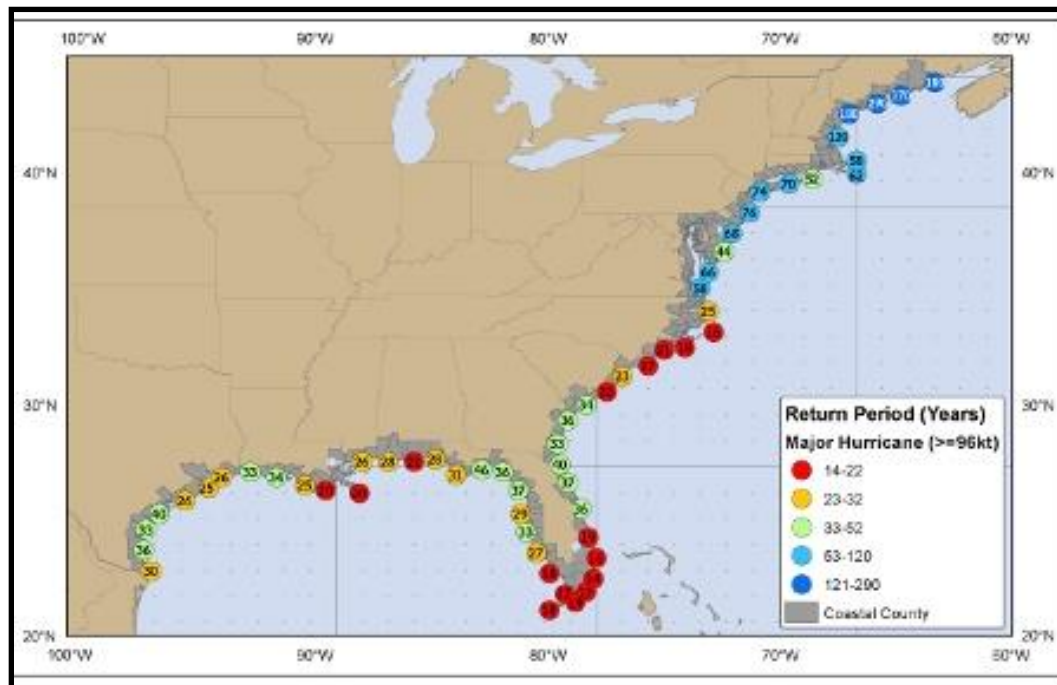
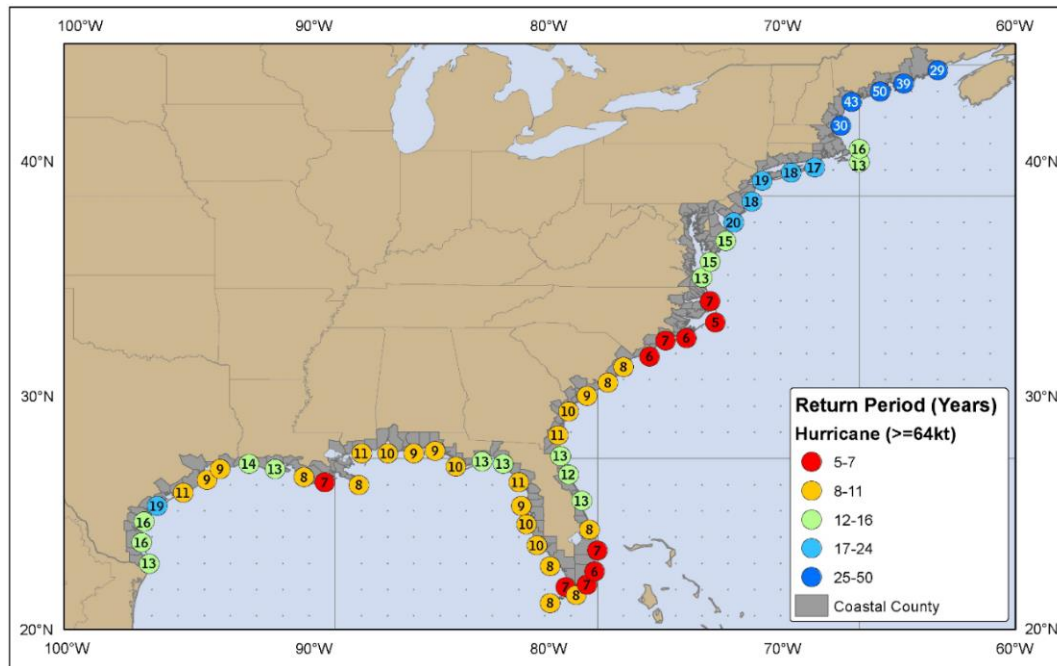
The results indicate the following hurricane strike probability at and near Hawley:

- All Hurricanes: 6% AEP or 18-year recurrence interval
- Major (≥ Cat 3) Hurricanes: 1% or 75-year recurrence period



Total number of major hurricane strikes by counties/parishes/boroughs, 1900-2010

**Figure 2-3: Hurricane Strikes (source - NOAA)**



**Figures 2-4 and 2-5: Hurricane Recurrence Interval (all hurricanes - top and major hurricanes - bottom)**

(Source: (Source: <https://www.nhc.noaa.gov/climo/#bac>)



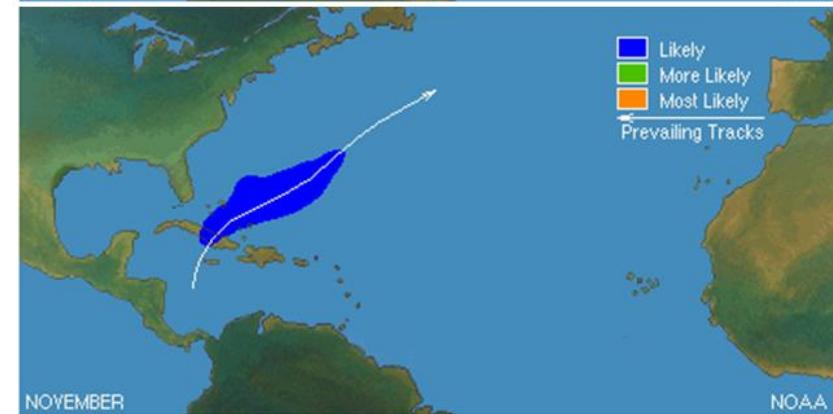
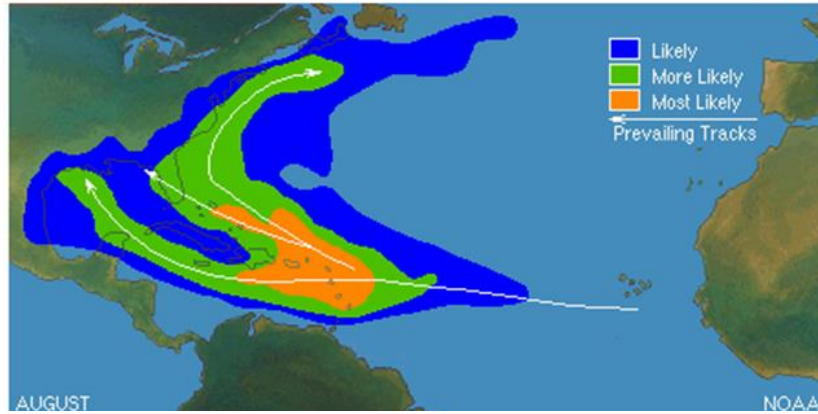
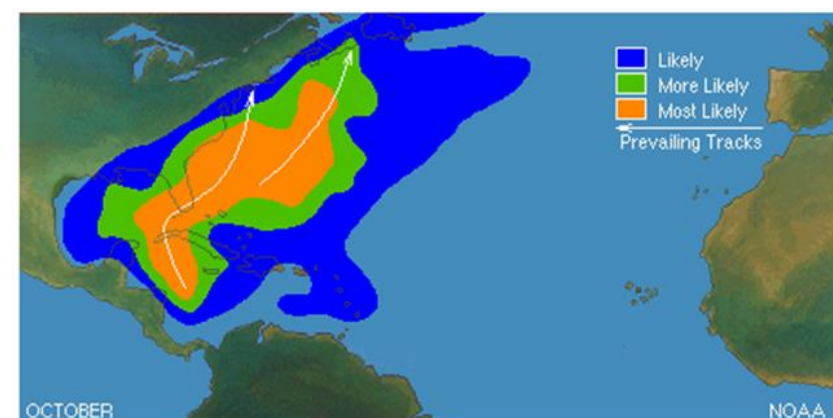
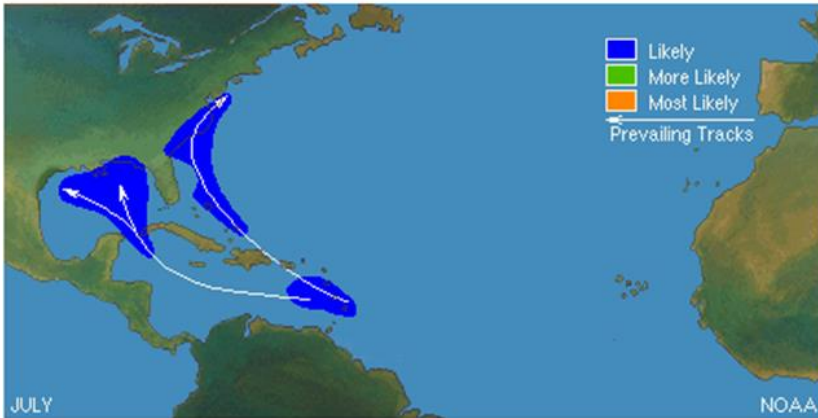
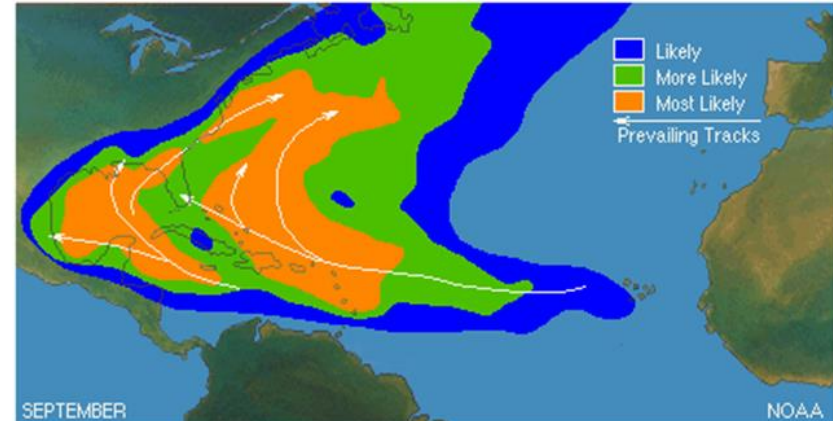
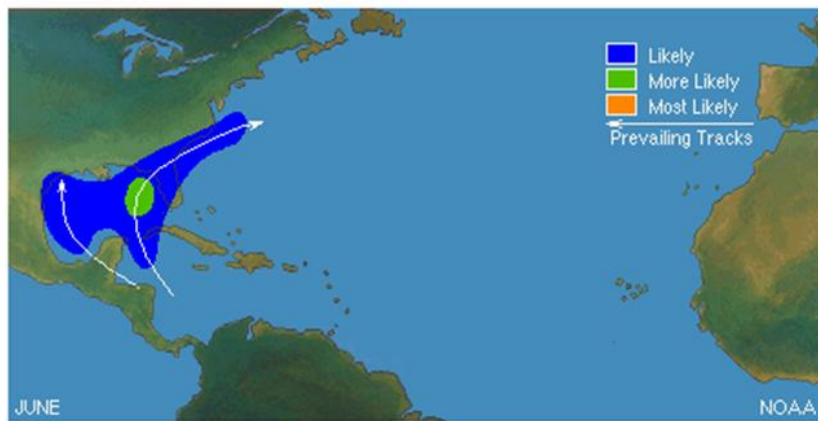


Figure 2-6: Hurricane Origin and Track Probability by Month

## THUNDERSTORMS



A thunderstorm is characterized by lightning and thunder and usually produces gusty winds, heavy rain, and sometimes hail. Cumulonimbus clouds produce lightning, which locally heats the air to 50,000 degrees Celsius, which in turn produces an audible shock wave, known as thunder. Tornadoes can also be generated during these events. Three basic ingredients are required for a thunderstorm to form: moisture, rising unstable air (air that keeps rising when given a nudge), and a lifting mechanism. Every thunderstorm has an updraft (rising air) and a downdraft (sinking air). Sometimes strong downdrafts known as downbursts can cause tremendous wind damage, similar to that of a tornado. A small (< 2.5-mile path) downburst is known as a “microburst” and a larger downburst is called a “macroburst.”

The peak season for severe thunderstorms in the Northeast U.S. is June through August, although thunderstorms also occur in the Spring and Fall, and thunder can occur during winter snow storms. Hazards from thunderstorms include high to extreme winds, lightning, torrential downpours, and hail. Thunderstorms can spawn tornadoes and cause flash floods, downed trees and power lines, power outages, and mudslides. Roads may become impassable due to flooding, downed trees, or a landslide. Power lines may be downed due to high winds, and services such as water or phone may not be able to operate without power. Lightning can cause severe damage and injury. Fatalities are uncommon, but can occur.

**Figure 2-7** shows the average number of thunderstorm days throughout the U.S. Massachusetts, including Franklin County, experiences between 20 and 30 thunderstorm days each year.

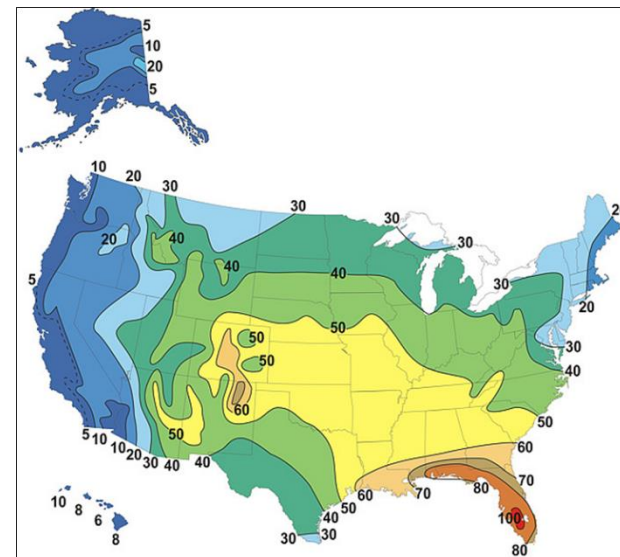
An average thunderstorm is 15 miles across and lasts 30 minutes; severe thunderstorms can be much larger and longer. According to the National Weather Service:

- a severe thunderstorm is a thunderstorm that produces a tornado, winds of at least 58 mph (50 knots or ~93 km/h), and/or hail at least 1" in diameter; and

- An approaching severe thunderstorm is a thunderstorm with winds equal to or greater than 40 mph (35 knots or ~64 km/h) and/or hail of at least ½"

Observed structural wind damage may imply the occurrence of a severe thunderstorm. Hail of 1" or greater can damage property such as plants, roofs and vehicles. <http://www.weather.gov/bgm/severedefinitions>

Derechos: Based on climatology, Massachusetts is located in a zone where derechos are predicted to occur about 1 every four years (typically during April to August).



**Figure 2-7: Average Annual Number of Thunderstorms in U.S.**  
(Source: [http://www.srh.noaa.gov/jetstream/tstorms/tstorms\\_intro.html](http://www.srh.noaa.gov/jetstream/tstorms/tstorms_intro.html))

### Historical Occurrence at Hawley and Vicinity

Between 1950 and 2021, Franklin County had 169 days with Thunderstorm (convective) winds resulting in 1 death, 3 injuries and \$1.25M damage.

111 of these events resulted in damage and 2 events resulted in death or injury. Of these, 8 thunderstorm events impacted the Town of Hawley. These storms resulted in \$71K in damages and no injuries or deaths. Ref. NOAA Storm Events Database. For this database, thunderstorm winds are

defined as speeds of at least 58mph or of any speed producing a fatality, injury or damage.

#### Estimated Probability of Occurrence at and near Hawley

The results indicate the following thunderstorm wind probability at and near Hawley (within Franklin County):

- Thunderstorm Winds within Franklin County: 71% AEP or minimum of 1- to 2- year recurrence interval (47 years with 1 or more events over 66 years)

#### TORNADOES

A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. The destruction caused by tornadoes ranges from light to catastrophic depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, including residential dwellings and particularly manufactured homes. Tornadoes are more likely to occur during the months of March through May and tend to form in the late afternoon and early evening.

Since 2007, tornadoes have been categorized according to the Enhanced Fujita scale:

**Table 2-4: Enhance Fujita Scale for Tornadoes**

Scale	Wind speed estimate		Potential damage
	mph	km/h	
EF0	65–85	105–137	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86–110	138–177	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111–135	178–217	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136–165	218–266	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166–200	267–322	Devastating damage. Well-constructed and whole <u>frame houses</u> completely leveled; cars and other large objects thrown and small missiles generated.
EF5	>200	>322	Incredible damage. Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks, and train cars can be thrown approximately 1 mile (1.6 km).

Prior to 2007, tornadoes were categorized according to the Fujita Tornado Intensity Scale:

**Table 2-5: Original Fujita Tornado Intensity Scale**

Scale	Wind Speed Estimate (mph)	Potential Damage
Category F0:	Gale tornado (40-72 mph)	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
Category F1	Moderate tornado (73-112 mph)	Moderate damage. The lower limit is the beginning of hurricane wind speed; peel surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads.
Category F2	Significant tornado (113-157 mph)	Considerable damage. roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
Category F3	Severe tornado (158-206 mph)	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.
Category F4	Devastating tornado (207-260 mph)	Devastating damage. Well-constructed houses leveled; structure with weak foundation blown off some distance; cars thrown and large missiles generated.
Category F5	Incredible tornado (261-318 mph)	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile sized missiles fly through the air in excess of 100 yards; trees debarked; incredible phenomena will occur.

Tornadoes can also occur anywhere in Massachusetts, although relatively infrequently. Between 1950 and 2021, there were 190 tornado events within Massachusetts including 114 days with damage, 24 days with injury or death and 8 days with deaths, resulting in \$544.352M damages. The data for this period for the State is presented below:

**Table 2-6: Massachusetts Tornado Data for the period of 1950 to 2021**

Magnitude	No of Days with Event	No. of Injuries	No. of Deaths	Property Damage
F0/EF0	48	6	1	\$463,670
F1/EF1	93	38	1	\$16,944,750
F2/EF2	35	9	2	\$16,042,750
F3/EF3	10	221	4	\$235,900,000
F4/E4	3	1288	97	\$275,000,250

Magnitude	Avg. No of Events/year	Avg. No. of Injuries/Event	Avg. No. of Deaths/Event	Avg. Property Damage/Event
All	2.7	8.3	0.6	-
F0/EF0	0.7	0.1	0.02	\$9,660
F1/EF1	1.3	0.4	0.01	\$182,202
F2/EF2	0.5	0.3	0.06	\$458,364
F3/EF3	0.1	22.1	0.4	\$23,590,000
F4/E4	0.04	429.3	32.3	\$91,666,750

Tornado risk is calculated from the destruction path that has occurred within 30 miles of the location. Details for Franklin County are presented in **Table 2-6**. The tornadoes were generally weak. A total of 21 days with tornadoes were reported in Franklin County for the period of record between 1950 and 2021, according to the NOAA Storm Events Database. **Figure 2-8** shows the start and end points and tracks of the Franklin County tornadoes in the vicinity of Hawley. These tornadoes ranged in severity from F0 to F2, with more recent tornadoes rated under the EF scale at EF0 to EF1. These tornadoes occurred between the months of February and September.

**Table 2-7: Franklin County, Massachusetts Tornado Data for the period of 1950 to 2021**

<u>Date</u>	<u>Location</u>	<u>Fujita</u>	<u>Fatalities</u>	<u>Injuries</u>	<u>Length(miles)</u>
7/14/1954	Franklin County, Massachusetts	F1	0	0	1.3
7/4/1955	Franklin County, Massachusetts	F2	0	0	0
5/10/1957	Franklin County, Massachusetts	F1	0	0	0.2
7/11/1958	Franklin County, Massachusetts	F2	0	0	1
8/13/1958	Franklin County, Massachusetts	F1	0	0	8
7/2/1961	Franklin County, Massachusetts	F0	0	0	2
5/20/1963	Franklin County, Massachusetts	F2	0	0	0
9/12/1963	Franklin County, Massachusetts	F1	0	0	1
7/29/1964	Franklin County, Massachusetts	F0/F1	0	0	0.1/4.3
8/17/1970	Franklin County, Massachusetts	F1	0	0	16.7
7/17/1971	Franklin County, Massachusetts	F1	0	0	0.5
7/3/1972	Franklin County, Massachusetts	F1	0	0	1/3
8/27/1972	Franklin County, Massachusetts	F2	0	0	1
8/2/1973	Franklin County, Massachusetts	F0	0	0	3.3
8/1/1983	Franklin County, Massachusetts	F0	0	0	0.1
7/5/1984	Franklin County, Massachusetts	F1	0		2
6/27/1992	Franklin County, Massachusetts	F0	0	4	0.1
7/3/1997	Heath, Charlemont, Franklin County, Massachusetts	F1	0	0	4.5/8.5
7/11/2006	Wendell, Franklin County, Massachusetts	F2	0	0	2.9
9/1/2013	Baconville, Franklin County, Massachusetts	EF0	0	0	0.05
2/25/2017	South Ashfield, Franklin County, Massachusetts	EF1	0	1	4.64

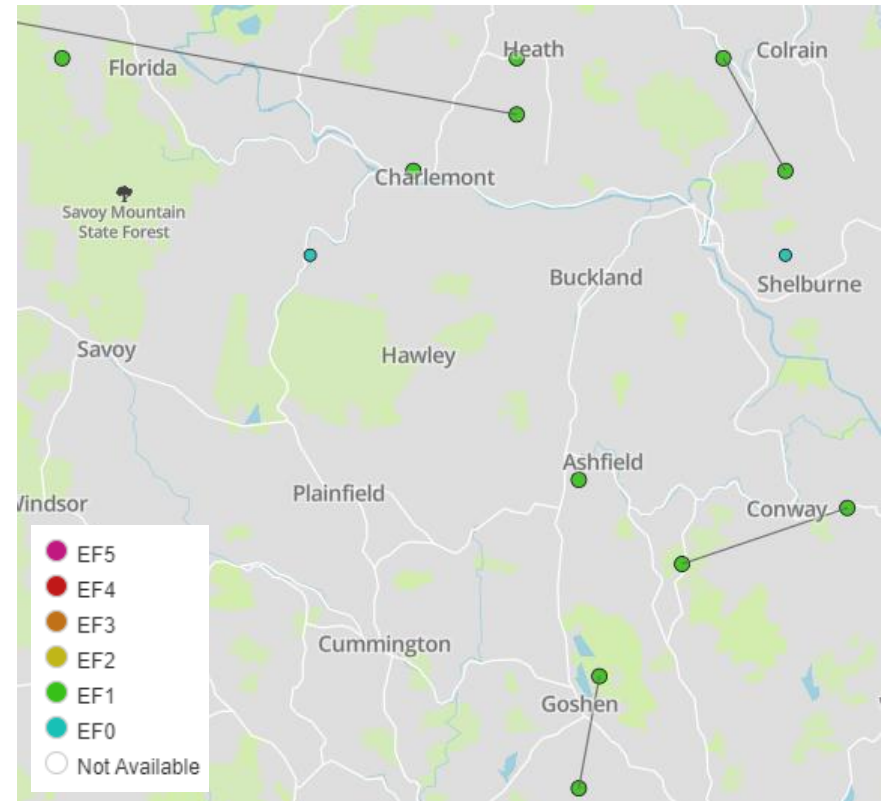
### Historical Occurrence at Hawley and Vicinity

Of the 21 tornadoes in Franklin County, the tornadoes during August of 1970, July of 2006, and February of 2017 resulted in the largest degree of property damages at \$250,000, \$200,000 and \$400,000, respectively. The June of 1992 tornado resulted in four (4) injuries. The February of 2017 tornado resulted in one (1) injury. Ref. NOAA Storm Events Database

### Estimated Probability of Occurrence at and near Hawley

The results indicate the following tornado probability at and near Hawley (within Franklin County):

- Tornadoes within Franklin County: 28% AEP or 3.6-year recurrence interval (18 years with 1 or more events over 64 years)
- There were no major tornadoes (EF4 and larger) within Franklin County reported between 1954 and 2017



**Figure 2-8: Location of Franklin County Tornadoes in the vicinity of Hawley**  
<https://data.burlingtonfreepress.com/tornado-archive/massachusetts/>



## SEVERE WEATHER HAZARDS: LIGHTNING

### LIGHTNING



Lightning is the second most common storm-related killer in the United States. It causes several billion dollars in property damage each year and kills several dozen people. It is a frequent cause of wildfires and costs airlines billions of dollars per year in extra operating expenses.

Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning. The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again. Lightning can occur between opposite charges within the thunderstorm cloud (intra-cloud lightning) or between opposite charges in the cloud and on the ground (cloud-to-ground lightning).

Massachusetts, including Franklin County, has a moderate risk associated with Lightning strikes relative to other states. **Figures 2-9 and 2-10** show the number of fatalities and relative fatality rates by state. In Massachusetts, there have been 6 Lightning fatalities during the period of 2005 and 2014 (an average of less than 1 per year).

#### Historical Occurrence at Hawley and Vicinity

Since 1997, Franklin County has experienced 23 Lightning events and 20 days with Lightning resulting in about \$835.5k in property damage, 1 injury and no deaths. No events were reported within Hawley. Ref. NOAA Storm Events Database.

#### Estimated Probability of Occurrence at and near Hawley

The results indicate the following Lightning probability at and near Hawley (within Franklin County):

- Lightning Events resulting in fatality, injury and/or damage within Franklin County: 52% AEP or about 2-year recurrence interval (12 years with 1 or more events over 23 years)

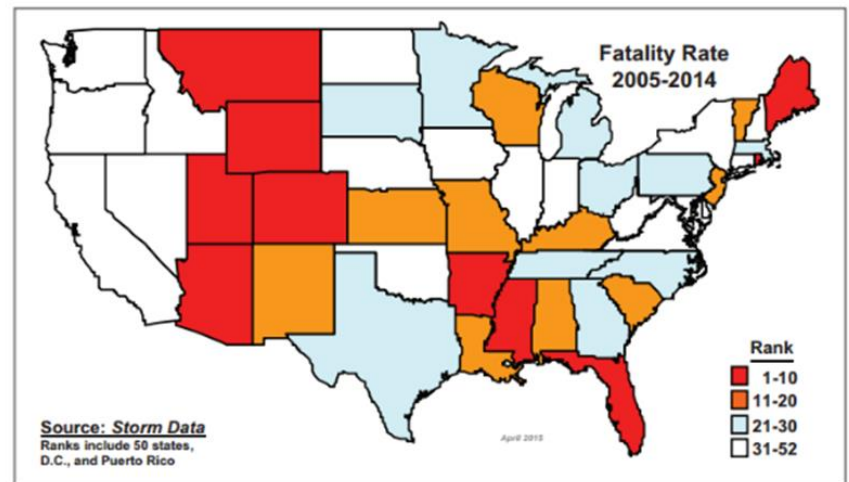
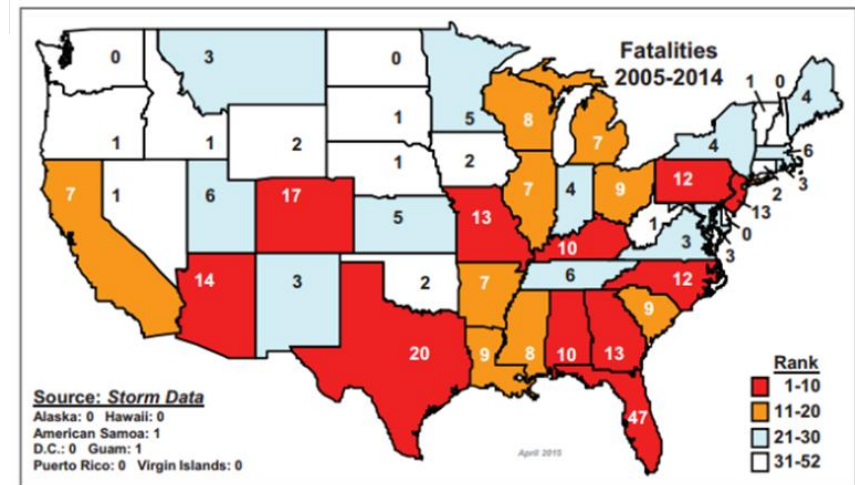


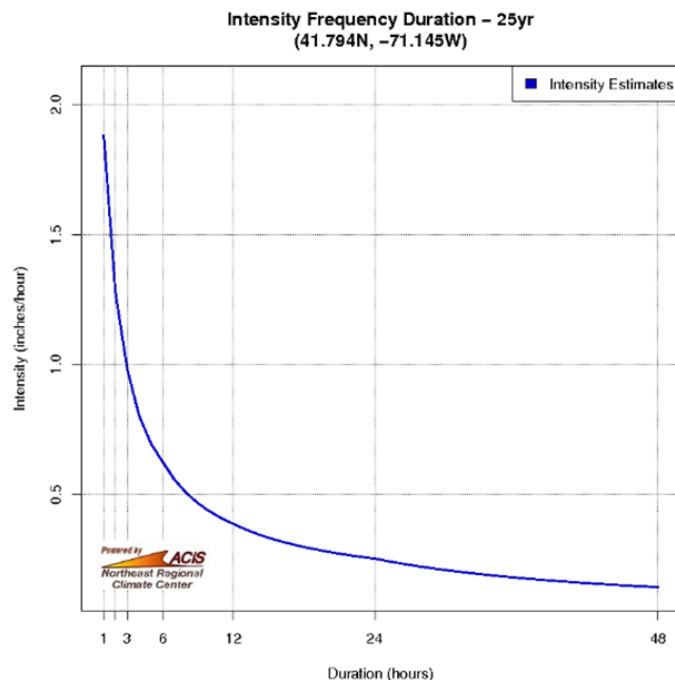
Figure 2-9: Lightning Fatalities by State, 2005-2014 (Source: Vaisala)

## SEVERE WEATHER HAZARDS: INTENSE RAINFALL

### INTENSE RAINFALL



Intense, heavy rainfall can result in localized flooding including flash flood events. Several factors contribute to intense precipitation flooding including rainfall intensity and duration. Other factors include the presence of streams and rivers, soil type, ground cover, drainage and the capacity of stormwater infrastructure. **Table 2-8** presents precipitation projections for Hawley developed by NOAA Atlas 14 Precipitation Frequency Data Server.



**Figure 2-11: Massachussetts Rainfall Intensity-Duration for the 25-year Recurrence Interval Rainfall**

While there is no specific, single set of criteria that defines “intense rainfall”, the rainfall intensities associated with a 25-year recurrence interval are a reasonable benchmark (a 1 in 4 chance of being met or exceeded in any given year). These are presented for Massachusetts including Franklin County in **Figure 2-11**. This figure indicates short duration intensities on the order of 1.5 to 2 inches per hour and longer

duration intensities on the order of an average 0.25 inch per hour over 24 hours (one- and two-day total rainfall amounts of about 6 and 7 inches, respectively).

### Historical Occurrence at Hawley and Vicinity

During the period between 1996 and 2021, Franklin County experienced 17 days with Heavy Rain events, with no documented property damages, injuries, or death. Ref. NOAA Storm Events Database.

**Table 2-8: Predicted Rainfall Intensity by Duration and Recurrence Interval for Hawley**

PRECIPITATION FREQUENCY ESTIMATES (rainfall in inches)										
by duration for ARI (years):	1	2	5	10	25	50	100	200	500	1000
5-min:	0.322	0.381	0.478	0.558	0.669	0.753	0.839	0.929	1.05	1.14
10-min:	0.456	0.54	0.677	0.791	0.947	1.07	1.19	1.32	1.49	1.62
15-min:	0.537	0.635	0.796	0.93	1.12	1.26	1.4	1.55	1.75	1.91
30-min:	0.762	0.901	1.13	1.32	1.57	1.77	1.97	2.18	2.47	2.69
60-min:	0.988	1.17	1.46	1.7	2.03	2.29	2.55	2.82	3.18	3.47
2-hr:	1.27	1.48	1.83	2.11	2.5	2.81	3.11	3.42	3.83	4.15
3-hr:	1.45	1.69	2.09	2.42	2.87	3.22	3.57	3.94	4.45	4.85
6-hr:	1.75	2.1	2.65	3.12	3.75	4.23	4.74	5.33	6.22	6.96
12-hr:	2.07	2.57	3.39	4.07	5.01	5.69	6.45	7.43	9	10.4
24-hr:	2.41	3.08	4.17	5.08	6.33	7.23	8.25	9.62	11.9	13.9
2-day:	2.82	3.61	4.9	5.98	7.46	8.53	9.74	11.4	14.1	16.5
3-day:	3.12	3.98	5.38	6.55	8.15	9.31	10.6	12.4	15.3	17.9
4-day:	3.39	4.29	5.78	7.01	8.7	9.93	11.3	13.2	16.2	18.9
7-day:	4.09	5.1	6.76	8.13	10	11.4	12.9	14.9	18.1	21
10-day:	4.8	5.86	7.6	9.05	11	12.5	14.1	16.1	19.4	22.2
20-day:	7.01	8.13	9.96	11.5	13.6	15.1	16.8	18.8	21.7	24.2
30-day:	8.84	9.99	11.9	13.4	15.6	17.2	18.9	20.8	23.5	25.7
45-day:	11.1	12.3	14.3	15.9	18.2	20	21.7	23.5	25.9	27.7
60-day:	12.9	14.2	16.3	18.1	20.5	22.4	24.3	26	28.2	29.8

ARI = Annual Recurrence Interval

### Estimated Probability of Occurrence at and near Hawley

The results indicate the following intense rainfall probability at or near Hawley (within Franklin County):

- Intense Rainfall within Franklin County: 19% AEP or about 5-year recurrence interval (5 years with 1 or more events over 26 years)



## SEVERE WEATHER HAZARDS: HAIL

### HAIL



Hailstorms are a potentially damaging outgrowth of severe thunderstorms. Hailstorms frequently accompany thunderstorms, so their locations and spatial extents overlap. Large hail (greater than 1 inch in diameter) can be destructive. Hail can cause substantial damage to vehicles, roofs, landscaping, and other areas of the built environment. U.S. agriculture is typically the resource most affected by hail storms, which cause severe crop damage even during minor events. A recent risk, due to the widespread use of solar panels, is hail-related damage to solar panels.

Hail storms are fairly common in Massachusetts, including Hawley. For this period of 1955 to 2021, Massachusetts hail data indicates:

- 1955-2021: 61 days (an average of 0.92 events per year), with 0 injuries, 0 deaths, \$5K property damage (average property damage of \$82 per event), and \$50K crop damage (average crop damage of \$820 per event).

Per HomeAdvisor.com, the average per building cost, nationally, to repair hail, wind or storm damage is \$10,265 ranging from \$350 to \$55,000.

The Hail Risk Score (**Table 2-9**) provides a short-to-medium term view of future hail risk based on the last 10 years of ultra-high resolution radar data. The score is based on a scale of 1 to 10, with the lowest score of 1 representing Very Low hail risk (damaging hail unlikely in the next 5-10 years) and the highest score of 10 representing Extreme hail risk (damaging hail very likely every year).

The Hail Risk Score for Hawley (reference stormersite.com) is 1.

**Table 2-9: Hail Risk Score Classifications**

Hail Risk Score	Hail Risk	Hail Risk Guidance
1	Very low	Damaging Hail unlikely in next 5-10 years
2	Very Low to Low	Damaging Hail likely every 5 years
3	Low	Damaging Hail likely every 2-4 years
4	Low to Moderate	Damaging Hail likely every 2-3 years
5	Moderate	Damaging Hail likely every other year
6	Moderate	Damaging Hail very likely every other year
7	Moderate to High	Damaging Hail likely every 1-2 years
8	High	Damaging Hail very likely every 1-2 years
9	Very High	Damaging Hail likely every year
10	Extreme	Damaging Hail very likely every year

### Historical Occurrence at Hawley and Vicinity

For the period of 1955 to 2021, there have been 110 hail events in Franklin County including 2 hail days with damage (resulting in \$5K property damage and \$50K in crop damage; an average damage of about \$500 per event) and no fatalities. 4 of these events occurred in Hawley. Ref. NOAA Storm Events Database.

### Estimated Probability of Occurrence at and near Hawley

The results indicate the following hail probability at and near Hawley (within Franklin County):

- 40% AEP or about 2.5-year recurrence interval (27 years with 1 or more events over 67 years)

## SEVERE WEATHER HAZARDS: FLOOD

### FLOODING

A flood is the partial or complete inundation of normally dry land. The various types of flooding include riverine flooding, coastal flooding, and shallow flooding. Common impacts of flooding include damage to personal property, buildings and infrastructure; bridge and road closures; service disruptions; and injuries or even fatalities.

The Town is vulnerable to:

- **Riverine flooding.** There are several streams within Hawley. Chickley River, Mill Brook, and Clesson Brook have a FEMA-mapped floodplain of Zone A (1% annual chance of flooding).
- **Rainfall events.** Inland (poor drainage) flooding associated with large rainfall events occurs within areas with impervious surfaces, poor drainage and inadequate stormwater management.
- **Beaver dams.** There are several locations of beaver dams identified within the Town of Hawley. There is a risk of flooding that could be caused by the failure of beaver dams, causing ponded water to flood downstream areas.

The Town is not vulnerable to other types of flooding including:

- **Coastal Flooding.** Hawley is not located near the coast.

#### Riverine Flooding



Riverine flooding includes flooding caused by river flows which overtop the riverbanks and spread into the surrounding floodplain or other low-lying areas. Flooding is often caused by heavy rains resulting from thunderstorms, nor'easters, tropical storms, and hurricanes. In addition, the spring rainy season is a particularly hazardous time, as runoff from winter snowfalls can saturate wetlands and fill the streams and brooks. A heavy or severe rain event at this time of year can often overwhelm natural flood storage areas and create flood hazards on streets and around residential areas.

One of the costliest floods in Franklin County occurred in August of 2011, due to eight to ten inches of rain associated with Hurricane Irene. Large swathes of farmland were inundated and homes were flooded, some being condemned. Many roads in the area were also affected. Two rivers set flood records, the Deerfield River in West Deerfield and the North River at Shattuckville. Combined damages in Franklin county totaled \$22.1M. Ref. NOAA Storm Events Database.

#### FEMA Flood Hazard Determination

Through FEMA's flood hazard mapping program, Risk Mapping, Assessment and Planning (MAP), FEMA identifies flood hazards, assesses flood risks and partners with states and communities to provide accurate flood hazard and risk data to guide them to mitigation actions. Flood hazard mapping is an important part of the National Flood Insurance Program (NFIP), as it is the basis of the NFIP regulations and flood insurance requirements. FEMA maintains and updates data through Flood Insurance Rate Maps (FIRMs) and risk assessments. In Hawley, the effective FIRM is dated 1985. The Special Flood Hazard Areas (shaded areas) shown on the FIRM are designated Zone A and all other (unshaded) areas are designated Zone C. Zone A is the flood having a one percent chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the "100-year flood". These areas within Hawley are associated with Chickley River, Mill Brook, and Clesson Brook. Zone C are areas of minimal flood hazard. The Zone A areas in Hawley do not have determined Base Flood Elevations (BFEs) in the effective FIRM.

#### Historical Occurrence at Hawley and Vicinity

For the period of 1996 through 2021, there have been 32 days with flood events in Franklin County, including 16 days with property damage (resulting in \$25.593M of damage), no injuries and no deaths. NOAA Storm Events Database.

The Town LPT identified riverine flood concerns at Labelle Road which is very close to Clesson Brook.

### Estimated Probability of Occurrence at and near Hawley

The results indicate the following flood probability at and near Hawley (within Franklin County):

- 58% AEP or about 1.7-year recurrence interval (15 years with 1 or more events over 26 years)

### Climate Change Effects and Riverine Flood Occurrence

There is high confidence, within the scientific community, that the frequency and severity of riverine flooding will increase within southern New England due primarily to the increase in precipitation frequency and intensity.

### Intense Rainfall and Poor Drainage Flooding



Intense, heavy rainfall can result in localized flooding including flash flood events. Risks due to intense rainfall are predominantly associated with flash flooding and are typically related to the capacity of the existing stormwater infrastructure to manage stormwater run-off. High velocity stormwater flow can also occur during these events. Damages can include localized flooding, damage to property and vehicles and potentially safety risk to the public.

### Historical Occurrence at Hawley and Vicinity

- During the period between 1996 and 2021, Franklin County experienced 17 days with Heavy Rain events, an average of about 1 event day every other year, with no documented property damages, injuries or death. Ref. NOAA Storm Events Database
- During the period between 1996 and 2021, Franklin County experienced 14 days with Flash Flood events, an average of about 1 event day every other year. Nine event days included property damage at a total cost of \$3.26M. There were no injuries or death. One Flash Flood event was reported in Hawley. Ref. NOAA Storm Events Database
- The Town LPT identified flooding issues at East Hawley Road, East Road, and Forge Hill Road

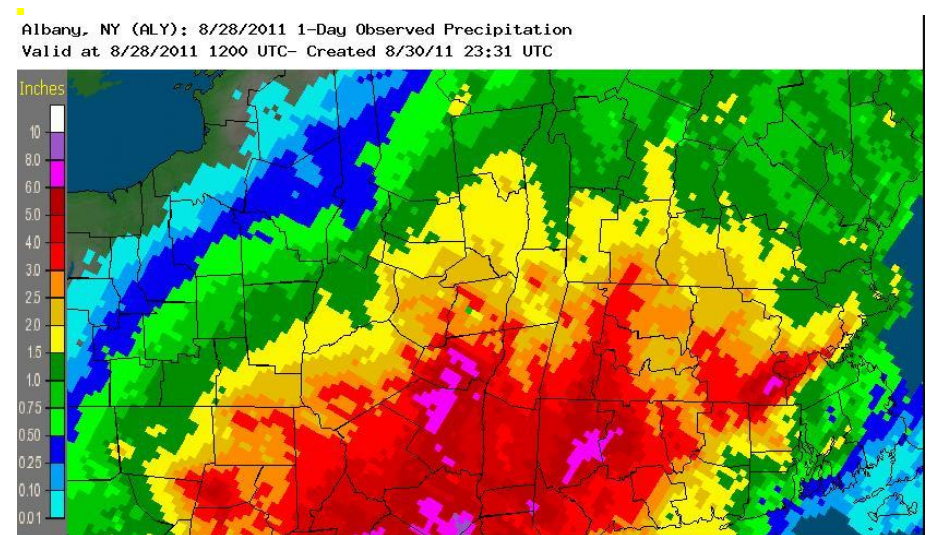
### Estimated Probability of Occurrence at and near Hawley

The results indicate the following flash flooding probability at and near Hawley (within Franklin County):

- Flash Flooding due to Intense Rainfall within Franklin County: 38% AEP or 2.6-year recurrence (10 years with 1 or more events over 26 years)

### Effects of Climate Change

The attribution of rainfall intensity and frequency has high confidence. Average annual precipitation in the Northeast increased 10 percent from 1895 to 2011, and precipitation from extremely heavy storms has increased 70 percent since 1958. During this century, average annual precipitation and the frequency of heavy downpours are likely to keep rising. Average precipitation is likely to increase during winter and spring, but not change significantly during summer and fall.



**Figure 2-12: August 28, 2011 (Tropical Storm Irene) 1-Day Total Rainfall (weather.gov)**

### Beaver Dam Related Flooding

From the Town of Hawley 2014 Multi-Hazard Mitigation Plan:

*Along with manmade dams, failure of beaver dams can cause flooding as well. Alteration of the landscape by beavers is a natural process that creates habitat for shore birds, mammals and rare amphibians. However, beaver ponds can flood structures, roads and utilities, causing costly and potentially dangerous situations. Beaver activity can also pollute drinking water supplies. Mitigation measures suggested by Massachusetts Division of Fish and Wildlife (MassWildlife) and other agencies can help communities and homeowners deal with nature’s master builders.*

*Until 1996, when a ballot initiative passed restricting the practice, Massachusetts residents were permitted to trap beavers. That change in policy caused a spike in the beaver population, which, in turn, led to a sharp increase in complaints about beaver activity and its effects. The law was modified in 2000 so that town Board of Health members could issue emergency trapping permission outside of the usual trapping season. State law makes it illegal for any person to disturb or tear open a beaver dam or beaver lodge without written permission from MassWildlife and the local Conservation Commission or Department of Environmental Protection.*

*An increased beaver population, combined with land development reducing beaver habitat, means that humans and beavers continue to clash. Several mitigation measures, when applied thoughtfully, legally and with maintenance measures in mind, can help with beavers’ negative effects, while preserving beavers’ positive impact on the land.*

*Techniques used to mitigate the flooding damage caused by beaver include breaching of beaver dams, protecting road culverts with fences or guards, and controlling water levels with water flow devices. All these techniques require a certain degree of effort and regular maintenance to insure water levels that can be tolerated (thereby preserving the positive aspects of the associated wetland). See the MassWildlife publication *The Use of Water Flow Devices and Flooding Problems Caused by Beaver in Massachusetts* for details on these mitigation measures.*

### Historical Occurrence at Hawley and Vicinity

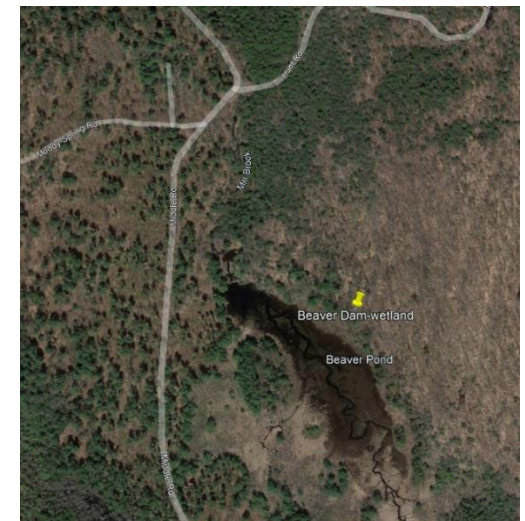
The Town of Hawley 2014 Multi-Hazard Mitigation Plan noted several locations of beaver activity within Hawley, as follows:

- Along King Brook near West Hawley Road and Stetson Road
- Along Basin Brook near Hallockville Road
- On Swift River near Plainfield Road
- Around Hawley Bog
- Along Clesson Brook near Forget Road

Though there have been several beaver dams and breaches in Hawley, none have resulted in damage. The LPT noted one beaver dam that impounds a significant area of water on Mill Brook, located off of Middle Road and which has the potential to flood or damage Hunt Road if breached. There is also a small beaver pond downstream of Cox Pond that could clog the downstream Pond Road culvert if breached.

### Estimated Probability of Occurrence at and near Hawley

It is expected that beaver activity will continue to persist in Hawley, as suitable habitat is expected to remain relatively constant over the next decade.



## SEVERE WEATHER HAZARDS: WINTER WEATHER

### SEVERE WINTER WEATHER: SNOWFALL



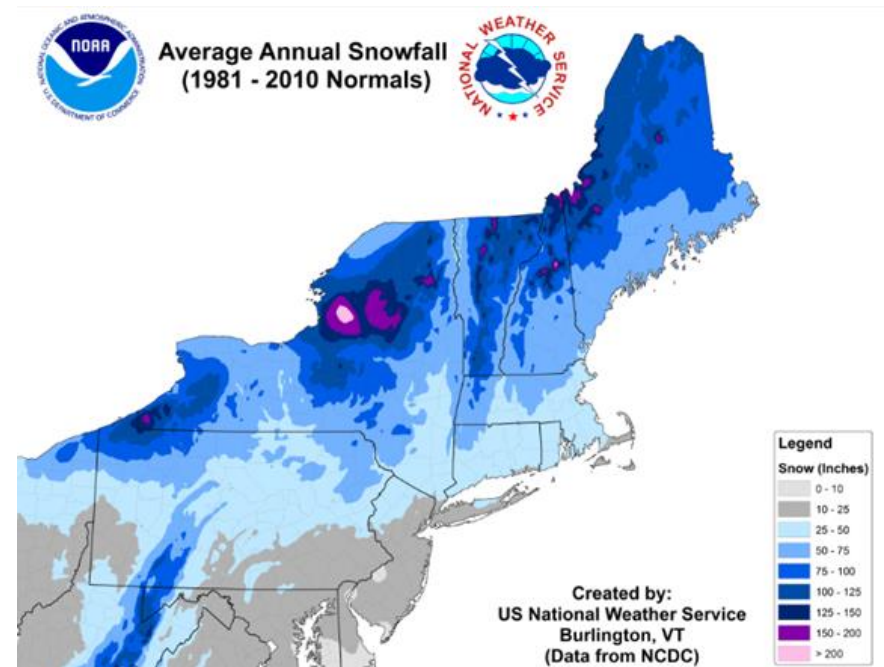
Severe winter weather includes large snow events, blizzards and ice storms. As defined by the National Weather Service, a blizzard is a snowstorm with sustained winds or frequent gusts of 35 miles an hour or greater and considerable falling and/or blowing snow (i.e., reducing visibility frequently to less than a quarter of a mile) for a period of 3 hours or longer. NOAA's National Centers for Environmental Information produces the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two thirds of the U.S. The RSI ranks snowstorm impacts on a scale from 1 to 5, as shown in **Table 2-10**. RSI is based on the spatial extent of the storm, the amount of snowfall, and the juxtaposition of these elements with population density and societal impacts. Currently, the index uses population data based on the 2000 Census. A similar storm index is the Northeast Snowfall Impact Scale (NESIS), also shown below. Reference NOAA; <https://www.ncdc.noaa.gov/snow-and-ice/rsi/>

Severe winter weather in Massachusetts is almost always associated with nor'easters. **Table 2-11** summarizes the major nor'easters that occurred between the 1880's and now in the Northeast U.S. and includes RIS and NESI values (if available). Ref. <https://gis.ncdc.noaa.gov/maps/ncei/rsi>

**Table 2-10: Regional Snowfall Index (RSI) and Northeast Snowfall Impact Scale**

Category	RSI Value	Description	NESIS Value	Description
1	1-3	Notable	1-2.5	Notable
2	3-6	Significant	2.5-4	Significant
3	6-10	Major	4-6	Major
4	10-18	Crippling	6-10	Crippling
5	18+	Extreme	10+	Extreme

**Figure 2-13** indicates the average annual snowfall amounts for the Northeast U.S. The average snowfall per year near Hawley is 50 to 75 inches per year.



**Figure 2-13: Average Annual Snowfall**  
(<http://www.weather.gov/btv/winter>)

**Table 2-11: Major Historical Nor'easters in the New England Region**

Event	Northeast Category/RSI Value	Date	Description
Great Blizzard of 1888	NA	March 11-14, 1888	One of the worst blizzards in U.S. history. Dropped 40–50 inches (100–130 cm) of snow, killed 400 people, mostly in New York.
Great Appalachian Storm of November 1950	4/14.5	November 24-30, 1950	A very severe storm that dumped more than 30 inches (76 cm) of snow in many major metropolitan areas along the eastern United States, record breaking temperatures, and hurricane-force winds. The storm killed 353 people.
The Blizzard of '58	3/7.9	February 16-17, 1958	This coastal storm brought heavy snow and strong winds to the Northeast and resulted in 19.4 inches of snow in Boston.
	0/0	March 3-5, 1960	This <u>wind-driven snowstorm</u> brought whirling snow from Virginia to New York, before blowing into New England. Left 19.8 inches of snow in Boston.
Ash Wednesday Storm of 1962	1/1.8	March 5-9, 1962	Caused severe tidal flooding and blizzard conditions from the Mid-Atlantic to New England, killed 40 people.
February Blizzard	5/34.0	February 24-27, 1969	This storm lasted several days and left 26.3 inches of snow in Boston.
Eastern Canadian Blizzard of March 1971	4/10.8	March 3-5, 1971	Dropped over 32 inches (81 cm) of snow over areas of eastern Canada, killed at least 30 people.
Groundhog Day Gale of 1976	NA	February 1-5, 1976	Caused blizzard conditions for much of New England and eastern Canada, dropping a maximum of 56 inches (140 cm) of snow.
January Blizzard	2/5.4	January 20-21, 1978	The January blizzard occurred just a couple of weeks before the infamous Blizzard of '78 and left 21.4 inches of snow in Boston.
Northeastern United States blizzard of 1978	5/18.4	February 5-7, 1978	<u>A catastrophic storm, which dropped over 27 inches (69 cm) of snow in areas of New England, killed a total of 100 people, mainly people trapped in their cars on metropolitan Boston's inner beltway and in Rhode Island. \$500M property damage in Massachusetts.</u>
1991 Storm (the "Perfect Storm," combined Nor'easter/hurricane)	0/0	October 28-November 2, 1991	<u>Very unusual storm which evolved into a hurricane, tidal surge caused severe damage to coastal areas, especially Massachusetts, killed 13 people.</u>
December 1992 nor'easter	2/4.7	December 10-12, 1992	A powerful storm which caused severe coastal flooding throughout much of the northeastern United States.



Event	Northeast Category/RSI Value	Date	Description
1993 Storm of the Century	5/22.1	March 12-15, 1993	The Superstorm of 1993 which affected the entire eastern U.S., parts of eastern Canada and Cuba. It caused 6.65 billion (2008 USD) in damage, and killed 310 people.
Christmas 1994 nor'easter	NA	December 22-26, 1994	<u>An intense storm which affected the east coast of the U.S., and exhibited traits of a tropical cyclone.</u>
North American Blizzard of 1996	5/21.8	January 6-10, 1996	Severe snowstorm which brought up to 4 feet (120 cm) of snow to areas of the mid-Atlantic and northeastern U.S.
April Fools Storm	2/4.7	March 31-April 1, 1997	This April Fools storm dropped more than 2 feet of snow in Boston.
North American Blizzard of 2003	4/14.7	February 14-22, 2003	Dropped over 2 feet (61 cm) of snow in several major cities, including Boston, and New York City, affected large areas of the Northeastern and Mid-Atlantic U.S., and killed a total of 27 people.
North American Blizzard of 2005	NA	January 20-23, 2005	Brought blizzard conditions to southern New England and dropped over 40 inches (100 cm) of snow in areas of Massachusetts.
North American Blizzard of 2006	2/5.0	February 11-13, 2006	A powerful storm that developed a hurricane-like eye when off the coast of New Jersey. It brought over 30 inches (76 cm) of snow in some areas and killed 3 people.
April 2007 nor'easter	0/1.0	April 13-17, 2007	An unusually late storm that dumped heavy snow in parts of Northern New England and Canada and heavy rains elsewhere. The storm caused a total of 18 fatalities.
November 2009 nor'easter	0/0	November 11-17, 2009	Formed from the remnants of Hurricane Ida, produced moderate storm surge, strong winds and very heavy rainfall throughout the mid-Atlantic region. It caused US\$300 million (2009) in damage, and killed six people.
December 2009 North American blizzard	1/2.8	December 16-20, 2009	A major blizzard which affected large metropolitan areas, including New York City, Philadelphia, Providence, and Boston. In some of these areas, the storm brought up to 2 feet (61 cm) of snow.
March 2010 nor'easter	0/0.3	March 12-16, 2010	A slow-moving nor'easter that devastated the Northeastern United States. Winds of up to 70 miles per hour (110 km/h) snapped trees and power lines, resulting in over 1 million homes and businesses left without electricity. The storm produced over 10 inches (25 cm) of rain in New England, causing widespread flooding of urban and low-lying areas. The storm also caused extensive coastal flooding and beach

Event	Northeast Category/RSI Value	Date	Description
			erosion.
December 2010 North American blizzard	2/3.4	December 5, 2010- January 15, 2011	A severe and long-lasting blizzard which dropped up to 36 inches (91 cm) of snow throughout much of the eastern United States.
January 8–13, 2011 North American blizzard and January 25–27, 2011 North American blizzard	2/3.4	January 8-13 and January 25-27, 2011	In January 2011, two nor'easters struck the East Coast of the United States just two weeks apart and severely crippled New England and the Mid-Atlantic. During the first of the two storms, a record of 40 inches (100 cm) was recorded in Savoy, Massachusetts. Two people were killed.
2011 Halloween nor'easter	1/2.6	October 28-November 1, 2011	A rare, historic nor'easter, which produced record breaking snowfall for October in many areas of the Northeastern U.S., especially New England. The storm produced a maximum of 32 inches (81 cm) of snow in Peru, Massachusetts, and killed 39 people. After the storm, the rest of the winter for New England remained very quiet, with much less than average snowfall and no other significant storms to strike the region for the rest of the season.
November 2012 nor'easter	0/0.3	November 7-10, 2012	A moderately strong nor'easter that struck the same regions that were impacted by Hurricane Sandy a week earlier. The storm exacerbated the problems left behind by Sandy, knocking down trees that were weakened by Sandy. It also left several residents in the Northeast without power again after their power was restored following Hurricane Sandy. Highest snowfall total from the storm was 13 inches (33 cm), recorded in Clintonville, Connecticut.

Event	Northeast Category/RSI Value	Date	Description
Late December 2012 North American storm complex	3/9.2	December 17-31, 2012	A major nor'easter that was known for its tornado outbreak across the Gulf Coast states on Christmas day as well as giving areas such as northeastern Texas a white Christmas. The low underwent secondary cyclogenesis near the coast of North Carolina and dumped a swath of heavy snow across northern New England and New York, caused blizzard conditions across the Ohio Valley, as well as an ice storm in the mountains of the Virginia and West Virginia.
<u>Early February 2013 North American blizzard</u>	3/NA	February 7-18, 2013	An extremely powerful and historic nor'easter that dumped heavy snow and unleashed hurricane-force wind gusts across New England. Many areas received well over 2 feet (61 cm) of snow, especially Connecticut, Rhode Island, and eastern Massachusetts. The highest amount recorded was 40 inches (100 cm) in Hamden, Connecticut, and Gorham, Maine, received a record 35.5 inches (90 cm). Over 700,000 people were left without power and travel in the region came to a complete standstill. The storm killed 18 people. Left 24.9 inches of snow in Boston and 22.8 inches in Providence.
March 2013 nor'easter	1/1.6	March 1-21, 2013	A large and powerful nor'easter that ended up stalling along the eastern seaboard due to a blocking ridge of high pressure in Newfoundland and pivoted back heavy snow and strong winds into the Northeast United States for a period of 2 to 3 days. Many officials and residents were caught off guard as local weather stations predicted only a few inches (several centimeters) of snow with a change to mostly rain. Contrary to local forecasts, many areas received over one foot (30 cm) of snow, with the highest amount being 29 inches (74 cm) in Milton, Massachusetts. Several schools across the region, particularly in the Boston, Massachusetts, metropolitan area, remained in session during the height of the storm, not knowing the severity of the situation. Rough surf and rip currents were felt all the way southwards towards Florida's east coast.
January 2015 North American Blizzard	3/6.2	January 23-31, 2015	Unlike recent historical winter storms, there was no indication that a storm of this magnitude was coming until about 3 days in advance. The Blizzard began as an Alberta Clipper in the Midwestern States, which was forecast to transfer its energy to a new, secondary Low Pressure off the coast of the Mid Atlantic and move northeastward and pass to the south and east of New England. Several reports of over 30 inches

Event	Northeast Category/RSI Value	Date	Description
			(76 cm) across the State of Massachusetts, breaking many records. A maximum of 36 inches (91 cm) was recorded in at least four towns across Worcester County in Massachusetts and the city of Worcester itself received 34.5 inches (88 cm), marking the city's largest storm snowfall accumulation on record. The city of Boston recorded 24.6 inches (62 cm), making it the largest storm snowfall accumulation during the month of January and the city's sixth largest storm snowfall accumulation on record. On the coast of Massachusetts, Hurricane Force gusts up to around 80 mph (130 km/h) along with sustained winds between 50 and 55 mph (80 and 89 km/h) at times, were reported. The storm also caused severe coastal flooding and storm surge. The storm bottomed out to a central pressure of 970 mb (970 hPa). By January 28, the storm began to pull away from the area.
October 2015 North American storm complex	0/0	September 29-October 2, 2015	In early October, a low pressure system formed in the Atlantic, Tapping into moisture from Hurricane Joaquin, the storm dumped a huge amount of rain, mostly in South Carolina.
January 2016 United States blizzard (also known as Winter Storm Jonas, Snowzilla, or The Blizzard of 2016 by media outlets)	4	January 19-29, 2016	This system dumped 2 to 3 feet (61 to 91 cm) of snow in the East Coast of the United States. States of Emergencies were declared in 12 States in advance of the storm as well as by the Mayor of Washington D.C. The blizzard also caused significant storm surge in New Jersey and Delaware that was equal to or worse than Hurricane Sandy. Sustained damaging winds over 50 mph (80 km/h) were recorded in many coastal communities, with a maximum gust to 85 mph (137 km/h) on Assateague Island, Virginia. A total of 55 people died due to the storm.
February 2017 United States blizzard (also known as Winter Storm Niko and The Blizzard of 2017 by media outlets)	4.17.8	February 6-11, 2017	<u>Forming as an Alberta clipper in the northern United States on February 6, the system initially produced light snowfall from the Midwest to the Ohio Valley as it tracked southeastwards. It eventually reached the East Coast of the United States on February 9 and began to rapidly grow into a powerful nor'easter, dumping 1 to 2 feet (30 to 61 cm) across the Northeast Megapolis. The storm also produced prolific thunder and lightning across Southern New England. Prior to the blizzard, unprecedented and record-breaking warmth had enveloped the region, with record highs of above 60 °F (16 °C) recorded in several areas, including Central Park in New York City. Some were caught off guard by</u>

Event	Northeast Category/RSI Value	Date	Description
			<u>the warmth and had little time to prepare for the snowstorm.</u>
October 2017 nor'easter	0/0	October 28-31, 2017	An extratropical storm absorbed the remnants of Tropical Storm Philippe. The combined systems became an extremely powerful nor'easter that wreaked havoc across the Northeastern United States and Eastern Canada. The storm produced sustained tropical storm force winds along with hurricane force wind gusts. The highest wind gust recorded was 93 mph (150 km/h) in Popponesset, Massachusetts. The storm caused over 1,400,000 power outages. Damage across New England, especially in Connecticut, Massachusetts, and Rhode Island, was extreme. This was due to the combination of the high winds, heavy rainfall, saturated ground, and most trees still being fully leaved. Some residents in Connecticut were without power for nearly a week following the storm. Heavy rain in Quebec and Eastern Ontario, with up to 98 mm (3.9 in) in the Canadian capital region of Ottawa, greatly interfered with transportation.
January 2018 North American blizzard	4/17.8	January 2-6, 2018	A powerful blizzard that caused severe disruption along the East Coast of the United States and Canada. It dumped snow and ice in places that rarely receive wintry precipitation, even in the winter, such as Florida and Georgia, and produced snowfall accumulations of over 2 feet (61 cm) in the Mid-Atlantic states, New England, and Atlantic Canada. The storm originated on January 3 as an area of low pressure off the coast of the Southeast. Moving swiftly to the northeast, the storm explosively deepened while moving parallel to the Eastern Seaboard, causing significant snowfall accumulations. The storm received various unofficial names, such as Winter Storm Grayson, Blizzard of 2018 and Storm Brody. The storm was also dubbed a "historic bomb cyclone".

Event	Northeast Category/RSI Value	Date	Description
March 1-3, 2018 nor'easter (also known as Winter Storm Riley or False Tropical Storm Riley by media outlets)	2/4.4	March 1-5, 2018	A very powerful nor'easter that caused major impacts in the Northeastern, Mid-Atlantic and Southeastern United States. It originated as the northernmost low of a stationary front over the Midwest on March 1, which moved eastward into the Northeast later that night. A new low pressure system rapidly formed off the coast on March 2 as it slowly meandered near the coastline. It peaked later that day and began to gradually move out to sea by March 3. Producing over 2 feet (24 in) of snow in some areas, it was one of the most significant March snowstorms in many areas, particularly in Upstate New York. In other areas, it challenged storm surge records set by other significant storms, such as Hurricane Sandy. It also produced widespread damaging winds, with gusts well over Hurricane force strength in some areas across Eastern New England as well as on the back side in the Mid-Atlantic via a sting jet. Over 2.2 million customers were left without power.
March 6-8, 2018 nor'easter (also known as Winter Storm Quinn by media outlets)	1/2.2	March 2-9, 2018	A powerful nor'easter that affected the Northeast United States. It came just days after another nor'easter devastated much of the Northeast. Frequent cloud to ground Thundersnow as well as snowfall rates of up to 3 inches (7.6 cm) an hour were reported in areas around the Tri-State Area, signaling the rapid intensification of the storm. Late in the afternoon, an eye-like feature was spotted near the center of the storm. It dumped over 2 feet of snow in many areas across the Northeast, including many areas in New England where the predominant precipitation type was rain for the previous storm. Over 1 million power outages were reported at the height of the storm due to the weight of the heavy, wet snow on trees and power lines. Many people who lost power in the previous storm found themselves in the dark again.
March 12-14, 2018 nor'easter (also known as Winter Storm Skylar by media outlets)	1/2.2	March 11-14, 2018	A powerful nor'easter that affected portions of the Northeast United States. The storm underwent rapid intensification with a central millibaric pressure dropping down from 1001 mb to 974 mb in just 24 hours. This was the third major storm to strike the area within a period of 11 days. The storm dumped over up 2 feet of snow and brought Hurricane force wind gusts to portions of Eastern New England.

Event	Northeast Category/RSI Value	Date	Description
			Hundreds of public school districts including, Boston, Hartford, and Providence were closed on Tuesday, March 13.
March 20–22, 2018 nor'easter (also known as Winter Storm Toby by media outlets)	1/1.6	March 20-22, 2018	A powerful nor'easter that became the fourth major nor'easter to affect the Northeast United States in a period of less than three weeks. It caused a severe weather outbreak over the Southern United States on March 19th before moving off of the North Carolina coast on March 20th and spreading freezing rain and snow into the Mid-Atlantic States after shortly dissipating later that night. A new low pressure center then formed off of Chesapeake Bay on March 21st and then became the primary nor'easter. Dry air prevented most of the precipitation from reaching the ground in areas in New England such as Boston, Hartford, and Providence, all of which received little to no accumulation, in contrast with what local forecasts had originally predicted. In Islip, New York at the height of the storm, snowfall rates of up to 5 inches per hour were reported. 8 inches was reported at Central Park and over 12 inches was reported in many locations on Long Island as well in and around New York City and in parts of New Jersey.
	2/3.2	December 14-18, 2020	
	3/4.9	January 30-February 3, 2021	

### Historical Occurrence at Hawley and Vicinity

Between 1996 and 2021, there were a total of 90 Heavy Snow event days in Franklin County, with 11 days with property damage and no injuries or fatalities. Heavy Snow in the NOAA database is defined as snow accumulation meeting or exceeding locally/regionally 12 and/or 24 hour warning criteria: typically 4, 6 or 8 inches or more within 12 hours or 6, 8 or 10 inches or more in 24 hours. Storms including strong winds or other types of precipitation are classified as Winter Storms instead of Heavy Snow events. Ref. NOAA Storm Events Database.

### Estimated Probability of Occurrence at and near Hawley

The results indicate the following Heavy Snowfall probability at and near Hawley:

- Average annual snowfall of 50 to 75 inches
- 92% AEP or about 1- year recurrence interval Heavy Snowfall (24 years with 1 or more events over 26 years)

### Effects of Climate Change

The attribution of Heavy Snowfall events to climate change and understanding is moderate. High sea surface temperatures, increased atmospheric moisture and polar vortex conditions may result in an increased frequency of Heavy Snowfall.

### SEVERE WINTER WEATHER: ICE STORMS



Ice storms are an occasional component of severe winter weather. Rain that falls and freezes on contact with cold surfaces is called freezing rain, while sleet is precipitation that freezes in the air before hitting the ground in the form of ice pellets. Heavy accumulations of ice can bring down trees or tree branches that may damage utility wires, causing power and communications outages, which may take days to repair. Ice can increase the weight of branches by 30 times. A 1/2-inch accumulation on power lines can add 500 lbs. of weight. Even slight accumulations of ice result in slippery conditions for motorists and pedestrians.

The National Weather Service issues:

- an Ice Storm Warning for a quarter-inch or more of ice accumulation
  - a Freezing Rain Advisory for ice accumulation of less than one quarter-inch
- Ice storms are relatively rare events in Massachusetts, including Hawley.

### Historical Occurrence at Hawley and Vicinity

There were three Ice Storm event days recorded in the NOAA Storm Events Database for Franklin County between 2002 and 2021, with \$6.3M in property damage and no deaths or injuries. Between 1990 and 2021, there were a total 8 days with ice storm events in Massachusetts (an average of 0.26 event per year), resulting in 1 injury and \$45.4M property damage.

### Estimated Probability of Occurrence at and near Hawley

The results indicate the following Ice Storm probability at and near Hawley:

- 17% AEP or 6 year recurrence interval Ice Storms (3 years with 1 or more events over 18 years)

### Effects of Climate Change

The attribution of Ice Storm events to climate change and understanding is low to moderate. High sea surface temperatures, increased atmospheric moisture and polar vortex conditions may result in an increased frequency of Ice Storms.





## EXTREME TEMPERATURES

### EXTREME TEMPERATURE: HEAT



The National Weather Service in Albany, NY issues:

- Excessive Heat Warnings when the daytime heat indices reach 105° F or greater for 2 or more hours
- A Heat Advisory is issued when the daytime heat indices reach 95-104°F for 2 or more hours
- A Heat Wave is defined as 3 or more days of temperatures of 90° F or above.

### Heat Index

The Heat Index, also known as the Apparent Temperature, is a subjective measure of what it feels like to the human body when relative humidity is factored into the actual air temperature. Relative humidity is a measure of the amount of water in the air compared with the amount of water that air can hold at the current temperature. The body cools itself through the evaporation of perspiration or sweat. However, when the relative humidity is high, the increased moisture content in the air decreases the evaporation of perspiration or sweat. For example, a hot and very humid air mass with a temperature of 94 degrees and a relative humidity of 45 percent yields an apparent temperature of 100 degrees. Holding the temperature constant and increasing the relative humidity to 60 percent yields an apparent temperature of 110° F.

The National Weather Service will initiate alert procedures when the Heat Index is expected to exceed 100° F to 104° F (depending on local climate). Under these conditions, sunstroke and heat exhaustion are likely, and physical activity or being outside for long periods is risky, potentially leading to heat stroke.

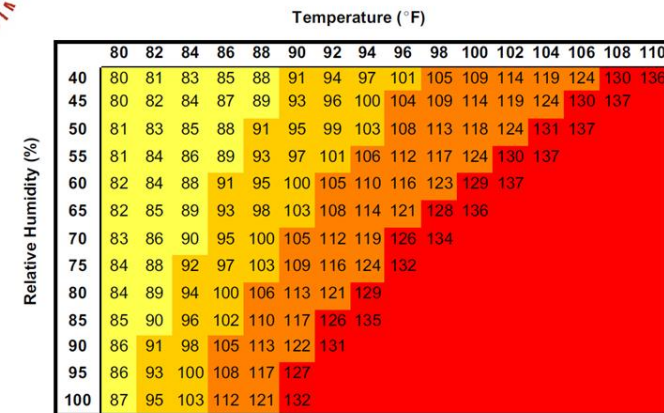
These dangerous heat days pose the greatest threat to children and the elderly, and to people who don't have easy access to air conditioning. The Heat Index values were derived for shady, light wind conditions, and exposure to full sunshine can increase heat index values by up to 15°F. ([http://www.nws.noaa.gov/om/heat/heat\\_index.shtml](http://www.nws.noaa.gov/om/heat/heat_index.shtml)).

From 1979-2016, more than 9,000 Americans have died in the United States from heat related ailments (EPA, 2016). During this period, more people in this country died from extreme heat than from hurricanes, lightning, tornadoes, floods, and earthquakes combined.

The highest temperature recorded in Massachusetts was 107°F on August 2, 1975, in Chester. According to the 2018 State Hazard Mitigation and Climate Adaptation Plan, there have been 43 warm weather events since 1995, ranging from Record Warmth/Heat to Excessive Heat events. During the period from 1985 to 2016, the heat-related mortality rate was about 2.9 per 100,000 people in Boston (Climate Ready Boston Executive Summary, December 2016).



### National Weather Service Heat Index Chart



Likelihood of Heat Disorders with Prolonged Exposure and/or Strenuous Activity  
 Caution Extreme Caution Danger Extreme Danger

Figure 2-14: Heat Index Chart

### Historical Occurrence at Hawley and Vicinity

Between 2000 and 2021, there was a total of 1 event with Excessive Heat in Franklin County and no fatalities or injuries. Ref. NOAA Storm Events



Database.

### Estimated Probability of Occurrence at and near Hawley

The results indicate that the probability of Excessive Heat near Hawley (Franklin County) is:

- 4.5% AEP or 22-year recurrence interval (1 years with 1 or more events over 22 years)

### Additional Heat Effects

In addition to the Heat Index, air quality is a significant issue related to extreme temperature. Summers in the U.S. bring more than just searing, dangerously hot days. When the air is stagnant and there is little air circulation, hot weather can trigger high levels of air pollution that can have health consequences. High temperatures on sunny days make ground-level ozone (a major component of smog) form much more readily. An EPA study looking at more than 20 years of measurements across most of the rural areas in the eastern U.S. found that harmful ozone concentrations increased nearly linearly as temperatures increased and named the effect the "climate penalty on ozone."

### Effects of Climate Change

The confidence of attribution of Excessive Heat to climate change, and understanding, is high. High global temperatures are effecting temperatures at the local level, including Hawley.

Massachusetts currently experiences between 5 and 8 days per year when the Heat Index is expected to exceed 105° F. By 2050, that number could grow to 16 days per year. The number of Heat Wave days in Massachusetts is expected to increase from about 11 to 30 days per year (the period of 2000 to 2030) to about 40 days per year by the year 2050. **Figure 2-15** shows the increase in days above 90° F for Albany, NY. **Figure 2-16** shows the predicted range of days above 105° F for Albany through 2050.

As summers get hotter from the increase in greenhouse gases, they are also getting stickier. More evaporation occurs in a warming atmosphere,

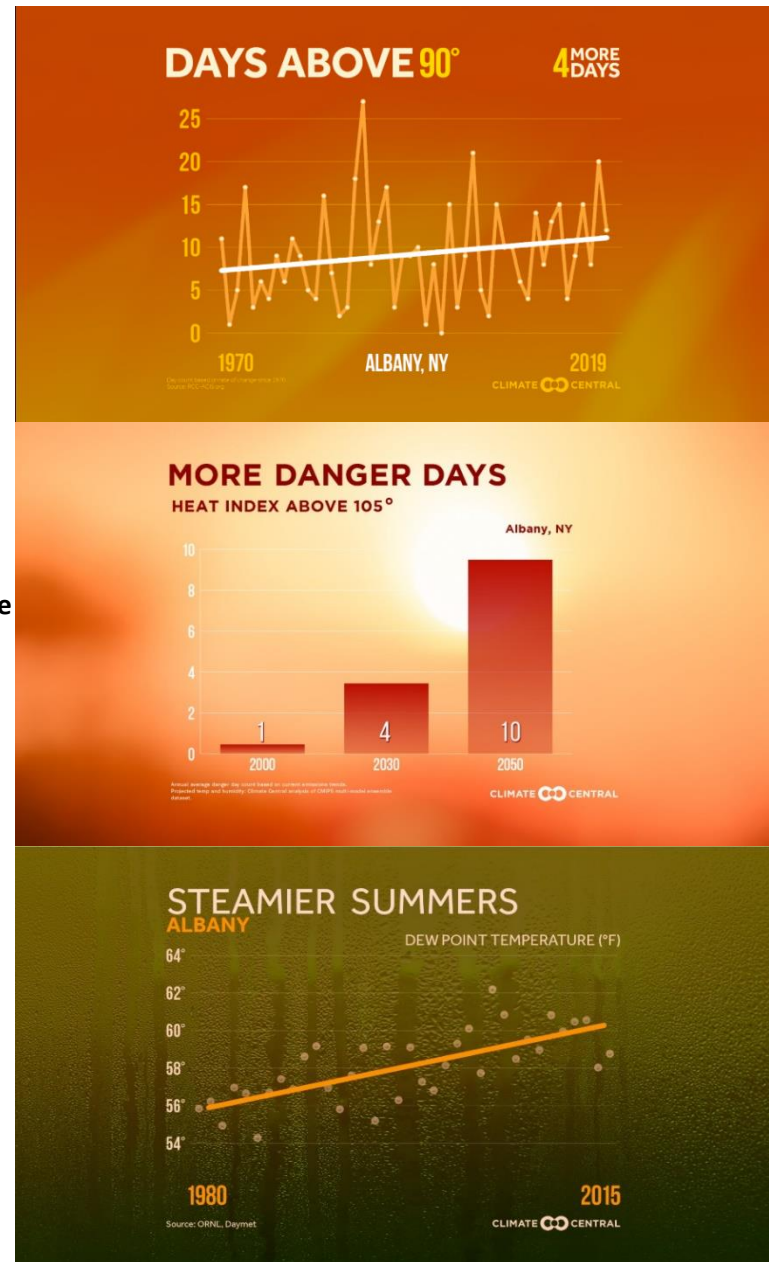
and on a world where water covers nearly three-quarters of the surface, it means an increase in water vapor in the air. During the period of 1980 to 2015, the dew point temperature increased from about 59° F to 62° F. as presented on **Figure 2-17**.



In addition to the effect of climate change on extreme heat events, the overall increase in global and local temperature averages will significantly change climate patterns within the Northeast U.S., including Hawley. Spring will arrive sooner, summers are growing hotter, and the weather is becoming more extreme with swings between above-average winter temperatures to extreme cold with large snowfall events. Per the Union of Concerned Scientists summary reports, if global greenhouse gas emissions continue, the Northeast can expect dramatic temperature increases and other climate changes within the next several decades. Recent observations indicate that these effects are already underway, including within Massachusetts. Average summer temperatures may increase between 6° F and 14° F by 2100 (see **Figure 2-19**). The overall effect will be a shift in the Massachusetts climate equivalent to that historically experienced in lower latitudes, ranging between the Chesapeake Bay area to South Carolina (see **Figure 2-20**).

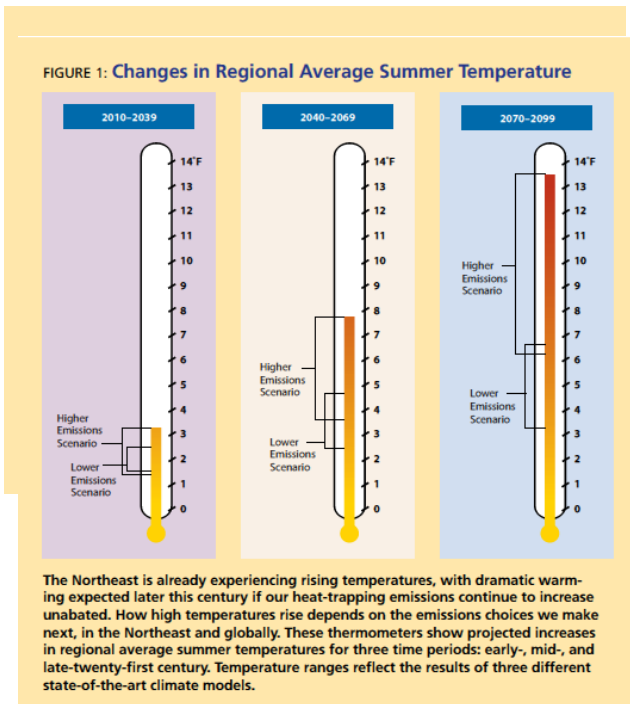
With its setting in the Berkshire mountains, Hawley benefits from higher elevations and tree cover.

Figure

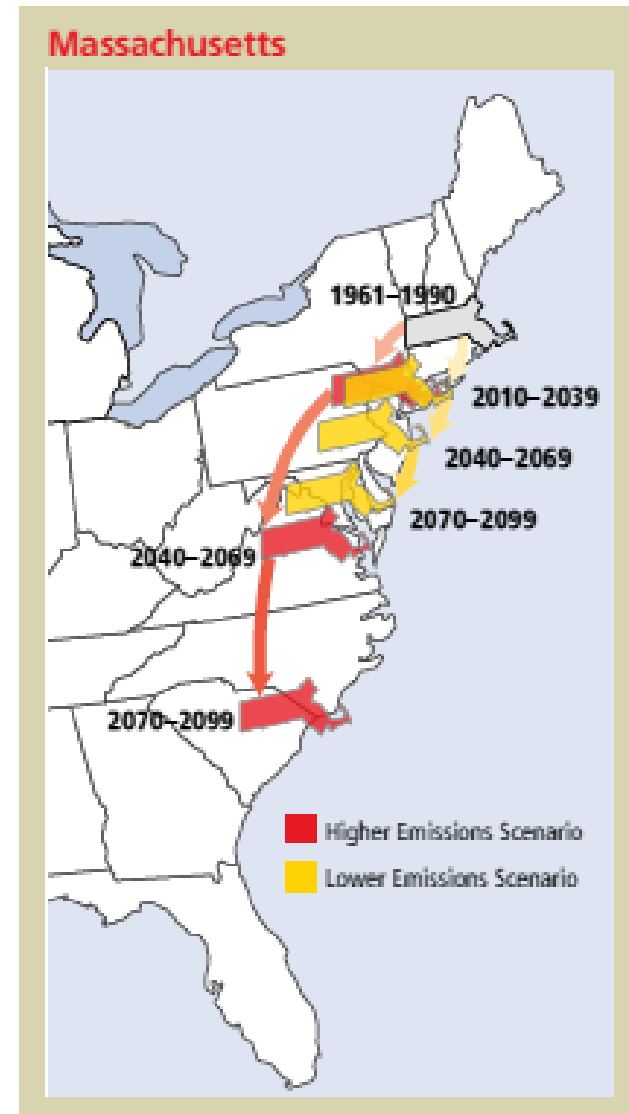
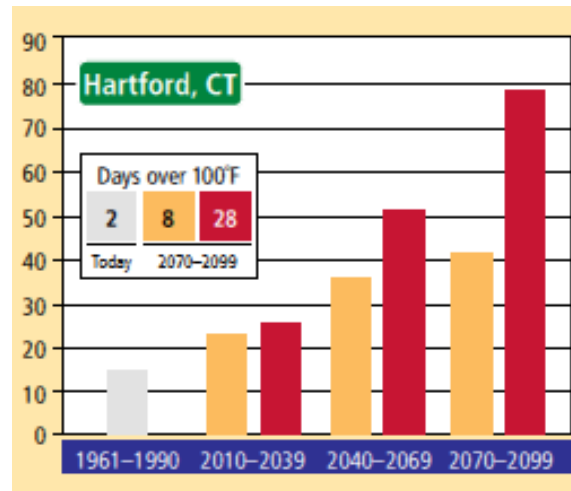


Concerned Sci

Figures 2-15 through 2-17: Days Above 90 degrees (top); Days with Heat Index above 105 degrees (middle); Dew Point Temperature (bottom)



**Figure 2-19: Predicted Rise in Average Northeast U.S. Temperatures (source Union of Concerned Scientists)**



**Figure 2-20: Latitudinal Changes in Regional Climate (source Union of Concerned Scientists)**

## EXTREME TEMPERATURE: COLD



Extreme cold events are generally defined as a prolonged period of excessively cold weather. Extreme cold conditions are often, but not always, part of winter storms. Winter in Massachusetts almost always includes periods of extreme cold weather. Exposure to cold can cause frostbite or hypothermia and has the potential to become life-threatening. Although anyone can suffer from cold-related health issues, some people are at greater risk than others, such as:

- Older adults
- Young children
- Those who are sick; and
- Those without adequate shelter.

Heating sources can be impacted by power failures due to winter storms. Infants and the elderly are more at risk of serious or life-threatening health problems from extreme cold. Secondary hazards may include risk of fires or carbon monoxide poisoning from space heaters, generators, inadequately cleaned or vented fireplaces, or use of candles.

The following extreme cold warnings and advisories are issued by the National Weather Service (NWS):

- Freezing Warning – When minimum shelter temperature drops to 32° F or lower during the growing season.
- Frost Advisory – Issued under clear, light wind conditions with forecast minimum shelter temperature at 33-36° F during the growing season.
- Wind Chill Warning – Wind chill index is -25° F or lower for at least three hours using only sustained wind.
- Wind Chill Advisory - Wind chill index is between -15° F and -24° F for at least three hours using only sustained wind.

The National Weather Service Wind Chill Chart indicates the amount of time in which frostbite may occur on exposed skin based on temperature and wind speed. The National Weather Service maintains a Wind Chill Calculator, which calculated wind chill based on temperature and wind speed, as a period of extremely low temperatures or wind chill

temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -35° F or colder). Ref. <http://www.wpc.ncep.noaa.gov/html/windchill.shtml>.

The lowest temperature recorded in Massachusetts was -35° F on January 5, 1904 in Taunton, February 15, 1943 in Coldbrook, and January 12, 1981 in Chester, according to NOAA (<https://www.ncdc.noaa.gov/extremes/scec/records>).

Nationally, there have been 972 recorded cold fatalities since 1988, with a 10 year average of 30 fatalities/year. [80years\\_2020.pdf \(weather.gov\)](#)



## Wind Chill Chart

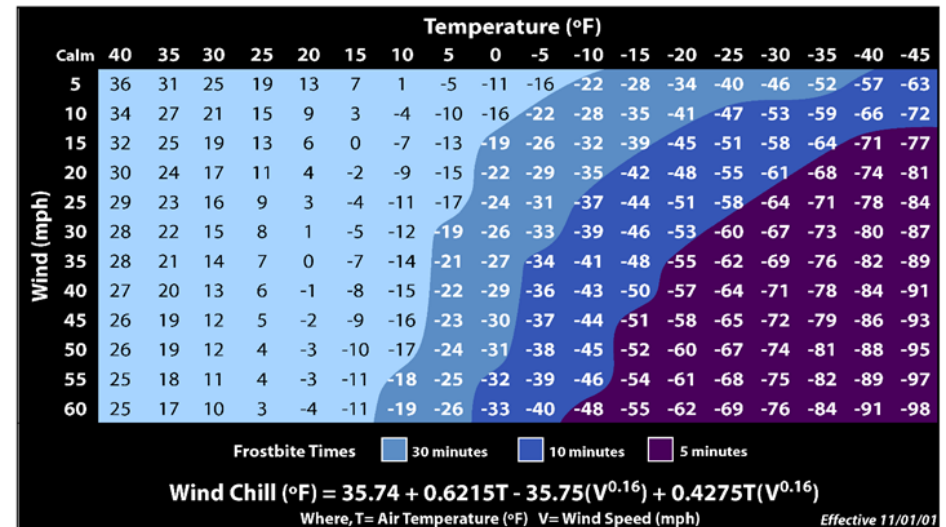


Figure 2-21: Wind Chill Chart

### Historical Occurrence at Hawley and Vicinity



Between 2015 and 2021, Franklin County has experienced 2 event days with an Extreme Cold/Wind Chill event resulting in no fatalities or injuries. Ref. NOAA Storm Events Database.

#### Estimated Probability of Occurrence at and near Hawley

The results indicate the following Extreme Cold/Wind Chill probability at and near Hawley:

- 28% AEP or 3.5 year recurrence interval (2 years with 1 or more events over 7 years)
- The average low temperature during January (the average coldest month) at Hawley is 3°F.

#### Effects of Climate Change

The confidence of attribution of Extreme Cold to climate change, and understanding, is moderate. It appears that warming trends have weakened polar vortex winds resulted in meandering of these winds. This condition allows cold Arctic air to dip further south, resulting in a variable New England winter with temperatures varying from above-average warm to periods of extreme cold.

## DROUGHT



Droughts occur when there has not been enough rainfall and water levels get low, in particular when precipitation and other water resources fall below expectations but the demand for water remains. They can happen anywhere in the United States, and droughts increase the risk of other hazards like wildfires, flash floods, and possible landslides or debris flows. Drought is a slow-onset hazard that can last for months or years. Droughts are generally classified into different types including:

- meteorological drought - lack of precipitation
- agricultural drought - lack of soil moisture
- hydrologic drought - reduced streamflow or groundwater levels.

As a hazard, it has the potential to impact many aspects of life, including two of our most important needs: drinking water and food. Because of the long duration of droughts, the impacts can last for years and can ripple through a community over time.

Drought is an important issue in Massachusetts and the Town due to effects on agricultural and water resources. Town residents obtain their drinking water from private wells, which can be affected by drought.

Massachusetts maintains a Drought Management Plan and five levels of drought are used to characterize drought severity and response: Normal; Advisory; Watch; Warning; and Emergency. A determination of drought level in Massachusetts is based on seven indices: Standardized Precipitation Index (SPI); Crop Moisture Index; Keetch-Byram Drought Index (KBDI); Precipitation Index; Groundwater Level Index; Stream Flow Index; and Reservoir Index. Additional climatological indices used nationally include: Standardized Precipitation-Evapotranspiration Index (SPEI), Palmer Drought Severity Index (PDSI) and Rainfall Deciles are standard climatological drought indices. Drought levels are declared on a regional basis. Massachusetts has identified six state-wide drought regions. The Town is located within the Connecticut River Valley Region.

During the summer of 2002, one-third of the U.S., including Massachusetts, experienced drought conditions. Based on historical Palmer Drought Severity Indices, Massachusetts has experienced multi-

year drought periods in 1879-83, 1910-19, 1928-39, 1964-69, and 1985-95. The most severe drought on record in the northeastern United States was during 1961-69. For the period of 1895 to 1995, Massachusetts experienced low PDSIs (indicating drought conditions) about 6 to 10 percent of the time, indicating the relative probability of drought. Water supplies and agriculture were affected because of the severity and long duration of the drought. Precipitation was less than average beginning in 1960 in western Massachusetts and beginning in 1962 in eastern Massachusetts.

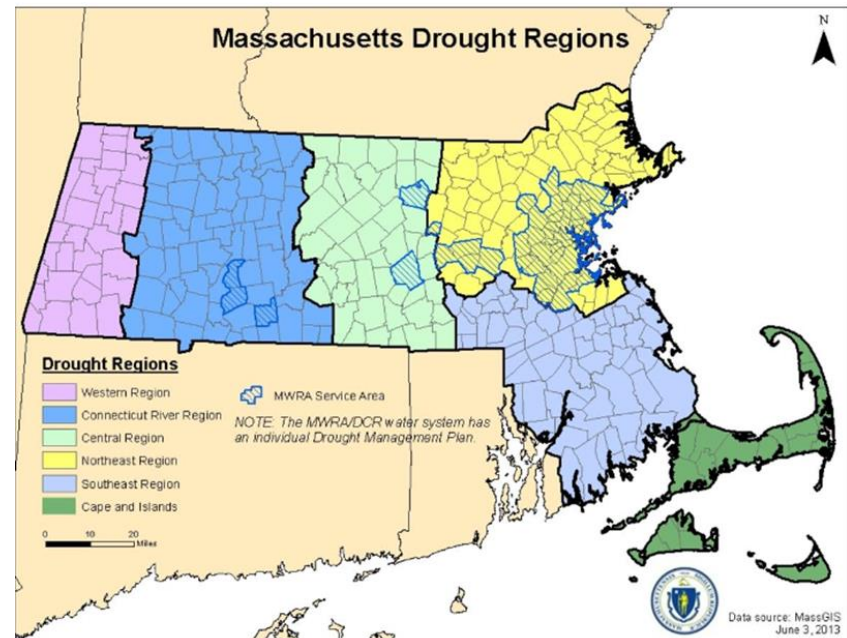


Figure 2-22: Massachusetts Drought Regions

### Historical Occurrence at Hawley and Vicinity

There was a long term drought that affected Franklin County and Hawley in 2016 and 2017. The drought lasted from August of 2016 until April of 2017 when the region saw above normal April precipitation. The Drought

Watch that was in effect in the Connecticut River Valley was downgraded to a Drought Advisory.

The long-term drought was characterized by dry weather and below normal precipitation levels, which caused groundwater and agricultural impacts.

#### Estimated Probability of Occurrence at and near Hawley

Based on recent drought history (1999 to 2021), Franklin County has been impacted by drought once in 22 years. Based on this limited data:

- The probability of Drought near Hawley (Franklin County) is 5% AEP or 1 event every 20 years.
- Massachusetts experiences extended, multi-year droughts about every 20 years

#### Effects of Climate Change

The confidence of attribution of Drought to climate change is moderate. Increased air temperatures and evapotranspiration can increase drought potential. In the Northeast U.S, the relationship between increased rainfall intensity and drought is uncertain.



## WILDFIRE



A wildfire is a non-structure/vehicle fire that occurs in undeveloped, wildland vegetated areas, including grass, brush/shrub, and forested areas. Wildfires occur when natural vegetation is ignited naturally, such as by lightning, or by human activity. Sometimes, wildfires are set intentionally for management of vegetation or to limit accidental fire risk. Wildfires may be unnoticed at first. Unnoticed fires often can spread to the urban-wildland interface and threaten developed areas.

Hawley is 90.99% forest, which presents potential area for wildfires to occur. The Local Planning Team expressed concerns about wildfires given the vast amount of forested area in the Town, and developed the mitigation action of constructing fire ponds in response.

There have been no wildfires in Hawley from 1950 through 2021. There have been no reports of significant property damage or deaths related to brush fires or wildfire.

### Historical Occurrence at Hawley and Vicinity

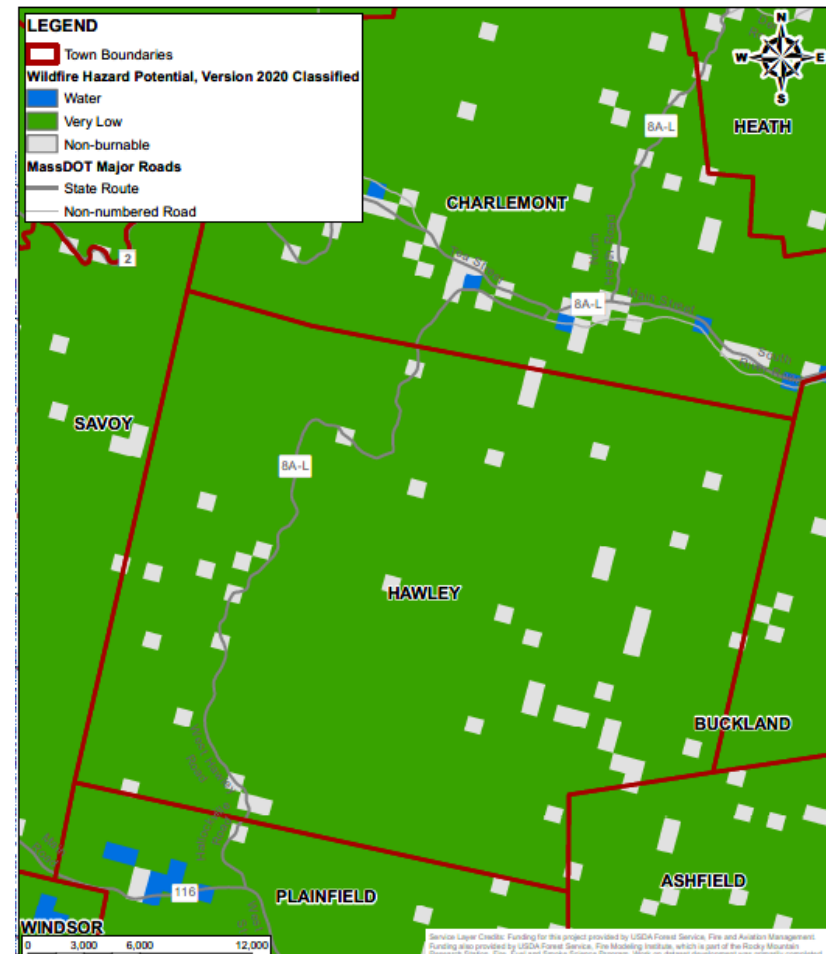
The most recent wildfire in Massachusetts occurred on May 14, 2021 on East Mountain in Clarksburg State Forest, Berkshire County, according to the NOAA Storm Events Database. The fire was contained to 947 acres after 4 days. The NOAA Storm Events database lists zero (0) wildfires as having occurred in Franklin County between 1950 and 2021.

### Estimated Probability of Occurrence at and near Franklin

The historical data indicates that the probability of wildfire within Hawley is low. The Wildfire Hazard Potential Index, developed by the U.S. Forest Service (**Figure 2-23**) indicates that there is very low wildfire hazard potential in Hawley.

### Effects of Climate Change

The confidence of attribution of Wildfire to climate change is low. Increased air temperatures and evapotranspiration, as well as increases in drought, can increase Wildfire potential.



**Figure 2-23:** This map layer portrays the Wildfire Hazard Potential (WHP), developed by the U.S. Forest Service's (USFS) Fire Modeling Institute to help inform assessments of wildfire risk or prioritization of fuels management needs across large landscapes. (arcgis.com)

## EARTHQUAKE



Earthquakes occur as the result tectonic activity. An earthquake is sudden ground motion or trembling caused by an abrupt release of accumulated strain acting on the tectonic plates that comprise the Earth's crust along faults. Although earthquakes have caused much less economic loss annually in the United States than other hazards such as floods, they have the potential for causing great and sudden loss. Within 1 to 2 minutes, an earthquake can devastate part of an area through ground-shaking, surface fault ruptures, and ground failures. The location of an earthquake is commonly described by the geographic position of its epicenter and by its focal depth. The focal depth of an earthquake is the depth from the surface to the region where the earthquake's energy originates (the focus). The epicenter of an earthquake is the point on the Earth's surface directly above the focus. The effects of earthquakes are: 1) ground shaking; 2) ground displacement; and 3) loss of soil strength (liquefaction). Ground shaking is represented by the Peak Ground Acceleration (PGA) and spectral acceleration (SA) response. The PGA reflects the ground acceleration at the top of bedrock. Thick deposits of soil over bedrock will modify (typically increase) the acceleration, resulting in ground surface accelerations that are greater than the PGA. Liquefaction is a function of soil type and density. Earthquake intensity is characterized by: 1) the Richter Scale; and 2) the Modified Mercalli Scale. Seismic hazards include damage to structures and infrastructure, landslides and tsunamis.

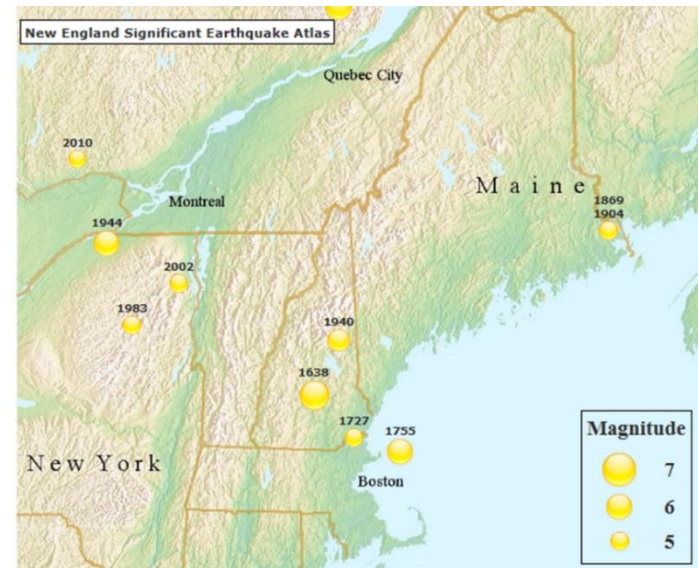
The National Seismic Hazard Maps (NSHM) (and the hazard model from which they are derived) are used by engineers who construct buildings to determine how strongly a particular site might be shaken by earthquakes. The NSHMs compile known earthquake sources, their distance from the site in question, and other seismological and geological information to project potential maximum expected ground motions at a site over a particular period of time (50 years).

Soil deposits above bedrock are classified based on shear wave velocity according to Site Class. Site Class Definitions are presented in **Table 2-13**. The geologic data indicates that the majority of Hawley consists of shallow glacial till or bedrock with sand and floodplain alluvium along the Chickley River (**Figure 2-28**).

**Figure 2-24** presents the significant earthquakes in New England. **Figure 2-25** presents the 2% probability of exceedance in 50 years PGA. The 2% in 50 years PGA in the vicinity of Hawley is 0.1g, where g is the acceleration of gravity (32.2 ft/sec<sup>2</sup>).

**Table 2-12: Richter Scale**

Richter Scale	Earthquake Effects
2.5 or less	Not felt or felt mildly near the epicenter, but can be recorded by seismographs
2.5 to 5.4	Often felt, but only causes minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake; serious damage
8.0 or greater	Great earthquake; can totally destroy communities near the epicenter



**Figure 2-24: Significant Earthquakes in New England**  
[http://aki.bc.edu/quakes\\_historical.htm](http://aki.bc.edu/quakes_historical.htm)

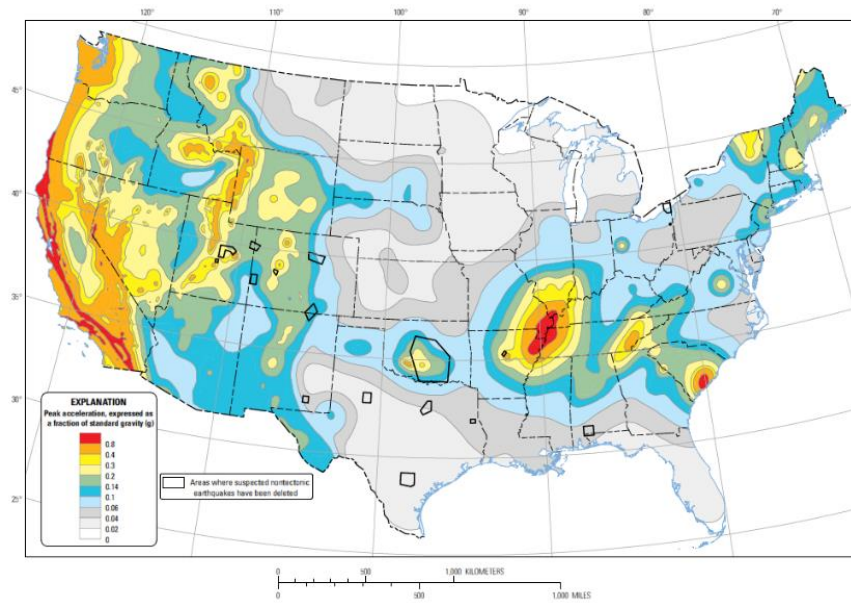


Figure 2-25: 2% probability of exceedance in 50 years Map of Peak Ground Acceleration

Table 2-13: Site Class Definitions

2010 ASCE-7 Standard – Table 20.3-1  
SITE CLASS DEFINITIONS

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
Any profile with more than 10 ft of soil having the characteristics:			
<ul style="list-style-type: none"> <li>• Plasticity index <math>PI &gt; 20</math>,</li> <li>• Moisture content <math>w \geq 40\%</math>, and</li> <li>• Undrained shear strength <math>\bar{s}_u &lt; 500</math> psf</li> </ul>			
F. Soils requiring site response	See Section 20.3.1		

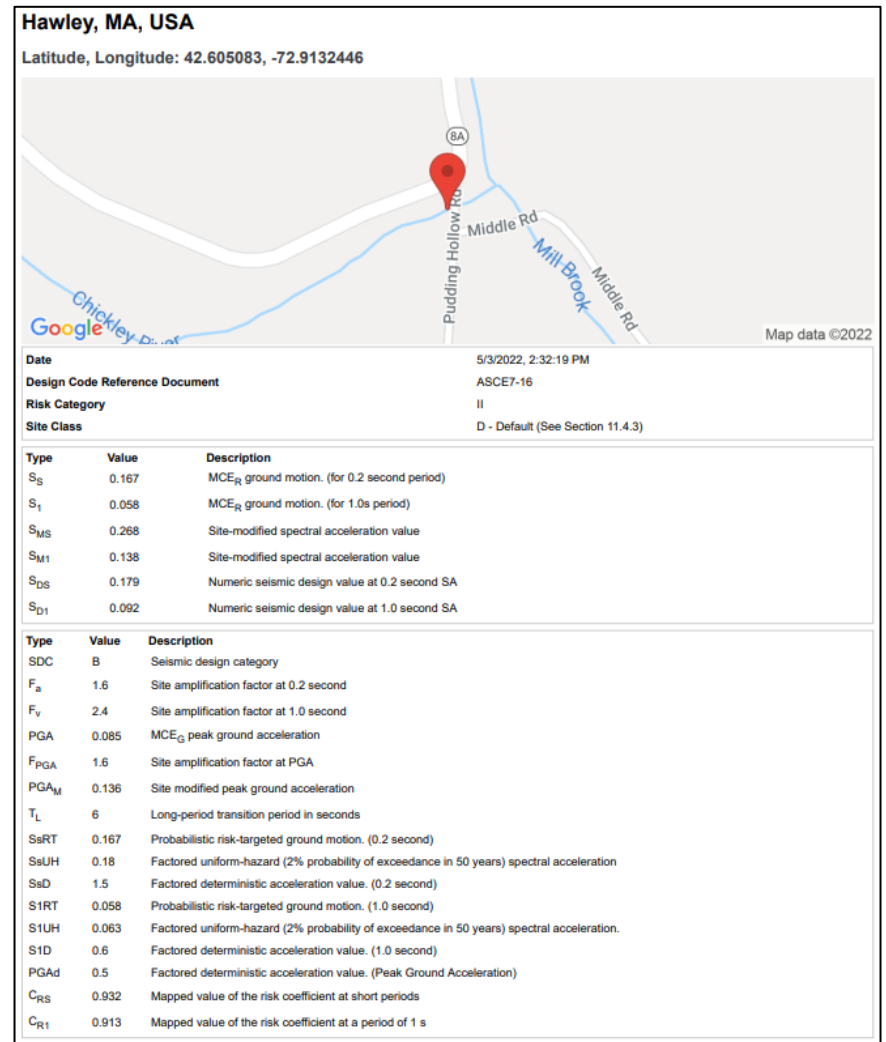


Figure 2-26: USGS Seismic Hazard Report for Hawley (<https://seismicmaps.org/>)

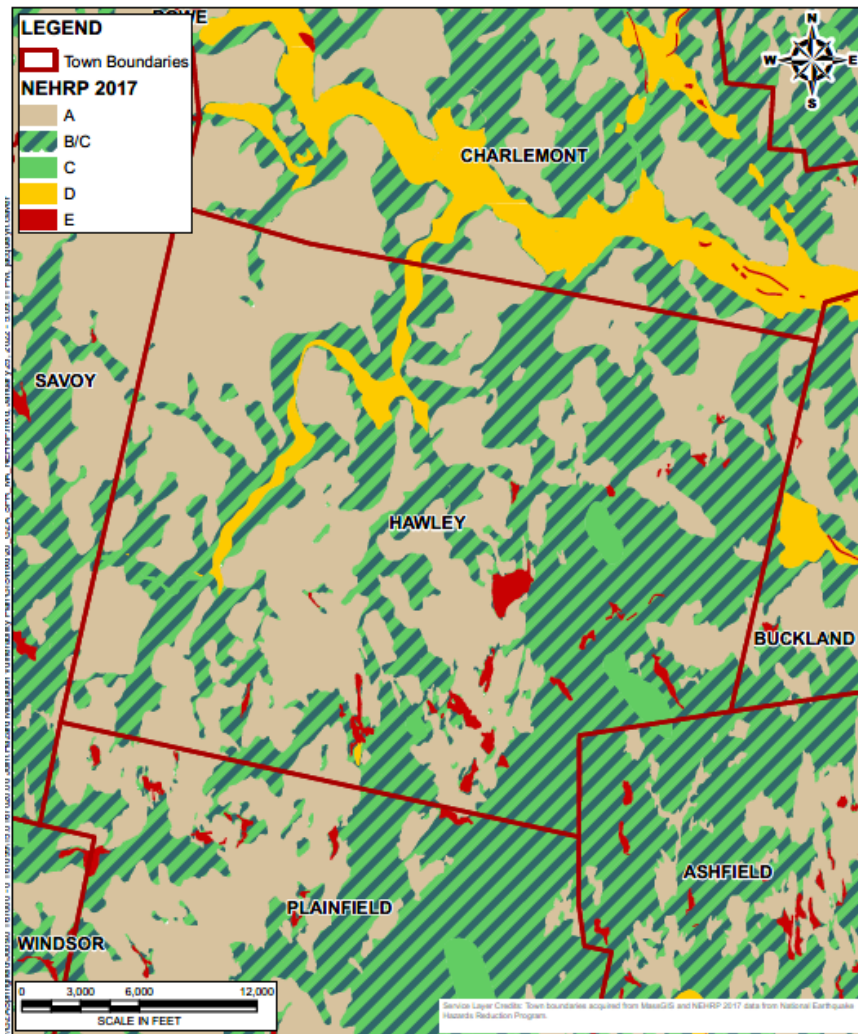


Figure 2-27: NEHRP 2017 Soil Site Classes at Hawley

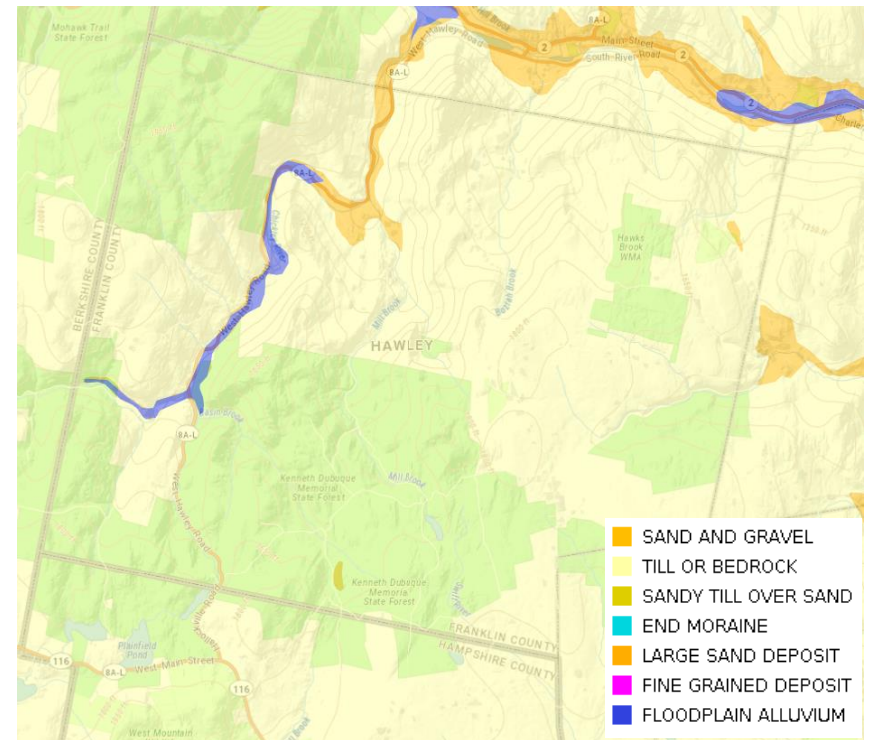


Figure 2-28: Surficial Geology of Hawley (MassGIS)

### Historical Occurrence at Hawley and Vicinity

According to the USGS Earthquake Catalog data search, there have been 20 earthquakes of magnitude 2.5 or greater which have occurred in Massachusetts or off the coast since 1974. The largest was a magnitude 3.7 which occurred near the Quabbin Reservoir in 1994. There was one aftershock of magnitude 3.3 associated with this earthquake. (<https://earthquake.usgs.gov/earthquakes/search/>) As shown in **Figure 2-29**, there have historically been significant (Richter magnitudes between 5 and 7) earthquakes in the vicinity of Massachusetts.

### Estimated Probability of Occurrence at and near Hawley

- The occurrence of historic earthquakes, PGA, and Site Class indicate that the seismic risk at Hawley is low. Amplified ground motion may occur within localized areas within Hawley classified as Site Classes D and E. These areas may also be susceptible to liquefaction.

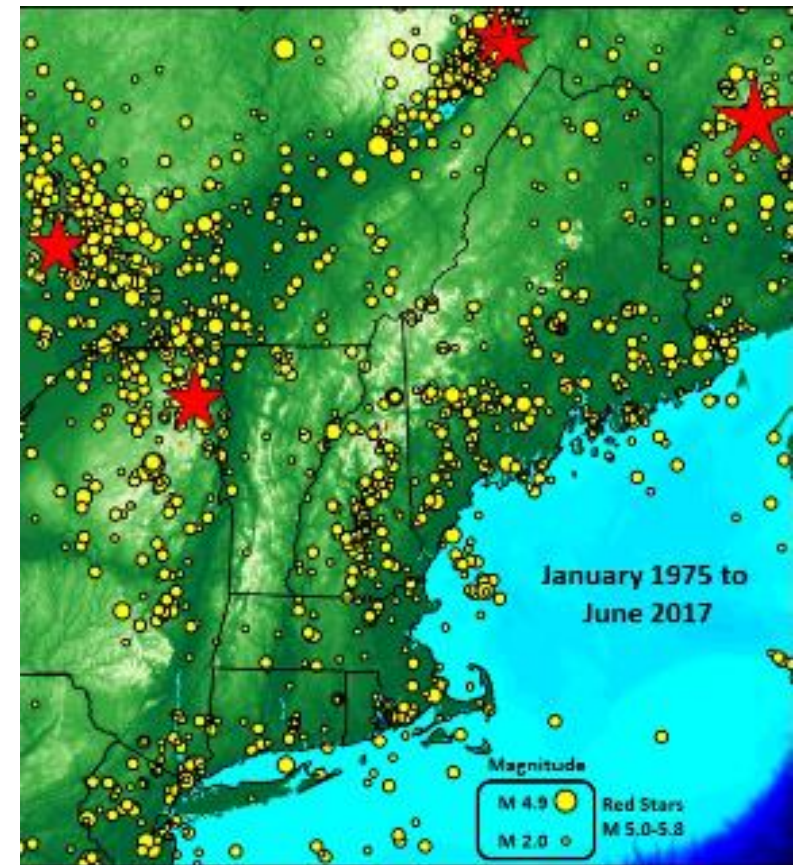


Figure 2-29: Area Earthquakes during January 1975 through June 2017

## ATTACHMENT 3: NATURAL HAZARD RISK

### Overview

A Natural Hazard Risk Assessment was conducted by GZA to evaluate the potential consequences of natural hazards to the people, economy, and built and natural environments of the Town of Hawley. The risk assessment was performed based on guidance provided by the FEMA Local Mitigation Planning Handbook and included the Local Planning Team (LPT). Two local planning meetings were held on February 17, 2022, and April 13, 2022.

The Natural Hazard Risk Assessment evaluates the effects of the relevant natural hazards (described in Attachment 2) on the community assets (identified in Attachment 1). The methodology assesses risk in terms of 1) the likelihood (i.e., frequency) of the natural hazard occurring; 2) the predicted effects (damages, losses, etc.); and 3) the consequences (e.g., costs) associated with those effects.

A vulnerability analysis was performed based on historical data and by spatially comparing the hazard data to the community assets. In particular, the vulnerability of the Town to flooding was assessed by identifying which assets are located within the FEMA flood zones (Special Flood Hazard Areas).

The FEMA Multi-Hazard MH-HAZUS program was used to evaluate losses due to seismic, flood and hurricane hazards. The hazards were ranked using a scoring system. The scoring system is based on the likelihood/frequency, severity/magnitude, and potential impact area. The scoring process and results were reviewed by the LPT to assess the Town's current "perceived" risk.

### Historical Hazard Events

Previous federal Presidential Disaster Declarations in Massachusetts and in Berkshire County were reviewed. FEMA Repetitive Loss Property data within the Town was also evaluated.

### Presidential Disaster Declarations:

Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. §§ 5121-5207 (the Stafford Act), a Governor of a State affected by an emergency, or a disaster can submit a request for a declaration by the President of the United States that a major disaster exists. The President can declare a major disaster for any natural event, including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought, or, regardless of cause, fire, flood, or explosion, that the President determines has caused damage of such severity that it is beyond the combined capabilities of state and local governments to respond.

A major disaster declaration provides a wide range of federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work (FEMA, "The Disaster Declaration Process", <https://www.fema.gov/disaster-declaration-process>).

**Table 3-1** presents disaster declarations which have been made since 1991 in Massachusetts (current through May 4, 2022). These disaster declarations included Franklin County. Based on the occurrence rate, the expected frequency of disaster declarations is about 1 every 2 years. Based on past declarations, the most common natural disasters were Severe Weather Hazards, including flooding, winter storms, snowstorms; and hurricanes and tropical storms.

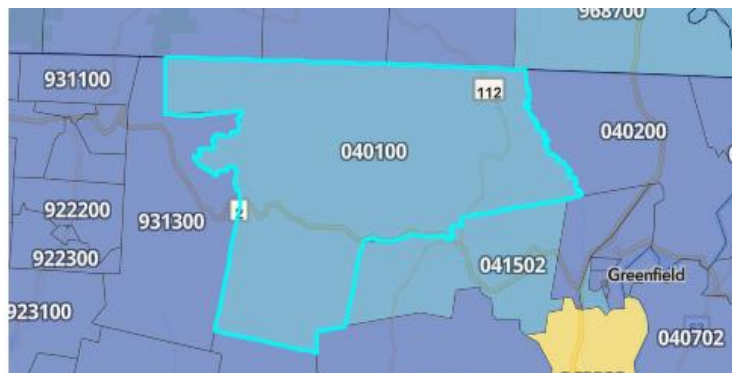
**Table 3-1: Disaster Declarations in Massachusetts 1991 to 2022**

**Ranking Hazards**

Disaster	Declaration Date	
COVID-19 Pandemic (DR-4496)	March 27, 2020	<p>The natural hazards were ranked according to the FEMA National Risk Index (FEMA, 2021). The National Risk index is a dataset and online tool that utilizes available natural hazard and community risk factors data to develop a relative risk measurement for counties and census tracts. Its intended use is to help planners and emergency managers at the local, regional, state, and federal level better understand the natural hazard risk of their communities.</p> <p>Risk is driven by loss due to natural hazard, social vulnerability, and community resilience. Risk is calculated using the following equation:</p> $\text{Risk} = \frac{\text{Expected Annual Loss} \times \text{Social Vulnerability}}{\text{Community Resilience}}$ <p>The risk index scores are calculated for each natural hazard. The social vulnerability and community resilience scores remain the same for each hazard, while the expected annual loss (EAL) varies by hazard. Social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards. The score is a relative score, and indicates the relative level of a community's social vulnerability compared to other communities at the same level. Community resilience is the ability of a community to prepare for a natural disaster, adapt to changing conditions, and withstand and recover rapidly from disruptions. Similar to social vulnerability, it is a relative score, and represents the community's relative level compared to other communities at the same level.</p> <p>The EAL represents the average economic loss in dollars resulting from a certain natural hazard each year. The EAL for each hazard is calculated as the product of exposure, annualized frequency, and historic loss ratio. Exposure represents the value of buildings, population, or agriculture potentially exposed to a natural hazard occurrence. Annualized frequency represents the expected frequency or probability of a natural hazard occurrence per year. Historic loss ratio represents the estimated percentage of the exposed building value, population, or agriculture value expected to be lost due to a natural hazard occurrence.</p>
Severe Winter Storm & Snowstorm (DR-4379)	July 19, 2018	
Severe Winter Storm & Flooding (DR-4372)	June 25, 2018	
Severe Winter Storm, Snowstorm & Flooding (DR-4214)	April 13, 2015	
Severe Winter Storm, Snowstorm & Flooding (DR-4110)	April 17, 2013	
Hurricane Sandy (DR-4097)	December 19, 2012	
Tropical Storm Irene (DR-4028)	September 3, 2011	
Severe Storm & Flooding (DR-1895)	March 29, 2010	
Severe Storms & Flooding (DR-1614)	November 10, 2005	
Severe Storms & Flooding (DR-1364)	April 10, 2001	
Heavy Rain, Flooding (DR-1224)	June 23, 1998	
Blizzard (DR-1090)	January 24, 1996	
Severe Coastal Storm (DR-920)	October 4, 1991	
Hurricane Bob (DR-914)	August 26, 1991	



The FEMA National Risk Index provides risk index scores at county and census tract levels. The report for census tract 040100 is included in **Attachment 13**. As shown in **Figure 3-1**, the census tract that includes Hawley is ranked as “Relatively Low” for the overall risk index. Further breakdown of the risk index for each hazard is presented in **Table 3-2**. The details of each natural hazard are presented in **Attachment 2**, including the expected probability of occurrence (i.e., Likelihood/Frequency). A Hazard Vulnerability Assessment was performed to evaluate the expected consequences (i.e., the Severity/Magnitude and Impact Area) of the top ranked hazards. The results of the vulnerability assessment are presented in this Attachment, in order of the hazard rank. There are qualitative ratings associated with each numerical score, ranging from “Very Low” to “Very High”. There are no specific numeric values that determine the rating since the scores are relative to other communities at the same level.



Risk Index Legend

**Figure 3-1 FEMA National Risk Index Score for Hawley**

**Table 3-2** presents the results of the hazard ranking for the Town (FEMA, 2022).

The top ranked hazards include: 1) Ice Storms, 2) Riverine Flooding and flooding caused by intense rainfall or poor drainage; and 3)

**Table 3-2: Natural Hazard Ranking Results for Hawley**

Severe Weather Hazards:	Hazard Index
Strong Wind	17.04
Tornadoes	18.69
Hurricanes/ Tropical Storms	10.18
Lightning	16.70
Hail	4.52
Flooding	19.75
Severe Winter Weather	8.47
Ice Storms	20.16
Climate-Related Hazards:	
Heat Wave/ Extreme Heat	0
Cold Wave/ Extreme Cold	9.67
Drought	0
Wildfire	3.40
Geologic Hazards:	
Earthquake	6.28
Landslides	5.94

Strong Wind caused by tornadoes, hurricanes/tropical storms, and/or thunderstorms.

An Ice Storm is a freezing rain situation with significant ice accumulations of 0.25 inches or greater. While the residents of Hawley are accustomed to managing the impacts of winter weather consisting of snow and cold, the LPT agreed that ice storms present a significant challenge as they are likely to result in downed trees and limbs that disrupt power transmission as well as the blocking of roads leaving some residents with no other options for egress. Riverine/overbank flooding is a highly ranked hazard due to: 1) flood inundation impacts to buildings; and 2) impacts to



transportation infrastructure, especially along the Chickley River, Mill Brook, and Clesson Brook.

Strong wind and related damages during tornadoes is also ranked highly due to its relatively high annualized frequency and its high historic loss ratio.

Severe winter weather (including greater than 10-inches snowfall) most frequently occur during Nor'easters, coincident with high winds, cold temperatures and blizzard conditions. They present risks due to transportation impacts (limited use of roadways), cold temperatures (including wind chill) and the potential for structure damage (roof failures). Winter weather has a high annualized frequency and ice storms have a high historic loss ratio.

Failure of the significant-hazard Hallockville Pond Dam due to a dam breach is a medium ranked hazard due to the unlikelihood of occurrence, lesser potential extent of flood inundation, and no potential loss of life.

Other hazards currently rank medium to low but are expected to become more impactful in the future due to climate change. In particular, these include:

- Extreme temperatures. The frequency and intensity of heat waves is expected to increase in the future. Although Hawley is located in a less developed environment, typically cooler by tree cover and higher elevations, its relatively high elderly population will be vulnerable to extended periods of extreme heat. Overall warming will also increase the northern migration of disease vectors such as West Nile Virus and increase the duration and intensity of tick-borne diseases such as Lyme's Disease.
- Drought. Droughts are expected to increase in the future with potential impacts to the Town's residential private wells.
- Wildfire. There have been no occurrences of wildfires in Franklin County from 1950 to 2020 and there is a low probability of a wildfire occurring in the near-term. However, the LPT expressed concern about this hazard given the large extent of forest in Hawley.

For comparison Hawley's hazard ranking with the Commonwealth, the census tract's overall risk index rating is slightly higher than the Commonwealth's average.

### Hazard Vulnerability Assessment

As indicated by the past Presidential Disaster Declarations (**Table 3-1**), Hawley (like most of Franklin County and much of Massachusetts) is principally vulnerable to the following frequent severe weather hazards: 1) flooding that occurs during hurricanes, tropical storms and nor'easters; 2) severe winds due primarily to hurricanes, which can occur coincident with flooding; and 3) heavy snowfall during winter nor'easters. Climate change has the potential to amplify the intensity and frequency of each of these hazards.

Although less frequent (or effecting less area), Hawley is also vulnerable to: 1) tornadoes; and 2) localized intense precipitation, resulting in localized poor drainage flooding. The attribution of climate change to tornadoes frequency and intensity has not been established. Climate change effects on precipitation are better understood and significant, with the frequency and magnitude of intense precipitation events expected to increase significantly in the near future.

The Hallockville Pond Dam presents a dam failure hazard.

### Flood Vulnerability

The Town is vulnerable to riverine flood events. There are many surface waters throughout the Town that present flooding potential; however, FEMA-mapped floodplain areas are limited to Chickley River, Mill Brook, and Clesson Brook. **Attachment 2** presents details about Hawley's flood hazards. **Figure 3-2** presents the FEMA special flood hazard areas within Hawley.

A screening level assessment of flood vulnerability relative to the FEMA 100-year (1% AEP) special flood areas indicates:

#### Essential Facilities:

- Fire Department: Vulnerable
- Highway Department: Vulnerable
- Town Offices: Vulnerable

#### Lifeline Systems:

- Water Pollution Control Facility: Not applicable (individual private septic systems may be vulnerable to flooding)
- Power Generation and Transmission: Generally not vulnerable
- Potable water: Private wells may be vulnerable to contamination by flooding
- Communications: Not vulnerable

#### Transportation Infrastructure:

- Airports: None present
- Public Transit Stations: None present
- Roads and Bridges: Vulnerable (Certain structures. See below)

Based on the effective FEMA Flood Insurance Rate Map (FIRM), certain Town roads are vulnerable to flooding, including:

- State Route 8A
- Middle Road
- Buckland Road

In addition, due to the steep terrain present in Hawley, there are multiple cross-culvert locations that drain surface runoff beneath roadways, which are susceptible to clogging by leaves and debris and which may overtop during heavy rain events and lead to erosion and failure of roadways.

#### High Potential Loss Facilities:

- Hallockville Pond Dam: Failure of the significant-hazard Hallockville Pond Dam due to a dam breach is a medium ranked hazard due to the unlikelihood of occurrence, lesser potential extent of flood inundation, and no potential loss of life.

#### National Flood Insurance Program (NFIP) Repetitive Losses

According to the FEMA Flood Insurance Manual, Effective April 1, 2020, a Repetitive Loss Structure is defined as a National Flood Insurance Program (NFIP)-insured structure that has had at least 2 paid flood losses of more than \$1,000 each in any 10-year period since 1978, and a Severe Repetitive Loss Building is any building that:

1. Is covered under a Standard Flood Insurance Policy made available under this title;
2. Has incurred flood damage for which:
  - 4 or more separate claim payments have been made under a Standard Flood Insurance Policy issued pursuant to this title, with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claims payments exceeding \$20,000; or

- At least 2 separate claims payments have been made under a Standard Flood Insurance Policy, with the cumulative amount of such claim payments exceed the fair market value of the insured building on the day before each loss.

As of 2/9/2022, there are no Repetitive Loss Properties (RLP) or Severe Repetitive Loss Properties (SRLP) within the Town of Hawley, as provided by the Massachusetts NFIP Coordinator.

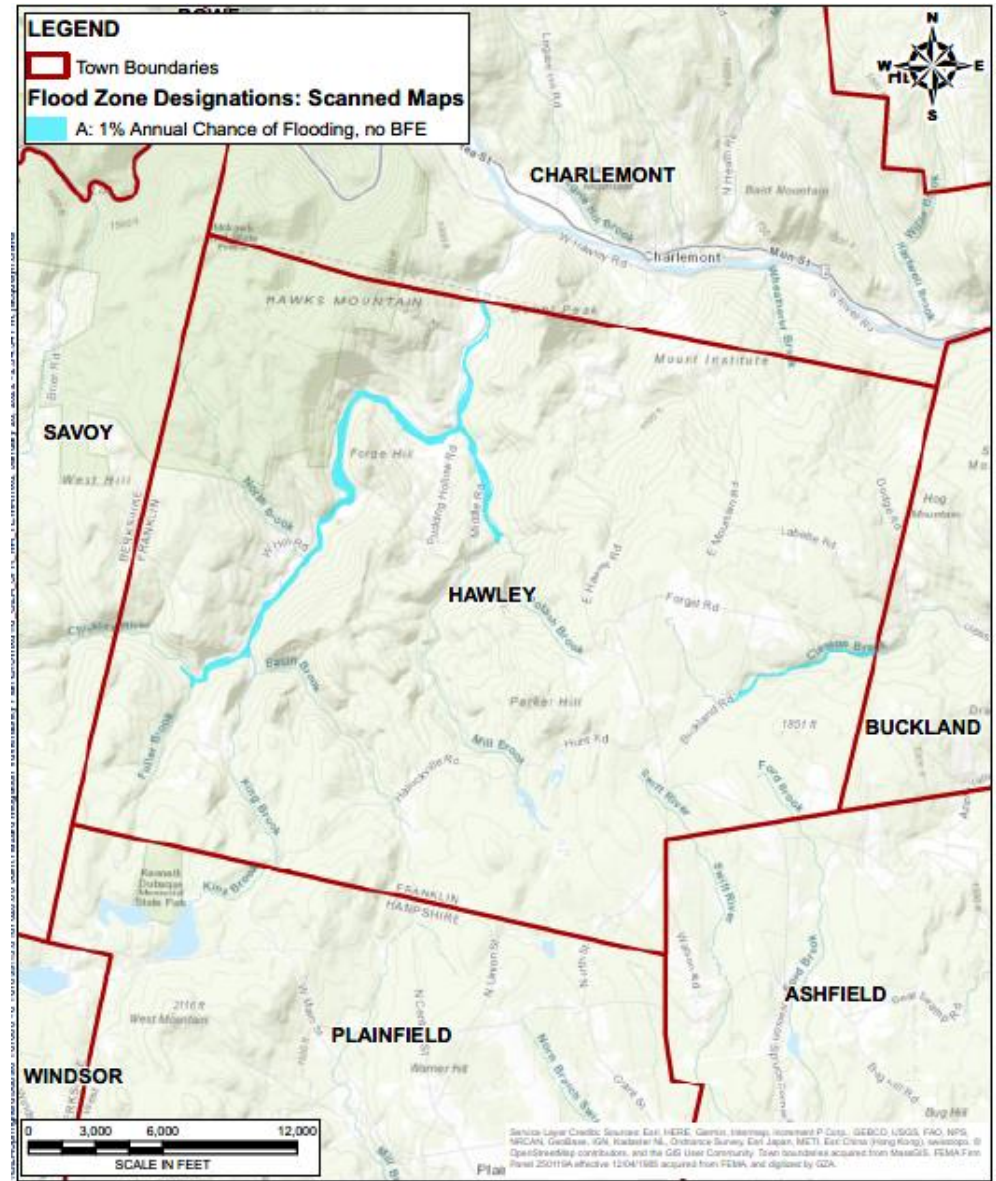
**Table 3-4** provides an overview of NFIP information for the Town of Hawley. FEMA maintains a database on these flood insurance policies and claims, which can be found at <https://www.fema.gov/policy-claim-statistics-flood-insurance>.

**Table 3-4: Hawley Flood Insurance Policies and Claims**

Item	(as of 2/9/22)
Flood insurance policies in force	4
Coverage amount of flood insurance policies	\$250,000 (Zone A) \$750,000 (Zone X)
Premiums paid	\$4,751 (Zone A) \$1,505 (Zone X)
Total losses (all losses submitted regardless of the status)	2
Closed losses (Losses that have been paid)	1
Open losses (Losses that have not been paid in full)	0
CWOP losses (Losses that have been closed without payment)	1
Total payments (Total amount paid on losses)	\$1,451

### Flood Risk Summary

As presented on the previous pages, the Town Office and State Route 8A-L, which provide essential services are located within the FEMA 100-year flood zone associated with Chickley River.



**Figure 3-2: FEMA Special Flood Hazard Areas (SFHAs)**

Legend: Blue shaded area indicates FEMA Base Flood inundation area (100-year recurrence interval)

#### Likelihood/Frequency:

While flooding can occur more frequently at Hawley, significant flood events are associated with the 1% AEP.

#### Severity/Magnitude

As part of the Plan preparation, GZA completed a Level 1 HAZUS-MH damage analysis for flood scenario (based on FEMA flood hazard delineation). The results are presented at the end of this Attachment. The results predict about \$3.08M to \$4.48M building and content damage for the 1% AEP (100-year recurrence interval) and the 0.2% (500-year recurrence interval flood, respectively.

Flooding is a top-ranked hazard due to: 1) potential flood inundation impacts to the Town's buildings and high associated economic losses; and impacts to transportation infrastructure.

As noted in **Table 3-4**, there are currently 4 NFIP-subsidized flood insurance policies in place. The Level 1 HAZUS scenario analyses identified 3 buildings vulnerable to flood damage (ranging from slight to substantial) for the 1% AEP and 0.2% AEP floods. Substantial damage will trigger specific flood regulations within the State Building Code, requiring that building repair or replacement be in compliance with current flood regulation.

#### Impact Area:

- 3 buildings are predicted to be impacted during the 1% and 0.2% AEP floods. This number represents 0.11% of the total number of buildings in the census tract that includes Hawley.

#### Strong Winds/ Tornadoes

Hawley is vulnerable to severe wind events due to hurricanes and tropical storms, nor'easters, thunderstorms and tornadoes. **Attachment 2** presents details about Hawley's wind hazards. Severe winds at Hawley occur most frequently due to hurricanes and tropical storms which can occur coincident with heavy precipitation and flooding. Severe winds can also occur at Hawley, although rarely, during tornadoes and more frequently during severe thunderstorms. High winds can also occur, frequently, during nor'easters (along with heavy rain and snow).

#### Likelihood/Frequency

The annual exceedance probability of experiencing High Winds within Franklin County is 28% AEP or 3.6-year recurrence interval.

The annual exceedance probability of experiencing a Tornado within Franklin County is 64% AEP or minimum of 1-year to 2-year recurrence interval.

#### Severity/Magnitude

Damages due to severe winds include: 1) damage to trees, often resulting in power outages and also potentially fatal accidents related to treefalls; 2) structure damage. **Table 3-5** presents the typical physical effects associated with different wind speeds. As shown on **Table 3-5**, significant, widespread damage can be expected due to sustained wind speeds of about 74 mph or greater.

As discussed in **Attachment 2**, During 1996 through 2021, Franklin County experienced 16 days of High Wind events with estimated gusts of about 58 to 69 mph resulting in about \$307,000 in property damage, one death, and one injury.

As part of the Plan preparation, GZA completed a Level 1 HAZUS-MH damage analysis for hurricane scenario. The results are presented at the end of this Attachment. The results predict about \$9.34M to \$57.76M building and content damage for the 1% AEP (100-year recurrence interval) and the 0.2% (500-year recurrence interval flood, respectively, for the census tract.

#### Impact Area

The Level 1 HAZUS scenario analyses identified 155 buildings (5.7% of total buildings) and 1,517 buildings (56% of total buildings) vulnerable to wind damage (ranging from minor to moderate) for the 1% AEP and 0.2% AEP, respectively, for the census tract.



**Table 3-5: Physical Effects associated with different wind speeds**

Sustained Wind Speed	Annual Recurrence Interval (years)	Physical Effects
6-38 kts (30-44 mph)	<1	Trees in motion. Light-weight loose objects (e.g., lawn furniture) tossed or toppled.
39-49 kts (45-57 mph)	2 to 10	Large trees bend; twigs, small limbs break, and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roof, doors). Building partially under construction may be damaged. A few loose shingles removed from houses. Carports may be uplifted; minor cosmetic damage to mobile homes and pool lanai cages.
50-64 kts (58-74 mph)	10 to 70	Large limbs break; shallow rooted trees pushed over. Semi-trucks overturned. More significant damage to old/weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas; mobile homes, carports incur minor structural damage; large billboard signs may be toppled
65-77 kts (75-89 mph)	70 to 300	Widespread damage to trees with trees broken/uprooted. Mobile homes may incur more significant structural damage; be pushed off foundations or overturned. Roof may be partially peeled off industrial/commercial/warehouse buildings. Some minor roof damage to homes. Weak structures (e.g., farm buildings, airplane hangars) may be severely damaged.
78+ kts (90+ mph)	>300	Many large trees broken and uprooted. Mobile homes severely damaged; moderate roof damage to homes. Roofs partially peeled off homes and buildings. Moving automobiles pushed off dry roads. Barns, sheds demolished.

## Dam Failure

Hallockville Pond Dam is the only significant hazard Dam within Hawley. There are no high hazard Dams in Hawley. Hallockville Pond Dam is owned by MA DCR. Significant hazard dams will likely cause damage to homes, businesses, and roadways in the event of dam failure.

Significant hazard dams are required by the Massachusetts Office of Dam Safety to have Emergency Action Plans (EAPs) to assist public safety personnel before, during, and after an uncontrolled release of water at the dams.

The EAP establishes the guidelines and procedures for addressing emergency conditions identified at the dam in time to take mitigative action such as notifying the appropriate emergency management officials of potential, impending, or active failing of the dam. Emergency conditions are generally identified by dam inspections (formal or casual) or triggered by unusual rainfall events or an earthquake. Identification of hazardous condition should be reported to the dam owner or to public safety personnel via 911 to initiate the notification process based on the Notification Flowchart (NFC) listing the personnel to be called and their phone numbers in case of emergency. The reader is referred to each dam's EAP for detailed information regarding these procedures.

Each EAP contains a Notification Flowchart (NFC) and Emergency Level Determination: The NFC indicates the chain of communication to be followed in the event of an emergency. The NFC indicates a Phase I and Phase II type of notification to be implemented depending on the emergency classification level (Condition I or II) as determined necessary based on the judgment of the personnel monitoring the emergency condition at the dam. The two emergency conditions outlined in the EAP are as follows:

- Condition I: "Potential failure situation is developing": This is a situation where a failure may eventually occur if left unattended. This situation will require Phase I response with continuous monitoring.

- Condition II: "Failure is imminent or has occurred": This is a situation where a failure has occurred, is occurring, or is just about to occur. This situation will require Phase I and II responses that will proceed with evacuation procedures.

General Responsibilities: The EAP includes specific emergency response actions for each emergency Condition to be carried out by the responsible local and state authorities. Decisions that are made should be made in accordance with the Incident Command Structure outlined in the EAP. Notification of local authorities is primarily the responsibility of the dam owner, depending on the identified emergency Condition as outlined in Section 5 of the EAP.

Evacuation Lists: The EAP includes a list of property lots and coordinates that would be notified in the event of an emergency.

Preparedness: The most important part of the EAP is the identification of a problem at the dam. The EAP notes that problem identification will be much easier if the dam is monitored closely by knowledgeable personnel. Maintenance District personnel must continue to monitor the dam on a regular basis. This is especially important during high rainfall events and during spring conditions when a large amount of snow melting occurs.

Each EAP also contains inundation mapping displaying the anticipated area subject to flooding in the event of dam failure. The inundation maps may consist of an overall index map and finer-scale resolution maps.

The dam failure inundation areas often include separate areas for failure during a flood and failure during a sunny day. Generally, the inundation areas close to the dam are larger than FEMA's Base Flood. Dam failure is often considered a potential low probability, high consequence type event. The reader is referred to the dam's EAP for more information.



## Ice Storms/ Severe Winter Weather

Hawley is vulnerable to ice storms. An Ice Storm is a freezing rain situation (rain that freezes on surface contact) with significant ice accumulations of 0.25 inches or greater.

Hawley is also vulnerable to frequent snowstorms, usually associated with nor'easters. The U.S. Northeast annually experiences about 20 to 40 nor'easters. Beginning in October and ending in April, the nor'easter season runs for seven months. Out of the 20 to 40 annual storms, at least two are severe. **Attachment 2** presents details about Hawley's severe winter weather hazards.

Heavy accumulations of ice can bring down trees and topple utility poles and communication towers. Ice can disrupt communications and power for days while utility companies repair extensive damage. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces (National Weather Service).

Damages due to severe winter weather include: damage to trees, often resulting in power outages and also potentially fatal accidents related to treefalls; structure damage, including roof collapse; and roadway issues including access limitations and vehicular accidents.

### Likelihood/Frequency

Between 2002 and 2021, there were a total of eight (8) Ice Storm event days in Franklin County that resulted in one (1) injury and \$45.4M property damage. Estimated Hawley ice storm frequency:

- 17% AEP or 6-year recurrence interval ice storm (3 years with 1 or more events over 18 years)

Between 1996 and 2021, there were a total of 90 Heavy Snow event days in Franklin County, with 11 days with property damage and no injuries or fatalities. Estimated Hawley snowfall frequency:

- 92% AEP or 1-year recurrence interval Heavy Snowfall (24 years with 1 or more events over 26 years)

### Severity/Magnitude

The severity/magnitude of severe winter weather is a function of the type of vulnerability. Winter weather vulnerabilities generally include: 1) building damage (e.g., roof collapse) due to snow weight; 2) branch fall and power line failure due to snow and ice weight and wind; and 3) roadway conditions due to ice and snowfall.

**Building Damage:** The Massachusetts State Building Code requires that structures be constructed in Hawley, at a minimum, to flat roof snow loads of 40 pounds per square foot (psf). The relationship of snow load to snow depth is a function of the water content of the snow (i.e., wet snow is heavier) and can be variable. In general, 30 psf snow loads correlates to about 24 inches of snow. For weight snow events (saturated snow = +/- 2 pcf), 30 psf correlates to about 15 inches of snow. During periods of cold, snow will not melt on roofs and will accumulate due to multiple snowfall events. Ref. <https://www.mutualbenefitgroup.com/insurance-101/storm-center/prevent-roof-collapse-on-your-home/>

**Tree and Powerline Damage:** 1/2" of ice can add 500 pounds load on power lines and trees, resulting in extensive damage. Similarly, greater than 6 to 8 inches of heavy snow accumulation on tree branches can result in significant tree damage.

**Roadway Conditions:** Black ice is a deadly driving hazard defined as patchy ice on roadways or other transportation surfaces that cannot easily be seen. It is often clear (not white) with the black road surface visible underneath. It is most prevalent during the early morning hours, especially after snow melt on the roadways has a chance to refreeze over night when the temperature drops below freezing. Black ice can also form when roadways are slick from rain and temperatures drop below freezing overnight.

Impact Area: Town wide



# ATTACHMENT 4: FEMA HAZUS-MH SIMULATION RESULTS

## FEMA HAZUS-MH HAZARD SCENARIO ANALYSES

Scenario analyses predict the impacts of an event or particular type of an event. This level of analysis considers potential impacts to infrastructure, people, and cost, as well as likelihood or frequency of the event. Scenario analyses were performed using the FEMA Multi-Hazard HAZUS-MH software.

Level 1 HAZUS analyses were performed using the HAZUS Flood, Hurricane and Earthquake modules. A Level 1 HAZUS analysis calculates basic estimates of earthquake, flood and hurricane wind losses based on national databases and expert-based analysis parameters included in the HAZUS software. The data used for this analysis included the HAZUS “default” data included in the HAZUS software and 2010 US Census Data. Level 1 analyses are appropriate for initial loss estimation at the planning level, and is not intended for establishing the flood, earthquake, or hurricane related risk of any specific parcel or property. The HAZUS analysis was completed for the census tract that contains Hawley, which is the smallest region that analysis can be conducted at. Census tract 040100 contains Hawley, as well as the neighboring Towns of Charlemont, Heath, Rowe, Colrain, and Monroe.

Potential losses estimated by HAZUS include:

- **Physical damage**, to residential and commercial buildings, schools, critical facilities, and infrastructure;
- **Economic loss**, including lost jobs, business interruptions, repair, and reconstruction costs;
- **Social impacts**, including estimates of shelter requirements, displaced households, and population exposed to scenario floods, earthquakes, and hurricanes

<https://www.fema.gov/HAZUS>

There are 2,704 buildings in Census tract 040100, with a total building replacement value (excluding contents) of \$642 million (2010 dollars; HAZUS). **Table 4-1** presents the total building value in Census tract 040100.

Approximately 91.94% of the buildings (representing about 82.48% of the total value) are residential. **Table 4-2** provides an overview of the expected damage and loss categories that will be the focus of this scenario analysis based on the results generated from the Earthquake, Flood and Hurricane HAZUS module runs.

**Table 4-1: Hawley Building Exposure and Occupancy Type**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	529,722	82.5%
Commercial	57,712	9.0%
Industrial	24,874	3.9%
Agricultural	5,098	0.8%
Religion	3,590	0.6%
Government	5,026	0.8%
Education	16,196	2.58%
Total	642,218	100%

**Table 4-2: Damage and Loss Categories**

DIRECT DAMAGE
General Building Stock
Essential Facilities
DIRECT LOSSES
Shelter Needs
INDIRECT LOSSES
Economic Loss
Property Damage
Business Interruption



## FLOOD SCENARIO

The Town is vulnerable to riverine flood events. The flood scenario analysis used the default building stock from HAZUS as presented categorically in **Table 4-2** and the FEMA-defined flood hazard zones for Chickley River and Mill Brook. **Table 4-3** presents the estimated damages and losses for the 100-year (1%), and 500-year (0.2%) flood events for: 1) buildings; 2) essential facilities; 3) displaced people and sheltering; and 4) Economic Losses.

### Building Damages

Only one building would experience at least moderate damage from a 100-year recurrence interval flood event and two (2) buildings would experience at least moderate damage from a 500-year recurrence interval flood event. No buildings are predicted to experience substantial damage.

The associated economic losses (including business interruption) range from \$3.08 million (100-year event) to \$4.58 million (500-year event).

### Essential Facilities

Based on the HAZUS flood analysis, zero (0) essential facilities are expected to be impacted or lose functionality during the 100-year recurrence interval flood event, while one (1) fire station may be subject to at least moderate damage during the 500-year recurrence interval flood event.

### Sheltering Requirements

Based on the HAZUS flood analysis, 4 households would be displaced and 24 people would require shelter for the 100-year flood event and 5 households would be displaced and 28 people would require shelter for the 500-year flood event.

**Table 4-3: HAZUS Flood Scenario Results**

	100-Yr	500-Yr
<b>Building Damages (# of Buildings)</b>		
# of Buildings with Slight Damage (1-10%)	2	1
# of Buildings with Moderate Damage (11-50%)	1	2
# of Buildings with Substantial Damage (>50%)	0	0
<b>TOTAL</b>	<b>3</b>	<b>3</b>
<b>Essential Facilities Building Damages (Lose of Use &gt; 1 Day)</b>		
Emergency Operations Center	0	0
Fire	0	1
Hospitals	0	0
Police	0	0
Schools	0	0
<b>TOTAL</b>	<b>0</b>	<b>0</b>
<b>Sheltering Requirements</b>		
Displaced Households (# Households)	4	5
Short-Term Shelter (# People)	24	28
<b>Economic Losses (in \$millions of dollars)</b>		
Residential Property - Building Loss	\$0.67M	\$0.98M
Total Property - Building Loss	\$1.07M	\$1.56M
Business Interruption	\$2.01M	\$3.02M
<b>Total</b>	<b>\$3.08M</b>	<b>\$4.58M</b>

## HURRICANE WIND SCENARIO

FEMA HAZUS estimates losses from hurricane winds for regions at the census tract level. As Hawley is small in geographic area, the census tract that includes Hawley also includes the neighboring Towns of Charlemont, Heath, Rowe, Colrain, and Monroe. Thus, the hurricane wind analysis by HAZUS includes inventory and results covering the entire census tract.

The Town will likely experience increasing order of magnitude impacts from hurricane wind events with increasing intensity that have a lower probability of occurrence especially from hurricanes with storm tracks that move directly through or in close proximity to Hawley. **Table 4-4** shows the estimated damages for the 100-year (1%), and 500-year (0.2%) hurricane-wind events for: 1) buildings, 2) essential facilities, 3) displaced people and sheltering, and 4) Economic Losses from the 100-year and 500-year hurricane-wind events.

### Building Damages

In Census tract 040100, hurricane wind events are predicted to cause minor to severe damage to buildings, with 155 building experiencing minor to moderate damage from a 100-year recurrence interval wind event, and 1,517 buildings experiencing moderate to severe damage from a 500-year recurrence interval wind event.

The estimated economic losses are about \$9.34 million and \$57.76 million, for the 100-year and 500-year events, respectively.

### Essential Facilities

All 26 of the essential facilities are expected to be impacted or lose functionality during both the 100-year and 500-year recurrence interval wind events.

### Sheltering Requirements

Based on the HAZUS wind analysis, no households would be displaced and no people would require shelter for the 100-year event, and four (4) households would be displaced and two (2) people would require shelter during the 500-year hurricane wind event.

**Table 4-4: HAZUS Hurricane Wind Scenario Results**

	100-Yr	500-Yr
<b>Building Damages (# of Buildings)</b>		
# of Buildings with Minor Damage	2	45
# of Buildings with Moderate Damage	153	1,456
# of Buildings with Severe Damage	0	61
# of Buildings Destroyed	0	0
<b>TOTAL</b>	<b>155</b>	<b>1,517</b>
<b>Essential Facilities Building Damages (Loss of Use &gt; 1 Day)</b>		
Emergency Operations Center	9	9
Fire	8	8
Hospitals	N/A	N/A
Police	4	4
Schools	5	5
<b>TOTAL</b>	<b>26</b>	<b>26</b>
<b>Sheltering Requirements</b>		
Displaced Households (# Households)	0	4
Short-Term Shelter (# People)	0	2
<b>Economic Losses</b>		
Residential Property	\$9.107M	\$54.61M
Total Property	\$9.117M	\$54.65M
Business Interruption	\$217,800	\$3.107M
<b>Total</b>	<b>\$9.34M</b>	<b>\$57.76M</b>

## EARTHQUAKE SCENARIO

FEMA HAZUS estimates losses from earthquakes for regions at the census tract level. Similar to the flooding and hurricane wind analysis, the earthquake analysis is conducted for census tract 040100, which includes Hawley along with the Towns of Charlemont, Heath, Rowe, Colrain, and Monroe.

This earthquake analysis was conducted assuming a magnitude 5 earthquake on the Richter scale. **Table 4-5** summarizes the estimated damages for the 1,000-year and 2,500-year recurrence interval earthquakes for: 1) buildings, 2) essential facilities, 3) displaced people and sheltering, and 4) Economic Losses from the 1000-year and 2500-year earthquake events.

### Building Damages

In the census tract, 91 buildings and 205 buildings are predicted to experience damage, ranging from slight to extensive, from a 1,000-year (aka 5% in 50 years) and 2,500 -year (aka 2% in 50 years) recurrence interval earthquake, respectively. The majority of damage is predicted to be slight.

The estimated economic losses are about \$1.27 million and \$3.84 million, for the 1,000-year and 2,500-year events, respectively.

### Essential Facilities

All 26 of the essential facilities are expected to be impacted or lose functionality during either the 1,000-year and 2,500-year recurrence interval earthquake events.

### Sheltering Requirements

Based on the HAZUS earthquake analysis, no households would be displaced for the 1,000-year event and one (1) would be displaced during the 2,500-year event. No people would require shelter for the 1,000-year or 2,500-year earthquake events.

**Table 4-5: HAZUS Earthquake Scenario Results**

	1,000-Yr	2,500-Yr
Building Damages (# of Buildings)		
# of Buildings with Slight Damage	71	153
# of Buildings with Moderate Damage	19	48
# of Buildings with Extensive Damage	1	4
# of Buildings with Complete Damage	0	0
<b>TOTAL</b>	<b>91</b>	<b>205</b>
	1,000-Yr	2,500-Yr
Essential Facilities Building Damages (Loss of Use > 1 Day)		
Emergency Operations Center	9	9
Fire	8	8
Hospitals	N/A	N/A
Police	4	4
Schools	5	5
<b>TOTAL</b>	<b>26</b>	<b>26</b>
	1,000-Yr	2,500-Yr
Sheltering Requirements		
Displaced Households (# Households)	0	1
Short-Term Shelter (# People)	0	0
Economic Losses	1,000-Yr	2,500-Yr
Residential Property	\$0.67M	\$2.14M
Total Property	\$1.04M	\$3.25M
Business Interruption	\$0.234M	\$0.595M
<b>TOTAL</b>	<b>\$1.27M</b>	<b>\$3.84M</b>

## ATTACHMENT 5: POTENTIAL STATE AND FEDERAL FUNDING SOURCES

Several of the proposed hazard mitigation projects and actions may be eligible activities for funding under the FEMA Hazard Mitigation Assistance (HMA) Grant Programs. The FEMA HMA Grant Programs include two non-disaster mitigation grant programs that include the BRIC and Flood Mitigation Assistance grant programs, and one disaster mitigation grant program that is the Hazard Mitigation Grant Program. An overview of each program is outlined as follows.

### Building Resilient Infrastructure and Communities (BRIC)

BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program. On an annual basis FEMA will set aside up to 6% of the annual Disaster Recovery Fund for proactive mitigation and community capacity building planning projects. For Fiscal Year (FY) 2021 BRIC grant applications were due to FEMA on January 28, 2022 with \$1 billion available in funds. For FY 2021, FEMA increased its allocations by \$400,000 to \$1 million to the Commonwealth of Massachusetts for Capability- and Capacity-Building (C&CB) activities. Additionally, this change includes an increase to mitigation planning and planning-related activities of \$500,000 per applicant. C&CB activities enhance the knowledge, skills, expertise, etc., of the current workforce to expand or improve the administration of mitigation assistance. This includes activities in the following sub-categories: building codes activities, partnerships, project scoping, mitigation planning and planning-related activities, and other activities. \$919,000,000 was also available for applicants (i.e., States, District of Columbia, U.S. territories, and Indian tribal governments (federally recognized)) through a national competition for BRIC grants for proactive large and small mitigation projects (with a new focus on lifeline facilities, natural and nature-based features, innovative projects, and large projects). For more information on the FY2021 BRIC Notification of Funding Opportunities please go to [Fiscal Year 2021 Notices of Funding Opportunities for Hazard Mitigation Assistance Grants | FEMA.gov](#) webpage.

The BRIC program guiding principles are supporting communities through

capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. The [Mitigation Action Portfolio](#) is an online resource that introduces the BRIC grant program with many project case history examples of eligible hazard mitigation activities, the community lifelines involved, and the funding partners involved around the country. BRIC's final Policy will be published soon in Federal Register. These grants will require a national disaster declaration within the past seven years, which includes the Whole of America COVID-19 Pandemic Emergency Declaration. In FY 2021, \$1 Billion was available for the BRIC grant program. Applications were due to FEMA on January 28, 2022. The Town of Hawley will be eligible as a sub-applicant to the Massachusetts Emergency Management Agency (MEMA) for BRIC funding for FY 2022. For more detailed program information on the BRIC program please go to [BRIC Grant Program](#). (04/20/22)

### Flood Mitigation Assistance (FMA)

The purpose of the FMA program is to reduce or eliminate the risk of repetitive flood damage to buildings and structures insured under the [National Flood Insurance Program](#) (NFIP). The FMA Program makes federal funds available to state, local, tribal, and territorial governments available for: 1) Project Scoping (previously Advance Assistance); 2) Community Flood Mitigation Projects; 3) Technical Assistance; 4) Flood Hazard Mitigation Planning; and Individual Flood Mitigation Projects. FEMA Funding for PDM and FMA is appropriated by Congress annually and awarded on a nationally competitive basis. In FY 2021, \$160 Million was available for the FMA grant program. Applications were due to FEMA on January 28, 2022. The Town of Hawley will be eligible as a sub-applicant to the MEMA for FMA funding for FY 2022. For more detailed program information on the FMA program please go to [FMA Grant Program](#). (02/16/22)

### Hazard Mitigation Grant Program (HMGP)

The HMGP provides funds to states, territories, tribal governments, and other communities after a disaster, to reduce or eliminate future risk to lives and property from natural hazards. The funding for FEMA's HMGP is 15% of the total assessed damages for a given disaster for states that meet FEMA's standard Mitigation Plan requirements, which applies to the Commonwealth

of Massachusetts. The HMGP application period is open for one year from the disaster declaration date.

The federal share of HMGP assistance is not less than 75 percent of the eligible cost. The HMGP requires a 25% local match for traditional Hazard Mitigation Assistance (HMA) projects. The most recent open disaster was announced on July 19, 2018 - Massachusetts Severe Winter Storm and Snowstorm (DR-4379-MA) and the application period closed on July 18, 2019. On March 13, 2020, the United States declared a nationwide emergency from the COVID-19 global pandemic which is still ongoing. On Aug. 8, 2021, an additional 3.46 billion in mitigation funding was announced for 59 major disaster declarations for COVID-19 global pandemic. Future HMGP funding will become available during the next open disaster declaration. <https://www.fema.gov/hazard-mitigation-grant-program> (04/20/22)

MEMA manages the HMGP application process by providing a state application that eligible entities complete and submit to MEMA electronically. Note that the application process for BRIC and FMA is conducted through FEMA's Grants Outcome (GO) online application process system (see <https://www.fema.gov/grants/guidance-tools/fema-go>). The application period for FY 2021 BRIC and FMA closed at 2pm on January 28, 2021.

All three HMA programs are managed by the MEMA with support from Department of Conservation and Recreation (DCR) and Executive Office of Energy and Environmental Affairs (EOEEA). Contact MEMA at (508) 820-1443 for more information on each of these HMA grant programs.

### Public Assistance (PA)

FEMA's Public Assistance (PA) grant program provides federal assistance to governmental organizations and certain private nonprofit (PNP) organizations following a Presidential disaster declaration. Through the program, FEMA provides supplemental federal disaster grant assistance for debris removal, life-saving emergency protective measures, and the repair, replacement, or restoration of disaster-damaged publicly-owned facilities, and the facilities of certain PNP organizations. The PA program also encourages protection of these damaged facilities from future events by

providing assistance for hazard mitigation measures during the recovery process. The federal share of assistance is not less than 75 percent of the eligible cost. The Recipient (usually the state) determines how the non-federal share (up to 25 percent) is split with the subrecipients (eligible applicants). <https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit>

### HUD Disaster Recovery and Resiliency Grants

#### Community Development Block Grant – Disaster Recovery (CDBG-DR)

Similar to FEMA's HMGP, HUD provides disaster recovery grants to help municipalities like Hawley and the State recover from Presidentially-declared disasters, especially in low-income areas. The goal of these grants is to rebuild the impacted areas and provide critical funding to start the recovery process. The CDBG-DR program allows for the funding of a wide range of recovery activities including planning activities that aid communities and neighborhoods that may otherwise not recover because of a lack of resources.

### US Department of Agriculture's (USDA) and other Federal Grants

#### Natural Resources Conservation Services (NRCS)

The NRCS is the US Department of Agriculture's (USDA) leading agency providing voluntary technical and financial assistance to conservation districts, private land-owners, tribal governments, and other organizations to help sustainably manage, conserve and improve natural resources at the local level. Two financial programs that offer funding support in response to natural hazards are outlined as follows.

#### Emergency Watershed Protection Program (EWP)

Congress established the EWP to assist public and private landowners in response to emergencies resulting from natural hazards including riverine flooding and storms. The mission of the EWP program is to assist people and conserve natural resources by reducing the future impacts to public safety and property caused by floods, storms and other natural hazards. The NRCS is the managing agency for the EWP program that includes two focus areas

which are: EWP-Recovery and EWP-Floodplain Easement (FPE).

The EWP-Recovery provides recovery assistance to public and private landowners as a result of a natural disaster that requires a 25% local match with the NRCS providing a 75% match for the construction cost for emergency measures. The EWP-FPE provides assistance to privately-owned lands or lands owned by a local or state government that have been damaged by flooding at least once within the previous calendar year or have been subject to flood damage at least twice within the previous ten years.

#### Watershed & Flood Prevention Operations (WFPO) Program

The Watershed Protection and Flood Prevention Act of 1954 authorizes the NRCS to provide technical and financial assistance to states, local and tribal governments (project sponsors) for the planning and implementation of approved watershed plans. The NRCS works with local sponsors to protect and restore watersheds from damage caused by erosion, floodwater and sediment, to conserve and develop water and land resources, and to solve natural resource and related economic problems on a watershed basis. In Massachusetts, the project sponsor for watershed projects is the Massachusetts Department of Conservation and Recreation (MA DCR). The MA DCR provides assistance for the implementation of measures outlined in approved plans, and is focusing their efforts on reducing flood damages.

#### U.S. Department of Commerce Economic Development Administration Disaster Recovery Grants

The Economic Development Administration (EDA) often releases a Disaster Recovery Supplemental grant program to address economic development challenges caused by a disaster. For example, in June 2019, Congress passed the Additional Supplemental Appropriations for Disaster Relief Act providing EDA with \$600 million in additional Economic Adjustment Assistance (EAA) Program funds. These funds are for expenses related to flood mitigation, disaster relief, long-term recovery, and restoration of infrastructure in areas impacted by hurricanes, tornadoes, wildfires, volcanic eruptions, and earthquakes. Of the 2019 total available funding, \$50 million was open for states including Massachusetts. Recent EDA recovery efforts include funding for the 2021 Kentucky tornado damage relief and 2020 Hurricane Ida relief for Louisiana. EAA funds can be awarded to assist a wide variety of activities

related to disaster recovery focused on economic development, including economic recovery strategic planning grants and construction assistance. Through this program, EDA can support both the development of disaster recovery strategies and the implementation of recovery projects identified with those strategies, including construction activities, capitalizing revolving loan funds (RLFs), and a variety of others. Disaster recovery project activities that can be eligible for Disaster Supplemental grants include, but are not limited to, economic recovery and resiliency projects that:

- Support the creation of new businesses and jobs in a variety of industry sectors, including, but not limited to advanced manufacturing, agriculture, energy, information technology, health care, telecommunications, tourism and recreation, transportation, and cultural and natural assets.
- Implement local and regional job creation and growth and economic diversification strategies targeted towards affected workers and businesses.
- Construction activities, including the restoration of damaged infrastructure, infrastructure enhancement, building new infrastructure including high performance and resilient infrastructure.
- Strengthening or developing existing or emerging industry clusters.
- Resiliency projects to increase the ability of a community or region to anticipate, withstand, and bounce back from future economic injuries and disasters. This may include: ensuring redundancy in telecommunications and broadband networks; promoting business continuity and preparedness; industrial diversification; employing safe development practices in business districts and surrounding communities; conducting disaster recovery planning with key stakeholders; and other methods that strengthen local and regional capacity to troubleshoot and address vulnerabilities within the regional economy.
- Developing business incubator programs.
- Enhancing access to and use of broadband services to support job growth through business creation and expansion.

- The development of economic development diversification strategies in accordance with EDA CEDS recommendations.
- Facilitating access to private capital investment and providing related capacity building and technical assistance, such as effective utilization of capital investment for business development and job creation.
- Facilitating and promoting market access for goods and services.

<https://www.eda.gov/disaster-recovery/> (04/20/2022)

### Commonwealth of Massachusetts Grants

#### **Municipal Vulnerability Preparedness (MVP) Grant Programs**

The Municipal Vulnerability Preparedness (MVP) Grant Program provides direct funding and support to cities and towns to complete a community-driven process that will bring together climate change information and local knowledge to identify top hazards, current challenges, and community strengths and then to develop priority actions to improve the municipality's resilience to all natural and climate-related hazards using a flexible, tested approach called the Community Resilience Building (CRB) workshop guide. The program provides access to a pool of state-certified MVP providers, a standardized toolkit for assessing climate change vulnerability and developing strategies, and access to the best available statewide climate projections and data.

Upon successful completion of the CRB process, municipalities will be designated as a "Municipal Vulnerability Preparedness (MVP) program community," or an "MVP Community" which enables communities to participate in the MVP Action Grants for program implementation, leads to increased standing in future state funding opportunities and indicates the

community's commitment to preparing for climate change. Completion of the program will ensure that as municipalities make investments, set policy, and implement climate change adaptation projects they have a thorough understanding of their risk and vulnerabilities from climate change impacts and how these impacts specifically affect their residents, community, local economy and natural resources.

<https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program>

#### **MVP Planning Grants**

Funding is to support municipalities who are completing climate change vulnerability assessments and resiliency planning using the Community Resilience Building workshop guide, and to allow them to procure an MVP certified provider (chosen from a list provided by the Commonwealth), to assess vulnerability to a full range of climate change impacts, including temperature changes, extreme weather, sea level rise, inland flooding, changes in precipitation, and other impacts, across multiple sectors of the municipality.

#### **MVP Action Grants**

The MVP Action Grant offers financial resources to municipalities that are seeking to advance priority climate adaptation actions to address climate change impacts resulting from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate impacts. To discuss potential actions, contact the MVP Coordinator for the Berkshires and Hilltop Region, Carrienne Petrik, at [carrienne.petrik@mass.gov](mailto:carrienne.petrik@mass.gov). For more information on MVP Action Grants refer to <https://www.mass.gov/s.rvice-details/mvp-action-grant>.

**ATTACHMENT 6: PUBLIC REVIEW DOCUMENTATION**






**Town of Hawley  
Multi-Hazard Mitigation Plan Update  
Municipal Vulnerability Preparedness Plan  
Planning Team Meeting #1**



February 17, 2022

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Proactive By Design.  
Our Company Commitment

1




**AGENDA**

- Planning Team: Attendance/Introductions
- Hazard Mitigation Plan Background
- MVP Background
- Project Schedule
- Public Outreach Coordination
- HMP
  - Critical Facilities / Assets Inventory
  - Hazards Characterization / Vulnerability
  - Risk Assessment



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## HAWLEY HAZARD MITIGATION PLAN UPDATE Planning Process

Local Planning Team / Core Team	Name
Core Team Leader; Conservation Commission	Williams Cosby
Hawley Town Clerk	Liz Billings
Resident	Sarah Ohmann
Highway Department	Gary Mitchell, Superintendent
Resident	Constance Emmett
Conservation Commission	Lloyd Crawford
Volunteer Fire Department	Greg Cox, Chief
Volunteer Fire Department	Brandon Root

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## HAZARD MITIGATION PLANNING BACKGROUND

**PURPOSE:** Hazard Mitigation planning is a proactive effort to identify actions that can reduce the dangers to life and property from natural hazard events, such as hurricanes, tornadoes, winter storms and earthquakes.

**REQUIREMENTS:** The [Federal Disaster Mitigation Act of 2000](#) requires all municipalities that wish to be eligible to receive FEMA funding for hazard mitigation grants, to adopt a local multi-hazard mitigation plan and update this plan in five year intervals.

**THE TOWN OF HAWLEY  
2014 MULTI-HAZARD MITIGATION PLAN**



Prepared by:  
**The Hawley Multi-Hazard Mitigation Planning Committee**  
 Gargan Cox, Emergency Management Director  
 Lloyd Crawford, Conservation Commission and Planning Board  
 John Sears, Select Board and Hawley Historical Commission  
 Virginia Gilbert, Select Board Assistant


and

**The Franklin Regional Council of Governments**  
 Peggy Sloan, Director of Planning & Development  
 Kimberly Nookle-MaPlace, P.G., Natural Resources & Land Use Program Manager  
 Gretchen Johnson, Planning Grant Administrator  
 Alyssa Larson, Land Use Planner  
 Ryan Clark, Smart GIS Specialist

This project was funded by a grant received from the Massachusetts Emergency Management Agency (MEMA).

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## HAZARD MITIGATION PLANNING BACKGROUND


### FEMA UNIFIED HAZARD MITIGATION ASSISTANCE (HMA) GRANTS

PROGRAM	FUNDING SOURCE	DESCRIPTION	FUNDING SOURCE	HMP STATUS
HAZARD MITIGATION GRANT PROGRAM	HMGP	Assists in implementing long-term hazard mitigation planning and projects	Tied to Disaster Declaration	Approved Plan must be in place at time of grant award*
PRE-DISASTER MITIGATION	PDM	Being replaced by BRIC (see below)		
FLOOD MITIGATION ASSISTANCE	FMA	Provides funds for planning and projects to reduce or eliminate risk of flood damage to buildings that are insured annually under the National Flood Insurance Program.	Re-authorization ongoing in Congress	Approved Plan must be in place by the grant application deadline and at the time of grant award*
HMGP POST FIRE GRANT		Assistance available to help communities implement hazard mitigation measures after wildfire disasters.	States, federally-recognized tribes and territories affected by fires resulting in an Fire Management Assistance Grant (FMAG) declaration on or after October 5, 2018, are eligible to apply.	
BUILDING RESILIENT INFRASTRUCTURE & COMMUNITIES	BRIC	Support for states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face		Approved Plan must be in place by the grant application deadline and at the time of grant award

\*except for planning grants to update a HMP

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## MVP Principles

### A community-led, accessible process that

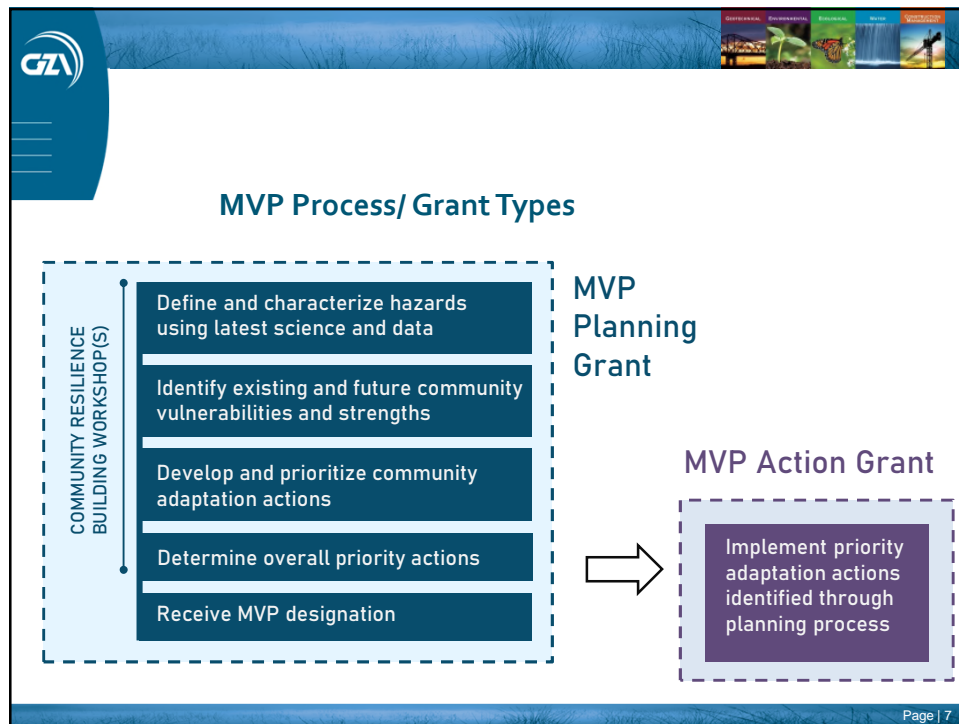
- Employs local knowledge and buy-in
- Utilizes partnerships and leverages existing efforts
- Is based on best available climate projections and data
- Incorporates principles of nature-based solutions
- Demonstrates pilot potential and is proactive
- Reaches and responds to risks faced by Environmental Justice (EJ) communities and vulnerable populations

**Why nature-based?**

Where appropriate, nature-based solutions can be more cost-effective, protect water quality and quantity, sustain lands that provide food and recreation opportunities, reduce erosion, and minimize temperature increases associated with developed areas and climate change.

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7

The slide is titled "CRB Workshop Overview" and features the GZA logo in the top left corner and a navigation bar at the top right with icons for Climate Action, Resilience, Community, Water, and Vulnerability.

**Objectives:**

- 1. Define top hazards.** Understand connections between ongoing issues, hazards, and local planning and actions in your Community.
- 2. Identify and map vulnerabilities and strengths** to develop infrastructure, societal and environmental risk profiles for your Community.
- 3. Develop and prioritize actions** that reduce vulnerabilities and reinforce strengths for your community - local organizations, academic institutions, businesses, private citizens, neighborhoods, and community groups.
- 4. Identify opportunities** to advance actions that further reduce the impact of hazards and increase resilience in your Community.

The page number "Page | 8" is located in the bottom right corner.

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## HAWLEY HMP/MVP Planning Process - Schedule

Planning Meetings	Date
Planning Team Meeting #1	February 17, 2022
CRB Workshop #1	Mid-March (3/9, 3/11, 3/16, 3/17)
CRB Workshop #2	Late March (3/25, 3/28, 3/29, 3/30)
Planning Team Meeting #2	Mid-April (4/7, 4/8, 4/11 - 4/15)
MVP Listening Session	Late April (4/25, 4/27-4/29)
HMP Listening Session	Early May (5/6, 5/9-5/11)
Final Draft Plan provided to Town	6/1/2022

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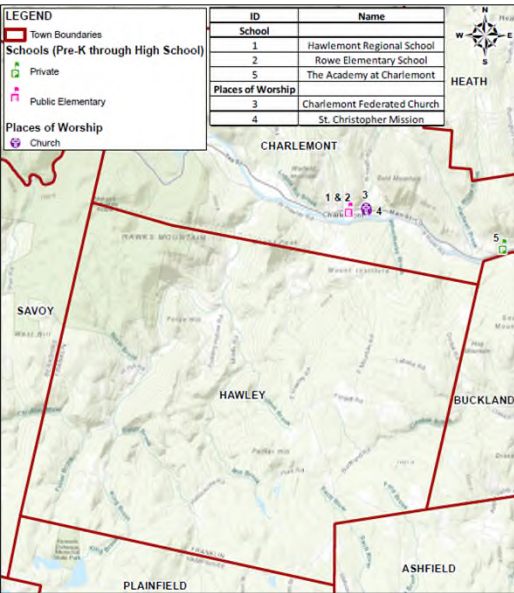


## HAWLEY HAZARD MITIGATION PLAN UPDATE Inventory of Assets

**The People:  
Support, High Occupancy,  
and Vulnerable Populations**

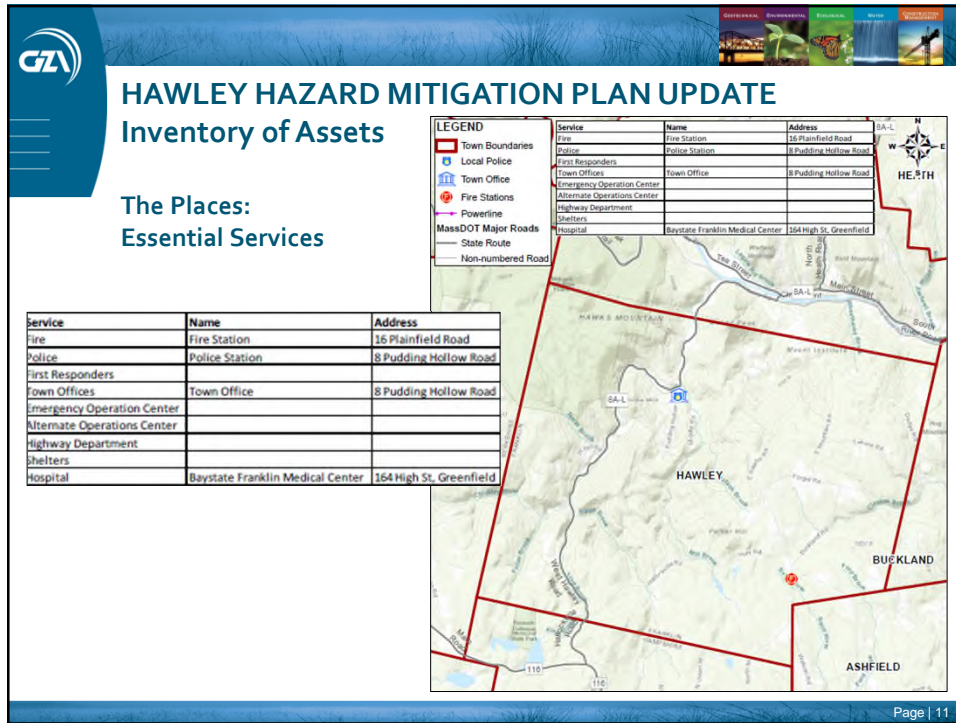
ID	Name
<b>School</b>	
1	Hawlemont Regional School
2	Rowe Elementary School
5	The Academy at Charlemont
<b>Places of Worship</b>	
3	Charlemont Federated Church
4	St. Christopher Mission

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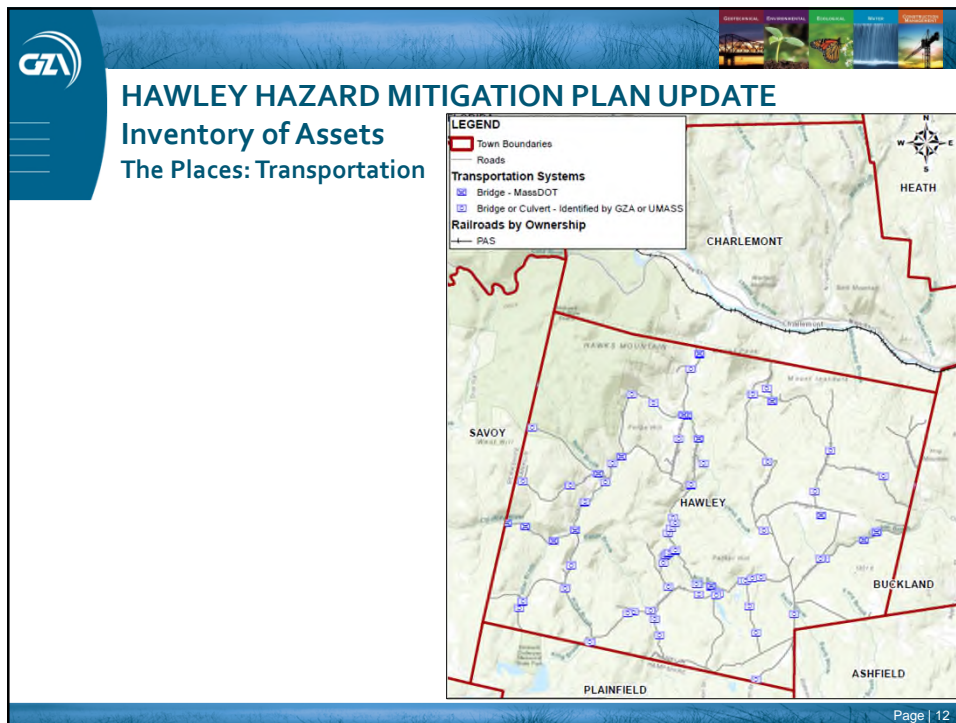


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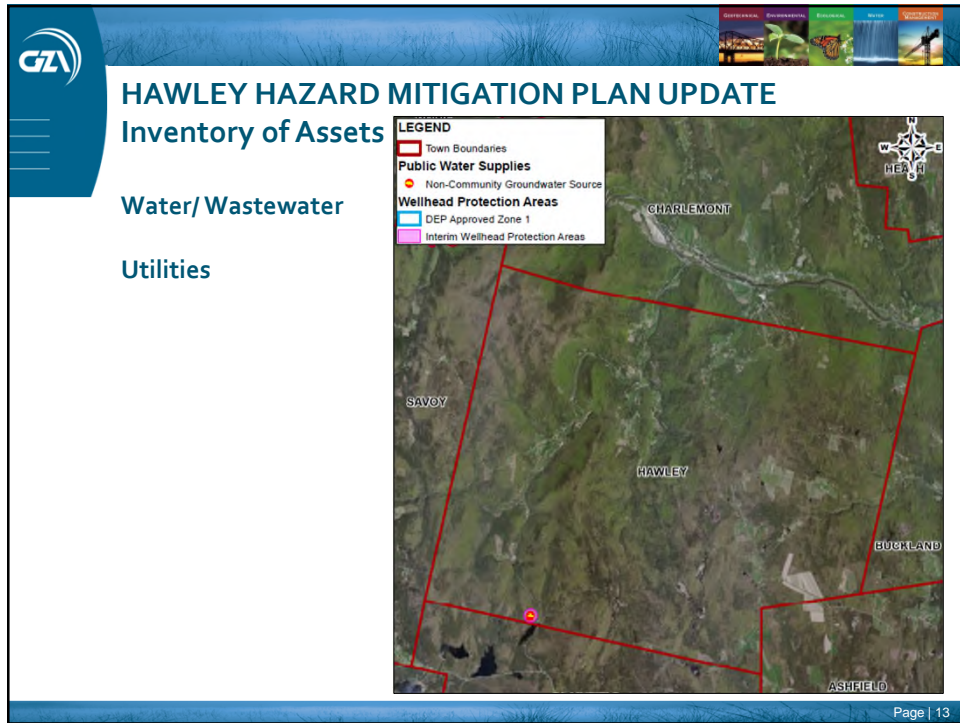
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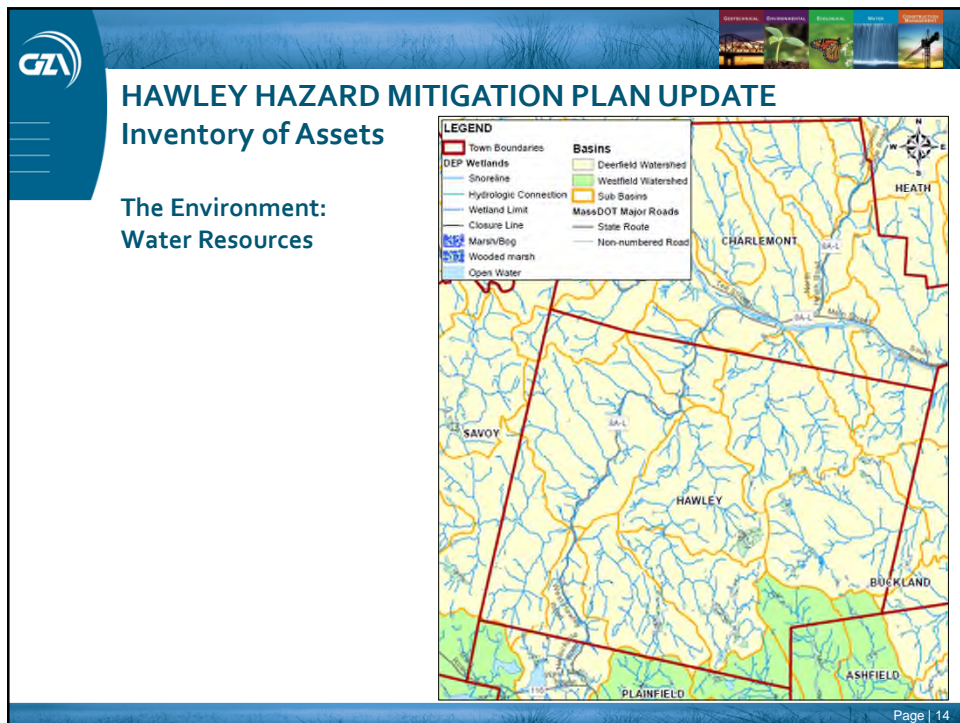
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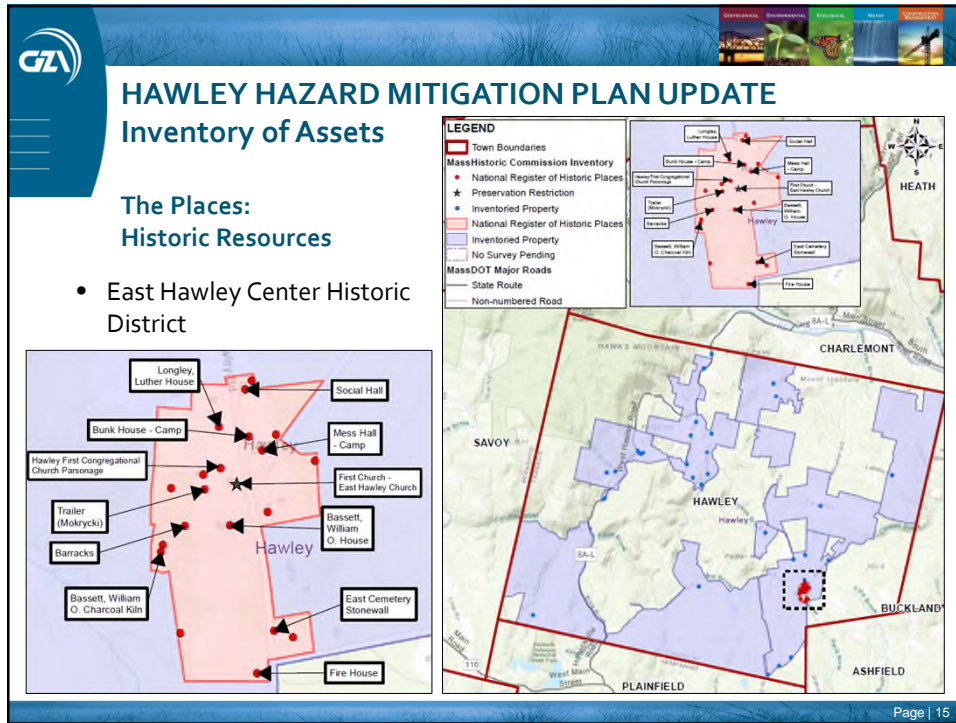
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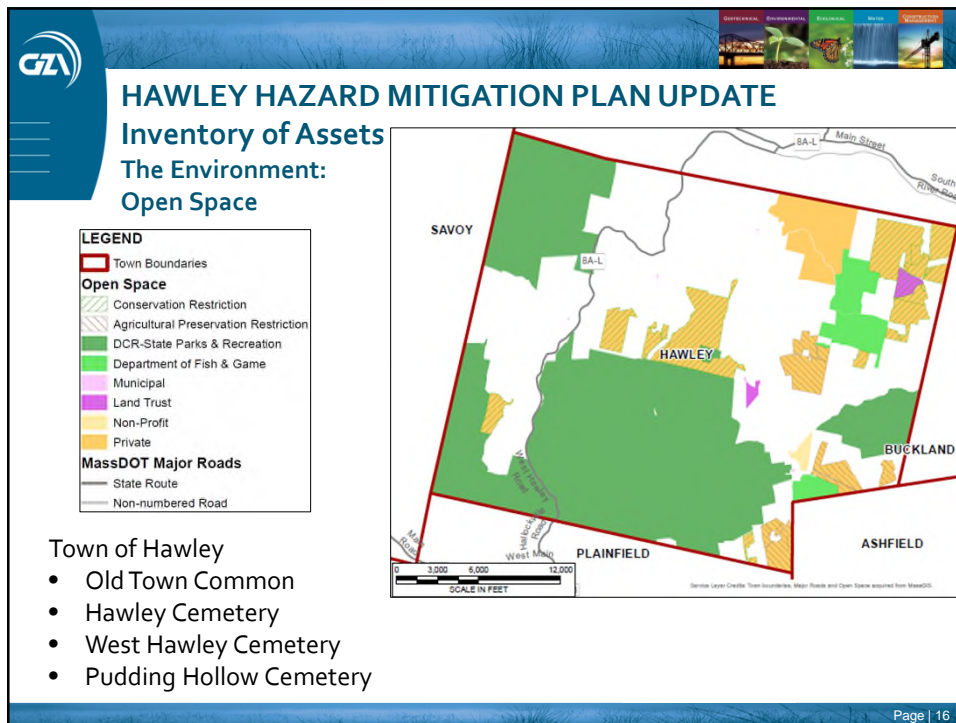
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**GZA**

**HAWLEY HAZARD MITIGATION PLAN UPDATE**  
**Future Development**

Are there any future developments proposed or expected in Town?



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**GZA**

**2014 TOWN OF HAWLEY MULTI - HAZARD MITIGATION PLAN**  
**Primary Hazards Identified**


- Hurricane / Tropical Storm
- Dam Failure
- Microburst and Thunderstorms (wind related)
- Flooding
- Wildfire/Brush Fire
- Severe Winter Storm
- Landslides
- Ice Jams
- Tornadoes
- Earthquakes

- Drought
- Beaver Dams
- Extreme Temperature




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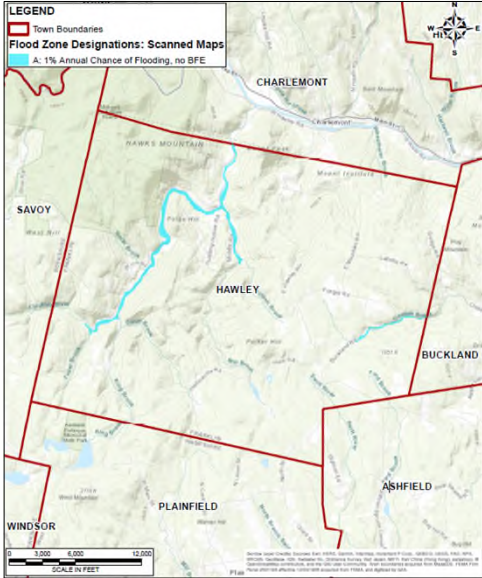
## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Characterize the Hazards




#### Flood Hazards

- Riverine Flooding
  - Chickley River
  - Clesson Brook
  - Hawks Brook
  - Mill Brook
- Urban Drainage Flooding
- Ice Jam
- Beaver Dams




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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Characterize the Hazards




**Table 3-2: Past Flood Events in Hawley**


Date	Type	Property Damage	Crop Damage	Description
8/27/2011, 8/28/2011	Flood	unknown	unknown	10 inches of rain within 24 hours from Tropical Storm Irene resulted in widespread flooding that caused bridge damage and road washouts throughout town, including Route 8A. The Town Highway Garage was undermined by flooding.
3/8/2008	Flood	\$25,000	\$0	Several basements were flooded with two feet of water around Hawley Road.
10/7/2005, 10/8/2005	Flood	\$98,289	unknown	11.1 inches of rain fell, causing several landslides, one of which took out a hill side on East Rd.
6/20/1998	Flash Flood	\$75,000	\$0	Radar estimated rainfall of 5 inches in 3 hours. Two bridges and portion of Rt. 8A washed out. State of emergency declared in Town. People had to be evacuated from their homes in certain locations.
1/19/1996	Flood	unknown	unknown	5 inches of rain fell on top of a 5 foot snow pack, resulting in flooded basements and two landslides along Rt 8A.
4/4/1987, 4/5/1987	Flood	\$75,000+	unknown	12 inches of rain fell on top of 4 feet of snow pack, causing major damage throughout town. Sections of Buckland Rd., Labelle Rd., East Hawley Rd., Middle Rd., and West Hawley Rd. washed out. A bridge on Buckland Rd. was completely destroyed. Homes were evacuated and a temporary shelter was opened.
5/1984	Flood	unknown	unknown	

Source: <http://www4.ncdc.noaa.gov>, Hawley Town Officials.

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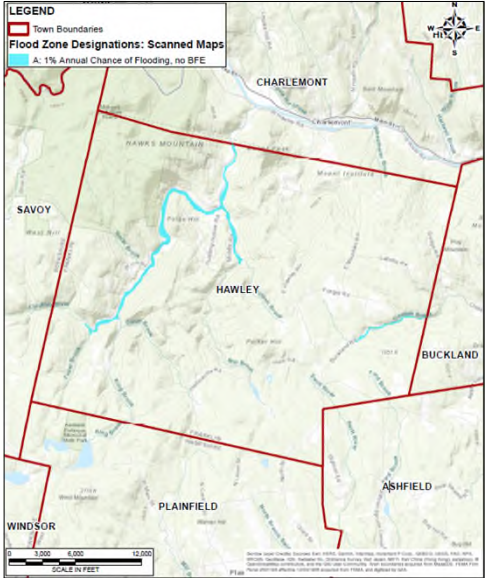


## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Characterize the Hazards

#### Flood Prone Areas

- Route 8A
- Buckland Road
- Labelle Road
- Pond Road
- East Hawley Road
- East Road
- Middle Road
- Forge Hill Road
- Highway Garage





**LEGEND**

- Town Boundaries
- Flood Zone Designations: Scanned Maps
- A: 1% Annual Chance of Flooding, no BFE

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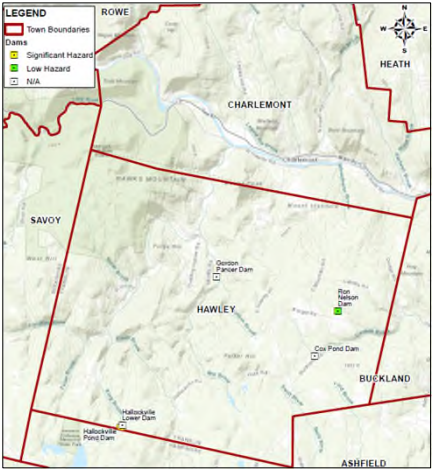


## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Characterize the Hazards

#### Flood Hazards

- Dam Failures
- Significant Hazard
  - Hallockville Pond Upper Dam at Hallockville Pond
  - Nelson Dam off Forget Road
  - Sidehill Farm dam off Forget Road
- Low hazard dams
  - Cox Pond Dam on Clesson Brook
  - Mitchell Orchard Dam off Pond Road
  - Plainfield Pond Dam off Rte. 116
  - Singing Brook Farm Dam off Singing Brook Lane
  - Schoelzel Pond dams off Plainfield Rd (consisting of three earthen dams).





**LEGEND**

- Town Boundaries
- Dams
- Significant Hazard
- Low Hazard
- N/A

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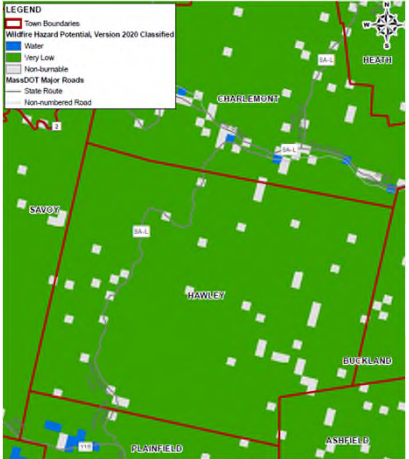




## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Characterize the Hazards


#### Wildfire Hazard Potential




Service Layer Credits: Funding for this project provided by USDA Forest Service, Fire and Aviation Management. Funding also provided by USDA Forest Service, Fire Modeling Institute, which is part of the Rocky Mountain Research Station, Fire, Fuel and Smoke Science Program. Work on dataset development was primarily completed by Pyrologix, LLC under contract with the USDA Forest Service, Fire Modeling Institute. Town boundaries acquired from MassGIS.

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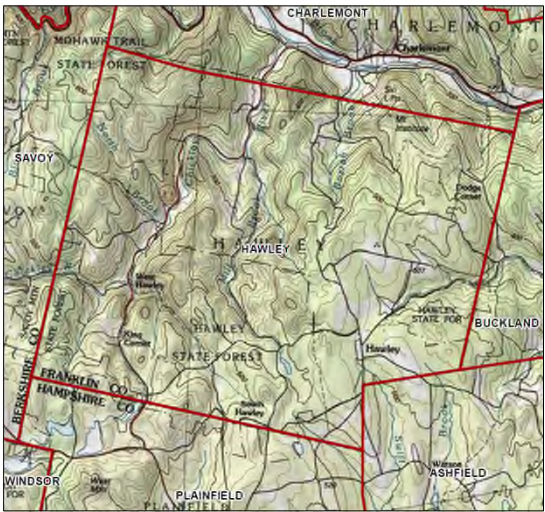


## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Characterize the Hazards

#### Locally Identified Hazards

- Based on local knowledge, where are the primary hazard areas?



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**GZA**

## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment

- Exposure Analysis
- Historical Analysis
- Scenario Analysis



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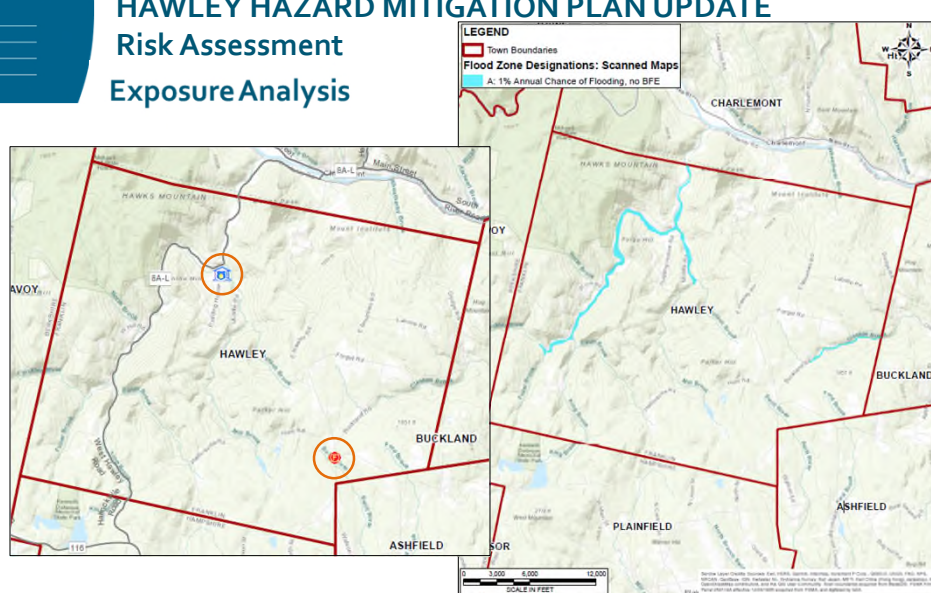
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**GZA**

## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment

### Exposure Analysis




**LEGEND**

- Town Boundaries
- Flood Zone Designations: Scanned Maps
- A: 1% Annual Chance of Flooding, no BFE

Scale: 0 3,000 6,000 12,000  
SCALE IN FEET

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment - Historical Analysis - Disaster Declarations

Disaster	Declaration Date
COVID-19 Pandemic (DR-4496)	March 27, 2020
Severe Winter Storm & Snowstorm (DR-4379)	July 19, 2018
Severe Winter Storm & Flooding (DR-4372)	June 25, 2018
Severe Winter Storm, Snowstorm & Flooding (DR-4214)	April 13, 2015
Severe Winter Storm, Snowstorm & Flooding (DR-4110)	April 17, 2013
Hurricane Sandy (DR-4097)	December 19, 2012
Tropical Storm Irene (DR-4028)	September 3, 2011
Severe Storm & Flooding (DR-1895)	March 29, 2010
Severe Storms & Flooding (DR-1614)	November 10, 2005
Severe Storms & Flooding (DR-1364)	April 10, 2001
Heavy Rain, Flooding (DR-1224)	June 23, 1998
Blizzard (DR-1090)	January 24, 1996
Severe Coastal Storm (DR-920)	October 4, 1991
Hurricane Bob (DR-914)	August 26, 1991

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment

#### Historical Analysis - Repetitive Loss Properties


A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. Currently there are over 122,000 RL properties nationwide.

**There are no RL properties in Hawley.**

Item	(as of 2/9/22)
Flood insurance policies in force	4
Coverage amount of flood insurance policies	\$250,000 (Zone A) \$750,000 (Zone X)
Premiums paid	\$4,751 (Zone A) \$1,505 (Zone X)
Total losses (all losses submitted regardless of the status)	2
Closed losses (Losses that have been paid)	1
Open losses (Losses that have not been paid in full)	0
CWOP losses (Losses that have been closed without payment)	1
Total payments (Total amount paid on losses)	\$1,451

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment

Scenario Analysis


**FEMA's Latest Multi-Hazard Software**

# HAZUS<sup>®</sup> MH

EARTHQUAKE • WIND • FLOOD


## What Could Happen?

*How can we plan to minimize damage and loss of life in order to prevent natural hazard events from becoming natural disasters? Which buildings, roads, and bridges may be damaged and how great would the damage be? Which roads may be closed? Which areas may be affected if utilities failed? Which businesses will shut down?*



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## HAWLEY HAZARD MITIGATION PLAN UPDATE


### Risk Assessment

Scenario Analysis - HAZUS

DIRECT DAMAGE	FLOOD (100- yr & 500- yr flood events)	HURRICANE WIND (100- yr & 500- yr)	EARTHQUAKE (1,000- yr & 2,500- yr)
General Building Stock	33 – 66 buildings damaged	153 (6%) – 1,517 (56%) buildings damaged	20 – 52 buildings damaged
Essential Facilities	2 (Fire, School)	0	0
DIRECT LOSSES			
Shelter Needs	74 – 126 displaced households	0 – 2 people	0
INDIRECT LOSSES			
Economic Loss			
Property Damage	~ \$11.6 – 29.6 million	~ \$9M - \$55M	~ \$0.8M - \$2.7M
Business Interruption	~ \$6.4 – 16.3 million	~ \$200k - \$3M	~ \$0.2M - \$0.6M

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment - Hazard Index Summary

Likelihood/Frequency		
Point Value	Category	Characteristics
0	Very Low	Events that occur less frequently than once in 1,000 years (Less than 0.1% probability per year)
1	Low	Events that occur from once in 100 years to once in 1,000 years (0.1% to 1% probability per year)
2	Medium	Events that occur from once in 10 years to once in 100 years (1% to 10% probability per year)
3	High	Events that occur more frequently than once in 10 years (Greater than 10% probability per year)


Severity		
Point Value	Category	Characteristics
0	Minor	Limited and scattered property damage; no damage to public infrastructure (roads, bridges, trains, airports, public parks, etc.) contained geographic area; essential services (utilities, hospitals, schools, etc.) not interrupted; no injuries or fatalities.
1	Serious	Scattered major property damage (more than 50% destroyed); some minor infrastructure damage; wider geographic area; essential services are briefly interrupted; some injuries and/or fatalities.
2	Extensive	Consistent major property damage; major damage to public infrastructure (up to several days for repairs); essential services are interrupted from several hours to several days; many injuries and fatalities.
3	Catastrophic	Property and public infrastructure destroyed; essential services stopped, multiple injuries and fatalities.

Impact Area Assessment		
Point Value	Category	Characteristics
1	Small	In localized, unpopulated or lightly areas of Town, without structures or critical facilities
2	Medium	Impacting only portions of the Town
3	Large	Town-wide and/or essential and lifeline facilities

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## HAWLEY HAZARD MITIGATION PLAN UPDATE


### Risk Assessment - Hazard Index Summary

Natural Hazard	Likelihood/ Frequency	Impact Area Assessment	Severity/ Magnitude	Hazard Index
<b>SEVERE WEATHER HAZARDS</b>				
<b>Severe Wind</b>				
Hurricanes/ Tropical Storms	2		3	2
Thunderstorms	3		2	1
Tornadoes	3		2	1
<b>Severe Weather</b>				
Lightning	3		2	0
Intense Rainfall	3		2	0
Hail	3		2	0

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment - Hazard Index Summary

Natural Hazard	Likelihood/ Frequency	Impact Area Assessment	Severity/ Magnitude	Hazard Index
<b>SEVERE WEATHER HAZARDS</b>				
<b>Flood Hazards</b>				
Riverine Flooding	3	3	1	7
Poor Drainage Flooding	3	2	1	6
Beaver Dams	3	2	1	6
Dam Failures	1	2	2	5
<b>Severe Winter Weather</b>				
Snow and Blizzards	3	3	1	7
Ice Storms	3	3	1	7

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment - Hazard Index Summary

Natural Hazard	Likelihood/ Frequency	Impact Area Assessment	Severity/ Magnitude	Hazard Index
<b>CLIMATE RELATED HAZARDS</b>				
Extreme Cold	3	3	0	6
Extreme Heat	1	3	0	4
Drought	1	3	0	4
Wildfire	1	1	0	2
<b>GEOLOGIC HAZARDS</b>				
Earthquakes	1	3	1	5
Landslides	1	1	0	2
Tsunami	0	0	0	0

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**GZA**

**2014 TOWN OF HAWLEY MULTI - HAZARD MITIGATION PLAN**  
**Primary Hazards Identified**

- Hurricane / Tropical Storm
- Dam Failure
- Microburst and Thunderstorms (wind related)
- Flooding
- Wildfire/Brush Fire
- Severe Winter Storm
- Landslides
- Ice Jams
- Tornadoes
- Earthquakes

- Drought
- Beaver Dams
- Extreme Temperature




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**GZA**

**2022 Risk Assessment**  
**Hazard Index Summary**

- Flooding (7 / 6)
- Dam Failure (5)
- Ice Jams
- Hurricane / Tropical Storm (7)
- Tornadoes (6)
- Severe Thunderstorms / High Winds/ Hail (6 / 5)
- Winter Hazards (Heavy Snow / Nor'easters / Blizzard / Ice) (7)
- Earthquakes (5)
- Landslides (2)
- Wildfires (2)
- Drought (4)
- Beaver Dams (6)
- Extreme Cold (6)
- Extreme Heat (4)



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## 2022 Risk Assessment Hazard Index Summary

- Hurricane / Tropical Storm (7)
- Winter Hazards (Heavy Snow / Nor'easters / Blizzard / Ice) (7)
- Flooding (7 / 6)
- Tornadoes (6)
- Beaver Dams (6)
- Severe Thunderstorms / High Winds/ Hail (6 / 5)
- Extreme Cold (6)
- Dam Failure (5)
- Extreme Heat (4)
- Drought (4)
- Earthquakes (5)
- Brush Fires (2)
- Landslides (2)
- Ice Jams



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## HAWLEY HAZARD MITIGATION PLAN UPDATE MUNICIPAL VULNERABILITY PREPAREDNESS PLAN

### Next Steps

- CRB Workshop
- Mitigation Strategies
- Plan Adoption
- Maintenance



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## PLANNING FOR CRB WORKSHOP

- Outreach/Advertising

Stakeholder Involvement
Board of Selectmen
Businesses
Schools
Non-profits
Neighboring communities
FRCOG
Regional Entities

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Proactive By Design.  
Our Company Commitment

## Town of Hawley Multi-Hazard Mitigation Plan Update Municipal Vulnerability Preparedness Plan

Questions?


**PLEASE SHARE PHOTOS**




Rosalie Starvish (rosalie.starvish@gza.com)  
860-550-2777

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**Town of Hawley  
Multi-Hazard Mitigation Plan Update  
Municipal Vulnerability Preparedness Plan  
Planning Team Meeting #2**



April 13, 2022

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Proactive By Design.  
Our Company Commitment

1





**AGENDA**

- Planning Team: Attendance
- Hazard Mitigation Goals
- Mitigation Actions
- Prioritizing Mitigation Actions
- Plan Adoption and Maintenance



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2




## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Planning Process

Local Planning Team / Core Team	Name
Core Team Leader; Conservation Commission	Williams Cosby
Hawley Town Clerk	Liz Billings
Resident	Sarah Ohmann
Highway Department	Gary Mitchell, Superintendent
Resident	Constance Emmett
Conservation Commission	Lloyd Crawford
Volunteer Fire Department	Greg Cox, Chief
Volunteer Fire Department	Brandon Root
Emergency Management	Dean Desmaris, Director
Former Select Board Chair	John Sears

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3



## HAWLEY HAZARD MITIGATION PLAN UPDATE


### Hazard Mitigation Goals from 2014 Plan

To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to...

- natural hazards.
- flooding.
- severe winter storms.
- a landslide
- high winds associated with hurricanes and tropical storms, microbursts and thunderstorms, tornados.
- a dam failure.
- wildfires and brushfires.
- ice jams and associated flooding.
- earthquakes

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Additional Suggested Hazard Mitigation Goals

1. **Investigate, design and implement structural projects that will reduce and minimize the risk of flooding.**
2. Investigate and implement projects that will reduce and minimize the risk of non-flooding hazards.
3. Increase the capacity of local Emergency Managers, DPWs, and Fire, Police and Health Departments to plan for and mitigate natural hazards.
4. Increase public awareness of natural hazard risks and mitigation activities available to them.
5. Improve the quality of the data for the region as it pertains to natural hazards.
6. Improve existing local policies, plans, regulations, and practices to reduce or eliminate the impacts of natural hazards.
7. Identify and seek funding for measures to mitigate or eliminate each known significant flood hazard area.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

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## HAWLEY HAZARD MITIGATION PLAN UPDATE


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## HAWLEY HAZARD MITIGATION PLAN UPDATE

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4. Increase public awareness of natural hazard risks and mitigation activities available to them.
5. Improve the quality of the data for the region as it pertains to natural hazards.
6. Improve existing local policies, plans, regulations, and practices to reduce or eliminate the impacts of natural hazards.
7. **Identify and seek funding for measures to mitigate or eliminate each known significant flood hazard area.**

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Additional Suggested Hazard Mitigation Goals

8. **Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees and boards.**
9. Ensure that future development meets federal, state and local standards for preventing and reducing the impacts of natural hazards including impacts from climate change.
10. Work with surrounding communities, regional, the Commonwealth and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Additional Suggested Hazard Mitigation Goals

8. Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees and boards.
9. **Ensure that future development meets federal, state and local standards for preventing and reducing the impacts of natural hazards including impacts from climate change.**
10. Work with surrounding communities, regional, the Commonwealth and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Additional Suggested Hazard Mitigation Goals

8. Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees and boards.
9. Ensure that future development meets federal, state and local standards for preventing and reducing the impacts of natural hazards including impacts from climate change.
10. **Work with surrounding communities, regional, the Commonwealth and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.**

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## HAWLEY HAZARD MITIGATION PLAN UPDATE


### Review Mitigation Actions in Prior Plan

**Table 4-11: 2014 Hawley Multi-Hazards Mitigation Prioritized Action Plan**

Hazard	Goal	Action Item	Responsible Department / Board	Benefit: What Areas Primarily? Built (B), Natural (N), Population (P), Infrastructure (I)	Potential Funding Source	Estimated Completion Date	Priority for Implementation/Status
<b>HAZARDS IDENTIFIED AS MOST IMPORTANT TO THE TOWN OF HAWLEY</b>							
The priority for implementation of each Action Item is ranked as High, Medium or Low							
<b>MULTIPLE HAZARDS</b>							
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to natural hazards.</i>							
		Develop a formal system for departments to record costs and property damages from natural hazard events. Encourage businesses and residents to report property damages, and farmers to report crop damages.	Emergency Management Director, Department of Public Works, Town Administrator, Fire Chief, Police	B, N, P, I	Town, Volunteer time	Year 2	Medium/New Action Item.
		Develop and implement an annual program to improve household disaster preparedness. Use available pamphlets and other information to educate the public on how to prepare for hazards and disaster, including encouraging residents to prepare by stocking up the necessary items and planning for how family members how to respond during a disaster.	Fire Department	P	Town, Volunteers	Year 0-1, to be reviewed annually and implemented in subsequent years (Years 1-3), as appropriate.	High/ This action has been implemented. Updated and carried over from 2007 plan. Still relevant. The town provides emergency preparedness information through the town email list.
<b>FLOODING</b>							
<i>To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to flooding.</i>							
		Reduce the risk of flooding and fluvial erosion hazards by undertaking a study to identify Fluvial Erosion Hazards for the Chickley River watershed and develop a prioritized list of flood hazard mitigation projects. The assessment would provide a map of Fluvial Erosion Hazards for the watershed and a prioritized list of flood hazard mitigation projects which may be eligible for the FEMA Hazard Mitigation Grant Program.	Select Board, Franklin Regional Council of Governments	B, N, P, I	60% Water Quality Management Planning Grant, FEMA	Target of Year 2 or when funding becomes available.	High/New Action Item.
		Investigate and install appropriate debris-flow measures to stabilize slopes, and control and dissipate high flows to reduce flooding damage and debris accumulation in tributary watersheds of the Chickley River.	Emergency Management Director, Select Board	B, N, P, I	Town, volunteer, FEMA	Target of Year 3 or when funding becomes available.	High/New Action Item.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE



### New Mitigation Actions

From CRB Workshop:

- Chickley River Watershed Culvert Assessment –prioritize culvert replacements for design and permitting (or do this town-wide)
- Cox Pond - address beaver dam between the culvert and the pond (Pond Road)
- Dugway
- Replace Sears Rd Culvert (construction)
- Town garage relocation; analysis of existing nature-based bank stabilization; develop plan for rapidly removing mobile equipment from the building
- Feasibility study to develop emergency shelters in town
- Establishment of fire ponds to address potential forest fires

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Prioritizing Local Mitigation Actions

- Approaches:
  - FEMA's March 2013 Local Mitigation Planning Handbook
  - other local plans
  - FEMA's STAPLEE method

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## HAWLEY HAZARD MITIGATION PLAN UPDATE


### Prioritizing Local Mitigation Actions

#### Benefits

- **High:** Action will support compliance with a legal mandate or, once completed, will have an immediate impact on the reduction of risk exposure to life and property.
- **Medium:** Once completed, action will have a long-term impact on the reduction of risk exposure to life and property, has a substantial life safety component, or project will provide an immediate reduction in the risk exposure to property.
- **Low:** Long-term benefits of the action are difficult to quantify in the short term.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE


### Prioritizing Local Mitigation Actions

#### Costs

- **High (Over \$100,000):** Would require an increase in revenue via an alternative source (i.e., municipal bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
- **Medium (Between \$50,000 - \$100,000):** Could budget for under existing capital budget but would require a reappropriation of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- **Low (Less than \$50,000):** Possible to fund under existing budget. Project is or can be part of an existing ongoing program or would not require substantial effort to initiate or appropriate funds.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Prioritizing Local Mitigation Actions



#### Estimated Timeline

1-2 years,  
3-5 years,  
5+ years, and  
ongoing.

Length of time for implementation of each mitigation action is based on the amount of time it would take upon receiving funding.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Prioritizing Local Mitigation Actions

#### Priority

- **High Priority:** Benefits > cost, has funding secured or is an ongoing project. Can be completed in the short-term or mid-term (1 to 5 years) or are projects that are long-term projects that can be initiated in the short-term and will have large positive impacts once completed.
- **Medium Priority:** Benefits > costs, and for which funding has not yet been secured, but is eligible for funding. Can be completed in the short- or mid-term, once funding is secured, or are projects that are long-term projects that can be initiated in the short-term and will have large positive impacts once completed.
- **Low Priority:** Benefits < costs or are difficult to quantify, for which funding has not been secured, that is not eligible for grant funding, and for which the timeline for completion is long-term or uncertain. Low priority actions may be eligible for grant funding from other programs that have not yet been identified. Financing is unknown, and they can be completed over the long term.

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## HAWLEY HAZARD MITIGATION PLAN UPDATE


### Next Steps

- GZA to tabulate mitigation actions for prioritization: 4/20/22
- Local Planning Team to review mitigation actions from prior plan and review prioritization of mitigation actions: 4/27/22
- Listening Session: 4/27/22
- Draft plan (combined HMP/MVP plan) provided to Town for Planning Team review: 5/6/22
- Return plan to GZA for edits: 5/20/22
- Finalize Draft plan for posting on Town website: 5/27/22
- Deadline for public comments: 6/10/22
- Final Draft Plan submitted to MEMA and MVP: 6/24/22

~~UNPREPARED~~

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Plan Adoption & Maintenance

#### Plan Adoption

1. Conditional Approval by FEMA
2. Plan approved (officially adopted) by Board of Selectmen

#### Plan Implementation

1. Local Hazard Mitigation working group (include LPT)
2. Awareness of updates to existing policies and regulations
3. Grant funding
4. Annual meeting to evaluate progress of the plan
5. Evaluate effectiveness of the action items with input from the public
6. 5-year update

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## Town of Hawley

### Multi-Hazard Mitigation Plan Update

### Municipal Vulnerability Preparedness Plan

#### Questions?

**PLEASE SHARE PHOTOS** 

Rosalie Starvish (rosalie.starvish@gza.com)  
860-550-2777

Proactive By Design.  
Our Company Commitment

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## ATTACHMENT 7: REFERENCES AND RESOURCES

- Centers for Disease Control and Prevention/ Agency for Toxic Substances and Disease Registry/ Geospatial Research, Analysis, and Services Program. Social Vulnerability Index 2018 Database Massachusetts. Accessed on 1/28/2022. <https://svi.cdc.gov/map.html>
- Franklin Regional Council of Governments (FRCOG), 2018. 2018 Annual Report.
- Federal Emergency Management Agency (FEMA), Local Mitigation Plan Review Guide, October 2011. [https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-plan-review-guide\\_09\\_30\\_2011.pdf](https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-plan-review-guide_09_30_2011.pdf)
- FEMA, Mitigation Ideas, January 2013. [https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas\\_02-13-2013.pdf](https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf)
- FEMA, Hazus-MH 2.1 Earthquake Model Technical Manual, July 2013. [https://www.fema.gov/sites/default/files/2020-09/fema\\_hazus\\_earthquake-model\\_technical-manual\\_2.1.pdf](https://www.fema.gov/sites/default/files/2020-09/fema_hazus_earthquake-model_technical-manual_2.1.pdf)
- FEMA, Hazus-MH Flood Model Technical Manual, July 2013. [https://www.fema.gov/sites/default/files/2020-09/fema\\_hazus\\_flood-model\\_technical-manual\\_2.1.pdf](https://www.fema.gov/sites/default/files/2020-09/fema_hazus_flood-model_technical-manual_2.1.pdf)
- FEMA, Hazus-MH 2.1 Hurricane Model Technical Manual, July 2013. [https://www.fema.gov/sites/default/files/2020-09/fema\\_hazus\\_hurricane-model\\_user-manual\\_2.1.pdf](https://www.fema.gov/sites/default/files/2020-09/fema_hazus_hurricane-model_user-manual_2.1.pdf)
- FEMA, Local Mitigation Planning Handbook, March 2013. [https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-planning-handbook\\_03-2013.pdf](https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-planning-handbook_03-2013.pdf)
- FEMA, Hazard Mitigation Assistance Guidance, February 2015. [https://www.fema.gov/sites/default/files/2020-07/fy15\\_HMA\\_Guidance.pdf](https://www.fema.gov/sites/default/files/2020-07/fy15_HMA_Guidance.pdf)
- FEMA, National Flood Insurance Program Flood Insurance Manual, April 2020. <https://www.fema.gov/flood-insurance/work-with-nfip/manuals/april-2020>
- FEMA, Flood Insurance Rate Maps (5 panels) for Hawley, MA effective December 4, 1985.
- FEMA, 2021. National Risk Index Technical Documentation. November 2021. [https://www.fema.gov/sites/default/files/documents/fema\\_national-risk-index\\_technical-documentation.pdf](https://www.fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf)
- FEMA, 2022. The National Risk Index Interactive Map. Accessed April 2022. <https://hazards.fema.gov/nri/>
- FEMA, 2022. FEMA Major Disaster Declarations. Accessed April 2022. <https://www.fema.gov/disaster/declarations>
- Massachusetts Climate Change Clearinghouse (Resilient MA). Resilient MA Map, 2022. <https://resilientma.org/map/>
- Massachusetts: Confronting Climate Change in the U.S. Northeast, Union of Concerned Scientists 2007. <https://www.ucsusa.org/resources/confronting-climate-change-us-northeast>
- MassGIS, 2022. Massachusetts Bureau of Geographic Information. MassMapper. Accessed 2022. <https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html>
- Massachusetts State Building Code (780 CMR), 9th Edition, Board of Building Regulations and Standards, October 20, 2017 <https://www.mass.gov/doc/780-cmr-ninth-edition-chapter-16-structural-design-amendments/download>
- Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan. Commonwealth of Massachusetts, 2018. <https://www.mass.gov/files/documents/2018/10/26/SHMCAP-September2018-Full-Plan-web.pdf>
- MassWildlife, Natural Heritage & Endangered Species Program, <https://www.mass.gov/orgs/masswildlifes-natural-heritage-endangered-species-program>
- National Oceanic and Atmospheric Administration (NOAA), NOAA Storm Events Database <https://www.ncdc.noaa.gov/stormevents/>

- NOAA Atlas 14, Precipitation Frequency Data Server. <https://hdsc.nws.noaa.gov/hdsc/pfds/>
- NOAA Historical Hurricane Tracks. Accessed April 2022. <https://oceanservice.noaa.gov/news/historical-hurricanes/>
- NOAA National Hurricane Center. Tropical Cyclone Climatology. 2010. <https://www.nhc.noaa.gov/climo/#bac>
- NOAA Regional Snowfall Index. <https://www.ncei.noaa.gov/maps/rsi/>
- NOAA Tornado Archive. Historical Tornado Tracks in Massachusetts since 1950. Accessed April 2022. <https://data.burlingtonfreepress.com/tornado-archive/massachusetts/>
- National Weather Service, 2022. Safety National Program- Ice Storms. <https://www.weather.gov/safety/winter-ice-frost>
- New England Seismic Network. Weston Observatory Boston College. New England Significant Earthquake Atlas. [http://aki.bc.edu/quakes\\_historical.htm](http://aki.bc.edu/quakes_historical.htm)
- Northeast Regional Climate Center. Extreme Precipitation in New York and New England. Intensity Frequency Duration Graphs. Accessed January 2022. <http://precip.eas.cornell.edu/>
- StormerSite, 2022. Hawley 2022 Hail Summary. Accessed April 2022. [http://www.stormersite.com/hail\\_reports/hawley\\_massachusetts/2022](http://www.stormersite.com/hail_reports/hawley_massachusetts/2022)
- The Town of Hawley 2014 Multi-Hazard Mitigation Plan
- United States Census Bureau American Community Survey 5-year estimates, 2020. <https://www.census.gov/programs-surveys/acs>
- U.S. Department of the Interior, 2020. National Register of Historic Places. September 2020. <https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466>
- U.S. Forest Service, 2020. Wildfire Hazard Potential for the United States (270-m). <https://www.fs.usda.gov/rds/archive/Catalog/RDS-2015-0047-3>
- Vaisala, 2018. Lightning Fatalities by State, 1959-2017. May 2018. [https://www.weather.gov/media/safety/59-17\\_State\\_Ltg\\_Fatality\\_Maps\\_lists.pdf](https://www.weather.gov/media/safety/59-17_State_Ltg_Fatality_Maps_lists.pdf)

## ATTACHMENT 8: KEY CONTACTS

### MASSACHUSETTS EMERGENCY MANAGEMENT AGENCY (MEMA)

MEMA Headquarters  
400 Worcester Road (Route 9 East), Framingham, MA  
01702-5399



Shelley O'Toole (MEMA Hawley Contact)  
Hazard Mitigation Grants Coordinator

[Michelle.OTOole@mass.gov](mailto:Michelle.OTOole@mass.gov)

MEMA Headquarters & 24x7 Communications Center  
508-820-2000

MEMA Region I Office  
978-328-1500

MEMA Region II Office  
774-613-5400

MEMA Region III & IV Office  
413-750-1400

MEMA Training & Exercise  
508-820-1408

<https://www.mass.gov/orgs/massachusetts-emergency-management-agency>

<https://www.mass.gov/topics/mema-resources-for-public-officials>

### TOWN OF HAWLEY

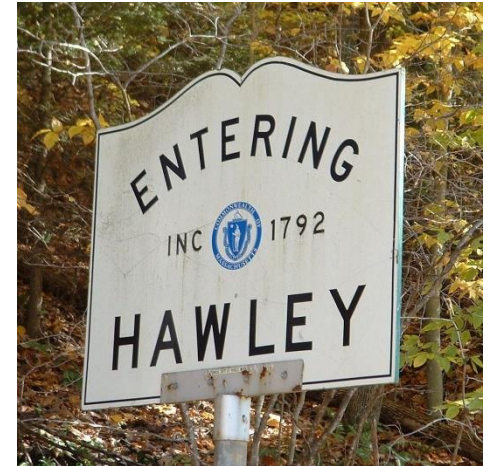
Town Office, 8 Pudding Hollow Road, Hawley, MA 01339

Emergency Management Director: Dean Desmarais  
413-339-5518

Fire Department  
16 Plainfield Road  
Hawley, MA 01339  
413-339-5526

Police Department  
8 Pudding Hollow Road  
Hawley, MA 01339  
413-834-1736  
911 Emergency

Highway Department  
247 West Hawley Road  
Hawley, MA 01339  
413-339-5509



## FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA):

### Massachusetts Contacts



#### Region I

99 High St.  
Boston, MA 02110  
1-877-336-2734

[fema-r1-info@fema.dhs.gov](mailto:fema-r1-info@fema.dhs.gov)

Melissa A. Surette, Senior Planner  
Risk Analysis Branch, Mitigation Division

[Melissa.Surette@fema.dhs.gov](mailto:Melissa.Surette@fema.dhs.gov)

Office: 617-956-7559  
Cellular: 617-794-0292

## DEPARTMENT OF CONSERVATION AND RECREATION (DCR)

### DCR Office of Water Resources (OWR)

Main Office  
251 Causeway St., 9<sup>th</sup> Floor, Boston, MA 02114  
617-626-1250

### State National Floodplain Insurance Coordinator

Joy Duperault, CFM  
MA Dept. of Conservation & Recreation, Flood Hazard Mgmt.  
251 Causeway Street, 8th Floor  
Boston, MA 02114  
(617) 626-1406

[Joy.duperault@mass.gov](mailto:Joy.duperault@mass.gov)

## EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

MVP Berkshires and Hilltowns Regional Coordinator  
Carrieanne Petrik  
617-875-0911  
[Carrieanne.petrik@mass.gov](mailto:Carrieanne.petrik@mass.gov)

## AMERICAN RED CROSS:

### Massachusetts Contacts



101 Station Landing  
Suite 510  
Medford, MA 02155

781-410-3670  
800-564-1234 (24/7)

<http://www.redcross.org/local/massachusetts/disaster-services>

## SALVATION ARMY

Greenfield Salvation Army Center for Worship and Service  
72 Chapman Street  
Greenfield, MA 01301  
413-773-3154  
[emily.leslie@use.salvationarmy.org](mailto:emily.leslie@use.salvationarmy.org)  
[paul.leslie@use.salvationarmy.org](mailto:paul.leslie@use.salvationarmy.org)



<https://massachusetts.salvationarmy.org/MA/Greenfield?openDocument&charset=utf-8>



## ATTACHMENT 9: MVP SURVEY

## SURVEY

A written survey was sent out to community members to inquire about hazards from extreme events which have been experienced recently and those which may occur in the future which may impact the town's infrastructure, social resources, and environmental resources. The following is a summarized list of the survey results with the questions posed, the data is available in **Appendix C**.

1. What climate hazard are you most concerned about impacting Hawley? (1 = most concerned; 7 = least concerned).
2. How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.
3. What steps have you taken to prepare for extreme events?
4. What are some of Hawley's greatest strengths?
5. What are some of Hawley's greatest vulnerabilities?
6. What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.
7. How would you like to receive information about climate change risks and resiliency projects in Hawley?
8. Additional comments or questions about planning for climate resiliency that you would like to share with the project team.

Thirty (30) residents responded to the survey, including twenty-four (24) homeowners, two (2) persons who work in Town, and six (6) who own a secondary home in Hawley. Eight (8) respondents are aged 66-75, four (4) aged 56-65, three (3) aged 36-55, and thirteen (13) aged over seventy-five (>75). Twenty-two (22) respondents identified as white, one (1) American Indian or Alaskan Native, and one (1) Multiple Races. Asked if the respondent identified as Hispanic, Latino, or of Spanish origin, twenty-one (21) answered no and one (1) answered yes.

The primary climate hazards identified in the questionnaire, and prioritized by the respondents, in order of importance or level of impact were (# in Parentheses indicates # of ranked votes): 1. Flooding (26), 2. Winter Weather (25), 3. Severe Wind Events (Tornado, Hurricane) (25), 4. Drought (23), 5. Brushfires and Wildfires (23), 6. Extreme Temperatures (23), and Other (Falling Trees, Ice Storms, Communications, Roads for Emergency Vehicles, Wind-Trees, Disease and Pest Infestation to Trees, Supply Chain Logistics, and Increased Rain) (10).

A follow up question to the climate hazard in the questionnaire was: "How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more." The responses included:

- "Flooded cellar, trees down, loss of electricity."
- "Hurricane Irene did cause roads and bridges to be rendered unusable; ice storms have knocked out power; trees have come down – also knocked out power."
- "Spring (water supply) dried up two years ago."
- "Flooding caused by a hurricane (Irene), ice storms."
- "Certainly all of the above."
- "No, except power outages."
- "If it really floods, our home is safe, but we can't drive anywhere."

- “Long loss of power both with hurricanes and ice storms. Town garage between two brooks that wash out culverts.”
- “Roads washed away during Irene, no power for 2.5 days, no phone for 17 days.”
- “Loss of power during ice storms. Impassible roads from extreme flooding.”
- “Irene”
- “Bridges lost from flooding, alterations to river, erosion around roadways, community disagreement over repairs management, power loss, travel in and out of town impossible.”
- “Ice storms, rely on generator, length of time, in very heavy weather we can lose land line – Verizon needs to step up but they won’t.”
- “We are worried about the erosion directly behind our house on 2 Savoy Road.”
- “We have had all of the above, but most frequent trouble comes from falling trees.”
- “Flooding and severe wind events that knocked our (and others) exit from Hawley have occurred in recent memory (the 2008 ice storm and tropical storm Irene).”
- “Hurricane Irene, ice storms, culvert failure.”
- “Ice storm, flooding.”
- “Tropical Storm Irene – flooding, destruction of roads; ice storm that snapped off tops of white pines and other trees; dying trees from disease that then fall across power lines and roads.”
- “Basement flooding, electricity loss (no water, no heat), roof damage.”
- “As the only access to our property is via 2 bridges over the Chickley, Irene was a wake-up call.”
- “Physical isolation during Hurricane Irene.”
- “Flooding of roads and landslide on property.”
- “The two summers of drought (the two prior to last summer) were absolute hell on the native wildflowers.”
- “Road flooding, ice storms, heavy snowfall, high winds.”

The questionnaire asked: “What are some of Hawley’s greatest strengths?” (Parentheses indicate # of ranked votes)

- Wastewater infrastructure (septic systems) (10).
- Emergency facilities, including the Fire Station (13).
- Communications infrastructure, including the Town’s Emergency Notification System (16).
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries (25).
- Public facilities (0).
- Public support systems, including Council of Aging (8).
- Transportation infrastructure, including roads and bridges (12).
- Agriculture, including local farms (17).
- Local businesses (3).
- Other
  - Road Crew
  - People and sports

The questionnaire asked: “What are some of Hawley’s greatest vulnerabilities?” (Parentheses indicate # of ranked votes)

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff (21).
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns (3).

- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents (17).
- Potential dam failure (4).
- Erosion of land surrounding bridges and roadways (15).
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma (21).
- Invasive species, crop disease, and pest infestations (15).
- New development in hazard-prone areas (2).
- Private drinking water wells (5).
- Power outages due to extreme wind or winter weather events (26).
- Communications/phone outages due to extreme wind or winter weather events (24).
- Spills along transportation routes (5).
- Degradation of loss of priority natural areas and core wildlife habitat (11).
- Other
  - Loss of phone unless you have an old phone. Cell phone service is not dependable and needs power to charge it.
  - Heavy goods vehicles using 8A as a shortcut and speeding, Hallockville dugway road health.
  - Best way to deal with ticks, mosquitos without Deet.
  - I got Lyme's disease here in Hawley.
  - Japanese Knotweed Phragmites.
  - For emergencies – caching logistical support throughout the town.

The questionnaire asked: "What do you think Hawley's top priorities should be for building climate resilience? Please select your top three." (Parentheses indicate # of ranked votes)

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps (12).
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards (25).
- Planning to address invasive species and their impacts on natural resources (7).
- Educating the public on hazard impacts and emergency preparedness (12).
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas (7).
- Updating bylaws and regulations to incorporate climate change considerations (9).
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power (18).
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests (10).
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change (7).
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality (2).
- Conducting a town-wide water supply analysis (3).
- Investigating opportunities for renewable energy (10).
- Other
  - Really all of the above. The Town is unique – big data less useful than using eyes and ears.
  - Backup power? Provided by Town? Individuals?



SURVEY RESULTS				
What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned				
Flooding	1	2	7	1
Extreme temperatures	3	6	1	5
Winter weather	2	4	3	2
Drought	6	7	2	6
Brushfires and wildfires	5	5	4	4
Severe wind events (tornado, hurricane)	4	1	5	3
Other		3 - trees falling on people, houses, roads	6	

How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.

	Flooded cellar, trees down, loss of electricity	Hurricane Irene did cause roads and bridges to be rendered unusable; ice storms have knocked out power; trees have come down - also knocked out power	Spring (water supply) dried up 2 years ago	basement flooding
--	---	---	--	-------------------

What steps have you taken to prepare for extreme events?

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)		✓	✓	
I receive news, updates, and information about emergency preparedness in Hawley	✓	✓	✓	
I know where the nearest local shelter is			✓	
I know what the local evacuation routes are			✓	
I know what community resources and/or support are available to me			✓	
I have backup power options (generator, solar panels, extra firewood)	✓	✓	✓	✓
I have increased my food security with a garden or stockpiling nonperishable foods	✓	✓	✓	
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event	✓	✓	✓	
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event	✓	✓	✓	
Other				

What are some of Hawley's greatest strengths?

Wastewater infrastructure (septic systems)		✓		
Emergency facilities, including the Fire Station		✓	✓	
Communications infrastructure, including the Town's Emergency Notification System	✓	✓	✓	
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries	✓	✓	✓	✓
Public facilities				
Public support systems, including Council of Aging	✓		✓	
Transportation infrastructure, including roads and bridges	✓	✓	✓	
Agriculture, including local farms	✓	✓		✓
Local businesses	✓			

SURVEY RESULTS	1	1	3	4
Other		Road crew		
<b>What are some of Hawley's greatest vulnerabilities?</b>				
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff	✓	✓		✓
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns				
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents		✓	✓	
Potential dam failure		✓		
Erosion of land surrounding bridges and roadways	✓	✓		
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓	✓	✓	✓
Invasive species, crop disease, and pest infestations	✓		✓	
New development in hazard-prone areas		✓		
Private drinking water wells		✓	✓	
Power outages due to extreme wind or winter weather events	✓	✓	✓	✓
Communications/Phone outages due to extreme wind or winter weather events		✓	✓	✓
Spills along transportation routes		✓		
Degradation or loss of priority natural areas and core wildlife habitat	✓	✓		✓
Other				

SURVEY RESULTS	1	1	3	4
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>				
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps	✓	✓	✓	
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓	✓	✓	✓
Planning to address invasive species and their impacts on natural resources	✓	✓		
Educating the public on hazard impacts and emergency preparedness	✓	✓	✓	
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas	✓	✓		
Updating bylaws and regulations to incorporate climate change considerations	✓	✓	✓	
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power	✓	✓	✓	✓
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests	✓	✓		✓
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change		✓		
Assessing watershed protection opportunities and developing regional partnerships to improve water quality				
Conducting a town-wide water supply analysis				
Investigating opportunities for renewable energy		✓	✓	
Other				
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>				
Interactive online webinars				
Pre-recorded videos posted online				
Online Surveys	✓	✓		
PDFs available online				
Printed media shared via mail	✓	✓	✓	✓
Information posted to the Town of Hawley website	✓	✓	✓	
Newsletters from the Town	✓	✓	✓	✓
Through social media, including Facebook				
Through the newsletters and meetings of local groups and regional organizations		✓	✓	
In-person events				
Other				
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>				
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>				
<a href="mailto:lesliecooper67@gmail.com">lesliecooper67@gmail.com</a> <a href="mailto:szyvqgroden@gmail.com">szyvqgroden@gmail.com</a>				
<b>Optional Demographic Questions</b>				
<b>Please tell us about your connection to Hawley</b>				
I rent a home or apartment in Hawley				
I own a home (primary residence) in Hawley		✓	✓	

SURVEY RESULTS	1	1	3	4
I work in Hawley				
I own a business in Hawley				
I own a home (secondary residence) in Hawley	✓			✓
<b>How would you describe yourself?</b>				
White	✓	✓	✓	✓
Black or African-American				
American Indian or Alaskan Native				
Asian				
Native Hawaiian or other Pacific Islander				
Multiple races				
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>				
Yes				
No	✓	✓	✓	✓
<b>Please select your age</b>				
Under 18 years old				
18-35				
36-55				
56-65				
66-75				
Over 75	✓	✓	✓	✓
How would you describe yourself?	Active	81 years old, relatively healthy and mobile, living comfortably with spouse, willing to act on expert advice to reduce the dangers of climate change to individuals and community, and willing to support town efforts in pursuit of greater community safety and resilience.		

SURVEY RESULTS	5	6	7	8	9
<b>What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned</b>					
Flooding	1		3	X	2
Extreme temperatures	6		5		7
Winter weather	3		1	X	3
Drought	5	X	6		6
Brushfires and wildfires	4	X	2		5
Severe wind events (tornado, hurricane)	2		4		1
Other	7				Ice storms
<b>How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.</b>					
	flooding caused by a hurricane (Irene), ice storms	certainly all of the above	no, except power outages	If it really floods, our home is safe, but we can't drive anywhere	Long loss of power both with hurricanes and ice storms. Town garage between two brooks that wash out culverts
<b>What steps have you taken to prepare for extreme events?</b>					
I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)	✓	✓			✓
I receive news, updates, and information about emergency preparedness in Hawley	✓		✓	✓	when internet works
I know where the nearest local shelter is					
I know what the local evacuation routes are					
I know what community resources and/or support are available to me		✓		✓	
I have backup power options (generator, solar panels, extra firewood)	✓	✓	✓	✓	✓
I have increased my food security with a garden or stockpiling nonperishable foods	✓	✓	✓		✓
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event				✓	✓
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event			✓	✓	✓
Other					
<b>What are some of Hawley's greatest strengths?</b>					
Wastewater infrastructure (septic systems)	✓				✓
Emergency facilities, including the Fire Station	✓	✓			
Communications infrastructure, including the Town's Emergency Notification System	✓				✓
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries	✓	✓	✓	✓	✓
Public facilities					
Public support systems, including Council of Aging			✓	✓	
Transportation infrastructure, including roads and bridges			✓		
Agriculture, including local farms				✓	
Local businesses			✓		

<b>SURVEY RESULTS</b>	5	6	7	8	9
Other					
<b>What are some of Hawley's greatest vulnerabilities?</b>					
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff	✓			✓	✓
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns					
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents	✓	✓		✓	
Potential dam failure					✓
Erosion of land surrounding bridges and roadways				✓	
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓	✓		✓	
Invasive species, crop disease, and pest infestations	✓	✓	✓		
New development in hazard-prone areas					
Private drinking water wells		✓	✓		
Power outages due to extreme wind or winter weather events	✓		✓	✓	✓
Communications/Phone outages due to extreme wind or winter weather events	✓	✓	✓	✓	✓
Spills along transportation routes			✓		
Degradation or loss of priority natural areas and core wildlife habitat		✓	✓		
Other					Loss of phone unless you have an old phone. Cell phone service is not dependable and needs power to charge it.

SURVEY RESULTS	5	6	7	8	9
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>					
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps	✓			✓	
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓		✓	✓	✓
Planning to address invasive species and their impacts on natural resources				✓	
Educating the public on hazard impacts and emergency preparedness					
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas			✓		
Updating bylaws and regulations to incorporate climate change considerations	✓	✓			
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power	✓		✓		✓
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests					
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change					
Assessing watershed protection opportunities and developing regional partnerships to improve water quality					
Conducting a town-wide water supply analysis	✓	✓			
Investigating opportunities for renewable energy	✓	✓			✓
Other					
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>					
Interactive online webinars					
Pre-recorded videos posted online					
Online Surveys					
PDFs available online		✓		✓	
Printed media shared via mail	✓		✓	✓	✓
Information posted to the Town of Hawley website	✓		✓	✓	✓
Newsletters from the Town		✓	✓		✓
Through social media, including Facebook					
Through the newsletters and meetings of local groups and regional organizations	✓				
In-person events		✓			
Other			large print for newsletters		Sometimes I don't have internet
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>					
	I would love SOMEDAY to have solar panels and backup batteries for all      Our biggest vulnerability is poor ambulance service but this is not related to climate				
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>					
	<a href="mailto:hmegett211@gmail.com">hmegett211@gmail.com</a> on town website				
<b>Optional Demographic Questions</b>					
<b>Please tell us about your connection to Hawley</b>					
I rent a home or apartment in Hawley					
I own a home (primary residence) in Hawley	✓	✓	✓	✓	✓

<b>SURVEY RESULTS</b>	5	6	7	8	9
I work in Hawley					
I own a business in Hawley					
I own a home (secondary residence) in Hawley					
<b>How would you describe yourself?</b>					
White	✓	✓	✓		✓
Black or African-American					
American Indian or Alaskan Native					
Asian					
Native Hawaiian or other Pacific Islander					
Multiple races					
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>					
Yes					
No	✓	✓	✓		
<b>Please select your age</b>					
Under 18 years old					
18-35					
36-55					
56-65					
66-75		✓		✓	
Over 75	✓		✓		✓
How would you describe yourself?				Resilent, like the town	



SURVEY RESULTS				
<b>What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned</b>				
Flooding	1	2	1	1
Extreme temperatures	5	5	2	5
Winter weather	6	1	3	4
Drought	4	6	5	6
Brushfires and wildfires	3	4	6	3
Severe wind events (tornado, hurricane)	2	3	4	2
Other				7
<b>How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.</b>				
	Roads washed away during Irene, no power for 2.5 days, no phone for 17 days	Loss of power during ice storms. Impassible roads from extreme flooding	Irene	Bridges lost from flooding, alterations to river, erosion around roadways, community disagreement over repairs management, power loss, travel in and out of town impossible
<b>What steps have you taken to prepare for extreme events?</b>				
I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)	✓	✓	✓	✓
I receive news, updates, and information about emergency preparedness in Hawley	✓			✓
I know where the nearest local shelter is				
I know what the local evacuation routes are				
I know what community resources and/or support are available to me	✓			
I have backup power options (generator, solar panels, extra firewood)	✓	✓	✓	✓
I have increased my food security with a garden or stockpiling nonperishable foods	✓	✓	✓	✓
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event	✓		✓	
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event				
Other		Chainsaws and tractor		Woodstove for heat, cell phone to navigate route out over land, trying to improve drainage some
<b>What are some of Hawley's greatest strengths?</b>				
Wastewater infrastructure (septic systems)	✓			✓
Emergency facilities, including the Fire Station				
Communications infrastructure, including the Town's Emergency Notification System				✓
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries	✓	✓	✓	✓
Public facilities				
Public support systems, including Council of Aging				
Transportation infrastructure, including roads and bridges				✓
Agriculture, including local farms		✓		✓
Local businesses				

<b>SURVEY RESULTS</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
Other				
<b>What are some of Hawley's greatest vulnerabilities?</b>				
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff	✓	✓	✓	✓
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns	✓			
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents	✓			✓
Potential dam failure	✓			
Erosion of land surrounding bridges and roadways	✓	✓	✓	✓
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓		✓	✓
Invasive species, crop disease, and pest infestations	✓			✓
New development in hazard-prone areas				
Private drinking water wells				
Power outages due to extreme wind or winter weather events	✓	✓	✓	✓
Communications/Phone outages due to extreme wind or winter weather events	✓	✓	✓	✓
Spills along transportation routes	✓			✓
Degradation or loss of priority natural areas and core wildlife habitat	✓	✓		
Other				heavy goods vehicles using 8A as a shortcut and speeding, Hallockville dugway road health

SURVEY RESULTS	10	11	12	13
<b>What do you think Hawley's top priorities should be for building climate resilience? Pleaes select your top three.</b>				
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps		✓		
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓	✓	✓	✓
Planning to address invasive species and their impacts on natural resources				
Educating the public on hazard impacts and emergency preparedness				✓
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas	✓			
Updating bylaws and regulations to incorporate climate change considerations			✓	
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power	✓	✓	✓	✓
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests	✓			
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change				
Assessing watershed protection opportunities and developing regional partnerships to improve water quality				
Conducting a town-wide water supply analysis				
Investigating opportunities for renewable energy				
Other				
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>				
Interactive online webinars		✓		✓
Pre-recorded videos posted online				✓
Online Surveys				
PDFs available online				✓
Printed media shared via mail	✓		✓	
Information posted to the Town of Hawley website	✓	✓	✓	✓
Newsletters from the Town	✓	✓	✓	
Through social media, including Facebook	✓	✓		
Through the newsletters and meetings of local groups and regional organizations	✓	✓		✓
In-person events	✓	✓		
Other				
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>				
flood maps you listed under 'pursuing data' seem very helpful				
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>				
<a href="mailto:bm1556@yahoo.com">bm1556@yahoo.com</a> <span style="float: right;"><a href="mailto:ptravers@mac.com">ptravers@mac.com</a> and <a href="mailto:gctravers@icloud.com">gctravers@icloud.com</a></span>				
<b>Optional Demographic Questions</b>				
<b>Please tell us about your connection to Hawley</b>				
I rent a home or apartment in Hawley				
I own a home (primary residence) in Hawley	✓	✓	✓	✓

<b>SURVEY RESULTS</b>	10	11	12	13
I work in Hawley				
I own a business in Hawley				
I own a home (secondary residence) in Hawley				
<b>How would you describe yourself?</b>				
White	✓	✓	✓	✓
Black or African-American				
American Indian or Alaskan Native				
Asian				
Native Hawaiian or other Pacific Islander				
Multiple races				
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>				
Yes				
No		✓	✓	✓
<b>Please select your age</b>				
Under 18 years old				
18-35				
36-55	✓	✓		
56-65			✓	
66-75				✓
Over 75				
How would you describe yourself?				active, health, aging fast, wort at home full time towards as much self-sufficiency as possible and affordable

SURVEY RESULTS	14	15	16
<b>What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned</b>			
Flooding	5	1	
Extreme temperatures	3		
Winter weather	6		
Drought	4		
Brushfires and wildfires	1		
Severe wind events (tornado, hurricane)	2		
Other	communications, roads OK for emergency vehicles		Wind - trees
<b>How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.</b>			
	ice storms, rely on generator, length of time, in very heavy weather we can loose land line - Verizon nees to step up but they won't	We are worried about the erosion directly behind our house on 2 Savoy Rd	We have had all of the above, but most frequent trouble comes from falling trees
<b>What steps have you taken to prepare for extreme events?</b>			
I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)		✓	✓
I receive news, updates, and information about emergency preparedness in Hawley			✓
I know where the nearest local shelter is			✓
I know what the local evacuation routes are			
I know what community resources and/or support are available to me	✓		
I have backup power options (generator, solar panels, extra firewood)	✓		✓
I have increased my food security with a garden or stockpiling nonperishable foods	✓	✓	✓
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event	✓	✓	✓
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event			
Other			
<b>What are some of Hawley's greatest strengths?</b>			
Wastewater infrastructure (septic systems)			✓
Emergency facilities, including the Fire Station		✓	
Communications infrastructure, including the Town's Emergency Notification System	✓		
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries	✓	✓	✓
Public facilities			
Public support systems, including Council of Aging			
Transportation infrastructure, including roads and bridges		✓	
Agriculture, including local farms	✓	✓	
Local businesses			

SURVEY RESULTS	14	15	16
Other	people and sports - but I honestly don't know other details		
<b>What are some of Hawley's greatest vulnerabilities?</b>			
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff		✓	✓
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns			
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents	✓		✓
Potential dam failure			
Erosion of land surrounding bridges and roadways		✓	
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓	✓	
Invasive species, crop disease, and pest infestations	✓		
New development in hazard-prone areas			
Private drinking water wells		✓	
Power outages due to extreme wind or winter weather events	✓	✓	✓
Communications/Phone outages due to extreme wind or winter weather events	✓		✓
Spills along transportation routes			
Degradation or loss of priority natural areas and core wildlife habitat		✓	
Other	best way to deal with ticks, mosquitos without Deet	I got Lyme's disease here in Hawley	

SURVEY RESULTS	14	15	16
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>			
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps	✓	✓	
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓	✓	
Planning to address invasive species and their impacts on natural resources	✓		
Educating the public on hazard impacts and emergency preparedness	✓		✓
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas			
Updating bylaws and regulations to incorporate climate change considerations			
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power	✓		✓
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests			
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change	✓	✓	
Assessing watershed protection opportunities and developing regional partnerships to improve water quality			
Conducting a town-wide water supply analysis			
Investigating opportunities for renewable energy		✓	
Other	really all of the above. The town is unique - big data less useful than using eyes and ears		back up power? provided by town? Individuals?
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>			
Interactive online webinars			
Pre-recorded videos posted online			
Online Surveys			
PDFs available online			
Printed media shared via mail	✓	✓	
Information posted to the Town of Hawley website	✓	✓	✓
Newsletters from the Town	✓	✓	✓
Through social media, including Facebook			
Through the newsletters and meetings of local groups and regional organizations	✓		
In-person events			
Other			
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>			
	Advice on best products or peoples' experiences on air conditioners, etc. How specifically are people solving specific problems.	We are worried about the erosion behind our house. I wanted to dump earth or rocks but I was told I need to get a permit from the state. I get that we want to protect the river, but what about protecting our houses? I think that should be equally important, and easier/more accessible for homeowners.	
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>			
	<a href="mailto:ninedogsnow@msn.com">ninedogsnow@msn.com</a>	<a href="mailto:djm1979djm@gmail.com">djm1979djm@gmail.com</a>	<a href="mailto:rick@rickkean.com">rick@rickkean.com</a>
<b>Optional Demographic Questions</b>			
<b>Please tell us about your connection to Hawley</b>			
I rent a home or apartment in Hawley			
I own a home (primary residence) in Hawley	✓	✓	✓

SURVEY RESULTS	14	15	16
I work in Hawley	✓	✓	
I own a business in Hawley			
I own a home (secondary residence) in Hawley			
<b>How would you describe yourself?</b>			
White	✓		
Black or African-American			
American Indian or Alaskan Native			
Asian			
Native Hawaiian or other Pacific Islander			
Multiple races		✓	
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>			
Yes			
No	✓	✓	
<b>Please select your age</b>			
Under 18 years old			
18-35			
36-55		✓	
56-65			
66-75			
Over 75	✓		
How would you describe yourself?	kind of stay at home - over 75. Finding I rely on others more than I used to. Very interested, but not a joiner for committees, etc. and public events. But two others live here - 1 has at home office.		



SURVEY RESULTS	17	18	19	20
<b>What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned</b>				
Flooding	1	1	1	1
Extreme temperatures	4	6		6
Winter weather	6	5		3
Drought	5	7		5
Brushfires and wildfires	3	2		4
Severe wind events (tornado, hurricane)	2	3	2	2
Other		disease and pest infestation to trees		
<b>How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.</b>				
	Flooding and severe wind events that knocked our (and others) exit from Hawley have occurred in recent memory (the 2008 ice storm and tropical storm Irene).	Hurricane Irene, ice storms, culvert failure	Ice storm, flooding	Tropical Storm Irene - flooding, destruction of roads; ice storm that snapped of tops of white pines and other trees; dying trees from disease that then fall across power lines and roads
<b>What steps have you taken to prepare for extreme events?</b>				
I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)	✓	✓	✓	✓
I receive news, updates, and information about emergency preparedness in Hawley	✓		✓	✓
I know where the nearest local shelter is	✓			
I know what the local evacuation routes are	✓			✓
I know what community resources and/or support are available to me	✓			✓
I have backup power options (generator, solar panels, extra firewood)	✓	✓	✓	
I have increased my food security with a garden or stockpiling nonperishable foods	✓	✓	✓	✓
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event	✓	✓	✓	
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event	✓			
Other				there is no local shelter
<b>What are some of Hawley's greatest strengths?</b>				
Wastewater infrastructure (septic systems)	✓		✓	
Emergency facilities, including the Fire Station	✓	✓	✓	✓
Communications infrastructure, including the Town's Emergency Notification System	✓		✓	✓
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries	✓		✓	✓
Public facilities				
Public support systems, including Council of Aging	✓			✓
Transportation infrastructure, including roads and bridges		✓	✓	
Agriculture, including local farms	✓		✓	✓
Local businesses	✓			

SURVEY RESULTS	17	18	19	20
Other				
<b>What are some of Hawley's greatest vulnerabilities?</b>				
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff	✓	✓	✓	✓
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns	✓			
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents	✓	✓		
Potential dam failure	✓			
Erosion of land surrounding bridges and roadways	✓	✓		
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓	✓	✓	✓
Invasive species, crop disease, and pest infestations	✓	✓	✓	✓
New development in hazard-prone areas				
Private drinking water wells				
Power outages due to extreme wind or winter weather events	✓	✓		✓
Communications/Phone outages due to extreme wind or winter weather events	✓	✓		✓
Spills along transportation routes		✓		
Degradation or loss of priority natural areas and core wildlife habitat				
Other			Japanese Knotweed Phragmites	

SURVEY RESULTS	17	18	19	20
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>				
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps				
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓	✓		✓
Planning to address invasive species and their impacts on natural resources				
Educating the public on hazard impacts and emergency preparedness				
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas	✓			✓
Updating bylaws and regulations to incorporate climate change considerations		✓		
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power	✓			
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests		✓		✓
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change				
Assessing watershed protection opportunities and developing regional partnerships to improve water quality				
Conducting a town-wide water supply analysis				
Investigating opportunities for renewable energy				
Other				
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>				
Interactive online webinars	✓			
Pre-recorded videos posted online	✓	✓		✓
Online Surveys				
PDFs available online		✓	✓	✓
Printed media shared via mail	✓		✓	
Information posted to the Town of Hawley website	✓	✓	✓	✓
Newsletters from the Town	✓		✓	✓
Through social media, including Facebook		✓		
Through the newsletters and meetings of local groups and regional organizations	✓			
In-person events	✓			
Other				
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>				
	Address the Route 8A dugway. Route 8A is the state of MA's back up if Route 2 is lost again. One house on top of hill is vulnerable.			
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>				
	<a href="mailto:kthwingjr@gmail.com">kthwingjr@gmail.com</a> and <a href="mailto:beththwing@gmail.com">beththwing@gmail.com</a>	<a href="mailto:puringtone@gmail.com">puringtone@gmail.com</a>	<a href="mailto:vintagersray@hotmail.com">vintagersray@hotmail.com</a>	<a href="mailto:isears7@gmail.com">isears7@gmail.com</a>
<b>Optional Demographic Questions</b>				
<b>Please tell us about your connection to Hawley</b>				
I rent a home or apartment in Hawley				
I own a home (primary residence) in Hawley	✓	✓	✓	✓

<b>SURVEY RESULTS</b>	17	18	19	20
I work in Hawley				
I own a business in Hawley				
I own a home (secondary residence) in Hawley	✓			
<b>How would you describe yourself?</b>				
White	✓		✓	✓
Black or African-American				
American Indian or Alaskan Native				
Asian				
Native Hawaiian or other Pacific Islander				
Multiple races				
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>				
Yes				
No	✓		✓	✓
<b>Please select your age</b>				
Under 18 years old				
18-35				
36-55				
56-65		✓		
66-75				
Over 75	✓		✓	✓
How would you describe yourself?				

SURVEY RESULTS					
What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned					
Flooding	1		4	1	
Extreme temperatures	6		6	2	
Winter weather	3		5	5	X
Drought	4		3	6	
Brushfires and wildfires	5		1	3	
Severe wind events (tornado, hurricane)	2		2	4	X
Other			Supply chain/ logistics interruption	increased rain	
How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.					
			Basement flooding, electricity loss (no water, no heat), roof damage	As the <u>only</u> access to our property is via 2 bridges over the Chickley, Irene was a wake-up call	
What steps have you taken to prepare for extreme events?					
I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)	✓	✓	✓	✓	✓
I receive news, updates, and information about emergency preparedness in Hawley	✓		✓		
I know where the nearest local shelter is					
I know what the local evacuation routes are	✓				
I know what community resources and/or support are available to me					
I have backup power options (generator, solar panels, extra firewood)	✓	✓	✓	✓	✓
I have increased my food security with a garden or stockpiling nonperishable foods	✓		✓		
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event		✓			
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event					
Other					
What are some of Hawley's greatest strengths?					
Wastewater infrastructure (septic systems)	✓		✓		
Emergency facilities, including the Fire Station	✓		✓		
Communications infrastructure, including the Town's Emergency Notification System	✓		✓		✓
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries	✓			✓	✓
Public facilities					
Public support systems, including Council of Aging					
Transportation infrastructure, including roads and bridges			✓	✓	
Agriculture, including local farms	✓		✓		
Local businesses					

SURVEY RESULTS	21	22	23	24	25
Other					
<b>What are some of Hawley's greatest vulnerabilities?</b>					
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff			✓	✓	✓
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns					
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents	✓	✓	✓	✓	
Potential dam failure					
Erosion of land surrounding bridges and roadways			✓		✓
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓	✓		✓	
Invasive species, crop disease, and pest infestations		✓			
New development in hazard-prone areas					
Private drinking water wells					
Power outages due to extreme wind or winter weather events		✓	✓	✓	✓
Communications/Phone outages due to extreme wind or winter weather events		✓			✓
Spills along transportation routes					
Degradation or loss of priority natural areas and core wildlife habitat		✓			
Other			for emergencies - caching logistical support throughout the town		

SURVEY RESULTS	21	22	23	24	25
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>					
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps			✓	✓	
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓	✓	✓		✓
Planning to address invasive species and their impacts on natural resources		✓			
Educating the public on hazard impacts and emergency preparedness		✓	✓		
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas					
Updating bylaws and regulations to incorporate climate change considerations	✓				
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power			✓		
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests	✓	✓	✓		
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change		✓	✓		
Assessing watershed protection opportunities and developing regional partnerships to improve water quality					
Conducting a town-wide water supply analysis				✓	
Investigating opportunities for renewable energy		✓		✓	
Other					
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>					
Interactive online webinars					
Pre-recorded videos posted online		✓			
Online Surveys					
PDFs available online		✓	✓		
Printed media shared via mail	✓				✓
Information posted to the Town of Hawley website	✓	✓	✓	✓	
Newsletters from the Town	✓				✓
Through social media, including Facebook			✓		
Through the newsletters and meetings of local groups and regional organizations					
In-person events					
Other					
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>					
Are you working with the Pioneer Valley Planning Commission?					
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>					
<a href="mailto:leclark24@gmail.com">leclark24@gmail.com</a> <a href="mailto:phil814@aol.com">phil814@aol.com</a> <a href="mailto:lidalewis@comcast.net">lidalewis@comcast.net</a> <a href="mailto:rgorevic@smith.edu">rgorevic@smith.edu</a>					
<b>Optional Demographic Questions</b>					
<b>Please tell us about your connection to Hawley</b>					
I rent a home or apartment in Hawley					
I own a home (primary residence) in Hawley	✓	✓			✓

<b>SURVEY RESULTS</b>	21	22	23	24	25
I work in Hawley					
I own a business in Hawley					
I own a home (secondary residence) in Hawley			✓	✓	
<b>How would you describe yourself?</b>					
White	✓			✓	✓
Black or African-American					
American Indian or Alaskan Native			✓		
Asian					
Native Hawaiian or other Pacific Islander					
Multiple races					
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>					
Yes			✓		
No	✓	✓		✓	✓
<b>Please select your age</b>					
Under 18 years old					
18-35					
36-55					
56-65		✓			
66-75	✓		✓	✓	✓
Over 75					
How would you describe yourself?			retired, aging		



SURVEY RESULTS	26	27	28	29
<b>What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned</b>				
Flooding	2	1	4	1
Extreme temperatures	3	4	3	3
Winter weather	4	6	6	4
Drought	6	5	2	5
Brushfires and wildfires	5	3	5	6
Severe wind events (tornado, hurricane)	1	2	1	2
Other				

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

	Physical isolation during Hurricane Irene	Flooding of roads and landslide on property	the two summers of drought (the two prior to last summer) were absolute hell on the native wildflowers	
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**What steps have you taken to prepare for extreme events?**

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)		✓		
I receive news, updates, and information about emergency preparedness in Hawley	✓	✓	✓	✓
I know where the nearest local shelter is				
I know what the local evacuation routes are		✓		
I know what community resources and/or support are available to me		✓		
I have backup power options (generator, solar panels, extra firewood)	✓	✓	✓	✓
I have increased my food security with a garden or stockpiling nonperishable foods	✓	✓		✓
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event		✓		✓
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event				
Other				

**What are some of Hawley's greatest strengths?**

Wastewater infrastructure (septic systems)				
Emergency facilities, including the Fire Station		✓	✓	
Communications infrastructure, including the Town's Emergency Notification System	✓	✓	✓	
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries			✓	✓
Public facilities				
Public support systems, including Council of Aging	✓			✓
Transportation infrastructure, including roads and bridges		✓		✓
Agriculture, including local farms			✓	✓
Local businesses				

<b>SURVEY RESULTS</b>	26	27	28	29
Other				
<b>What are some of Hawley's greatest vulnerabilities?</b>				
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff		✓		✓
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns		✓		
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents		✓	✓	
Potential dam failure				
Erosion of land surrounding bridges and roadways	✓	✓	✓	
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓			
Invasive species, crop disease, and pest infestations	✓		✓	
New development in hazard-prone areas			✓	
Private drinking water wells				
Power outages due to extreme wind or winter weather events	✓	✓		✓
Communications/Phone outages due to extreme wind or winter weather events	✓	✓	✓	✓
Spills along transportation routes				
Degradation or loss of priority natural areas and core wildlife habitat			✓	✓
Other				

SURVEY RESULTS	26	27	28	29
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>				
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps				✓
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓	✓		✓
Planning to address invasive species and their impacts on natural resources			✓	✓
Educating the public on hazard impacts and emergency preparedness	✓	✓		✓
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas				✓
Updating bylaws and regulations to incorporate climate change considerations			✓	
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power		✓		✓
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests				✓
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change			✓	✓
Assessing watershed protection opportunities and developing regional partnerships to improve water quality			✓	✓
Conducting a town-wide water supply analysis				
Investigating opportunities for renewable energy	✓	✓		
Other				
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>				
Interactive online webinars				✓
Pre-recorded videos posted online				
Online Surveys				✓
PDFs available online		✓	✓	✓
Printed media shared via mail			✓	
Information posted to the Town of Hawley website		✓	✓	
Newsletters from the Town	✓	✓	✓	
Through social media, including Facebook				
Through the newsletters and meetings of local groups and regional organizations				✓
In-person events				
Other				
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>				
			<p>Resilience planning should work <u>with</u> the environment, not obliterate it. I am appalled to see beavers listed as a liability. Educate yourselves! They <u>reduce</u> flooding, protect groundwater, clean toxins from water and provide natural barriers to wildfires. Forest "management" increases erosion and fire risk. It also provides the kind of soil disturbance that encourages invasive plants.</p>	
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>				
<p>pjpurdy285@gmail.com and sspurdy285@gmail.com</p>				
<b>Optional Demographic Questions</b>				
<b>Please tell us about your connection to Hawley</b>				
I rent a home or apartment in Hawley				
I own a home (primary residence) in Hawley			✓	✓

<b>SURVEY RESULTS</b>	26	27	28	29
I work in Hawley				
I own a business in Hawley				
I own a home (secondary residence) in Hawley	✓			
<b>How would you describe yourself?</b>				
White	✓		✓	
Black or African-American				
American Indian or Alaskan Native				
Asian				
Native Hawaiian or other Pacific Islander				
Multiple races				
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>				
Yes				
No	✓			
<b>Please select your age</b>				
Under 18 years old				
18-35				
36-55				
56-65				
66-75			✓	✓
Over 75	✓			
How would you describe yourself?			An environmentalist, very concerned about our non-human neighbors.	

SURVEY RESULTS	30	Totals
<b>What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned</b>		
Flooding	2	26
Extreme temperatures	1	23
Winter weather	1	25
Drought		23
Brushfires and wildfires		23
Severe wind events (tornado, hurricane)	3	25
Other	Not so much heat, but definitely cold	
<b>How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.</b>		
	Road flooding, ice storms, heavy snowfall, high winds	
<b>What steps have you taken to prepare for extreme events?</b>		
I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)	✓	22
I receive news, updates, and information about emergency preparedness in Hawley		19
I know where the nearest local shelter is		3
I know what the local evacuation routes are	✓	6
I know what community resources and/or support are available to me		8
I have backup power options (generator, solar panels, extra firewood)		27
I have increased my food security with a garden or stockpiling nonperishable foods	✓	24
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event	✓	17
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event	✓	8
Other	Evacuation route - only one road	
<b>What are some of Hawley's greatest strengths?</b>		
Wastewater infrastructure (septic systems)		10
Emergency facilities, including the Fire Station		13
Communications infrastructure, including the Town's Emergency Notification System		16
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries	✓	25
Public facilities		0
Public support systems, including Council of Aging		8
Transportation infrastructure, including roads and bridges		12
Agriculture, including local farms	✓	17
Local businesses		3

<b>SURVEY RESULTS</b>	<b>30</b>	<b>Totals</b>
Other		
<b>What are some of Hawley's greatest vulnerabilities?</b>		
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff		21
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns		3
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents		17
Potential dam failure		4
Erosion of land surrounding bridges and roadways		15
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	✓	21
Invasive species, crop disease, and pest infestations		15
New development in hazard-prone areas		2
Private drinking water wells		5
Power outages due to extreme wind or winter weather events	✓	26
Communications/Phone outages due to extreme wind or winter weather events	✓	24
Spills along transportation routes		5
Degradation or loss of priority natural areas and core wildlife habitat		11
Other		

SURVEY RESULTS	30	Totals
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>		
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps	✓	12
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	✓	25
Planning to address invasive species and their impacts on natural resources		7
Educating the public on hazard impacts and emergency preparedness	✓	12
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas		7
Updating bylaws and regulations to incorporate climate change considerations		9
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power	✓	18
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests		10
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change		7
Assessing watershed protection opportunities and developing regional partnerships to improve water quality		2
Conducting a town-wide water supply analysis		3
Investigating opportunities for renewable energy		10
Other		
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>		
Interactive online webinars	✓	5
Pre-recorded videos posted online	✓	6
Online Surveys		3
PDFs available online	✓	12
Printed media shared via mail	✓	18
Information posted to the Town of Hawley website	✓	25
Newsletters from the Town	✓	22
Through social media, including Facebook	✓	5
Through the newsletters and meetings of local groups and regional organizations		9
In-person events		4
Other		
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>		
	<p>It seems like Hawley is doing a good job taking care of the infrastructure it has - roads, bridge, fire station, culverts, line clearing, etc. The lack of reliable ambulance service is deeply disturbing. 100% broadband access should be a priority. Though it may be futile to mention it, 100% cell phone coverage should be right up there too. While these may not be directly part of climate change they certainly will only be more and more critical as climate change advances. We need redundancy in communication infrastructure.</p>	
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>		
	ccutler@smith.edu and solson954@gmail.com	
<b>Optional Demographic Questions</b>		
<b>Please tell us about your connection to Hawley</b>		
I rent a home or apartment in Hawley		0
I own a home (primary residence) in Hawley	✓	24

<b>SURVEY RESULTS</b>	<b>30</b>	<b>Totals</b>
I work in Hawley		2
I own a business in Hawley		0
I own a home (secondary residence) in Hawley		6
<b>How would you describe yourself?</b>		
White	✓	22
Black or African-American		0
American Indian or Alaskan Native		1
Asian		0
Native Hawaiian or other Pacific Islander		0
Multiple races		1
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>		
Yes		1
No	✓	21
<b>Please select your age</b>		
Under 18 years old		0
18-35		0
36-55		3
56-65		4
66-75		8
Over 75	✓	13
How would you describe yourself?		



SURVEY RESULTS		Notes Summarized
<b>What climate hazard are you most concerned about impacting Hawley? 1 = most concerned; 7 = least concerned</b>		
Flooding		Trees falling on people, houses, roads
Extreme temperatures		Ice storms
Winter weather		Communications, roads OK for emergency vehicles
Drought		Wind – trees
Brushfires and wildfires		Disease and pest infestation to trees
Severe wind events (tornado, hurricane)		Supply chain/logistics interruption
Other		Increased rain
<b>How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.</b>		
		<p>Flooded cellar, trees down, loss of electricity</p> <p>Hurricane Irene did cause roads and bridges to be rendered unusable; ice storms have knocked out power; trees have come down - also knocked out power</p> <p>Spring (water supply) dried up 2 years ago</p> <p>Basement flooding</p> <p>Flooding caused by a hurricane (Irene), ice storms</p> <p>Certainly all of the above</p> <p>No, except power outages</p> <p>If it really floods, our home is safe, but we can't drive anywhere</p> <p>Long loss of power both with hurricanes and ice storms. Town garage between two brooks that wash out culverts</p> <p>Roads washed away during Irene, no power for 2.5 days, no phone for 17 days</p> <p>Loss of power during ice storms. Impassible roads from extreme flooding</p> <p>Irene</p> <p>Bridges lost from flooding, alterations to river, erosion around roadways, community disagreement over repairs management, power loss, travel in and out of town impossible</p> <p>Ice storms, rely on generator, length of time, in very heavy weather we can loose land line - Verizon needs to step up but they won't</p> <p>We are worried about the erosion directly behind our house on 2 Savoy Rd</p> <p>Flooding and severe wind events that knocked our (and others) exit from Hawley have occurred in recent memory (the 2008 ice storm and tropical storm Irene).</p> <p>Hurricane Irene, ice storms, culvert failure</p> <p>Ice storm, flooding</p> <p>Tropical Storm Irene - flooding, destruction of roads; ice storm that snapped of tops of white pines and other trees; dying trees from disease that then fall across power lines and roads</p> <p>Basement flooding, electricity loss (no water, no heat), roof damage</p> <p>As the only access to our property is via 2 bridges over the Chickley, Irene was a wake-up call</p> <p>Physical isolation during Hurricane Irene</p> <p>Flooding of roads and landslide on property</p>
<b>What steps have you taken to prepare for extreme events?</b>		
I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)		Chainsaws and tractor
I receive news, updates, and information about emergency preparedness in Hawley		Woodstove for heat, cell phone to navigate route out over land, trying to improve drainage some
I know where the nearest local shelter is		There is no local shelter
I know what the local evacuation routes are		Evacuation route - only one road
I know what community resources and/or support are available to me		
I have backup power options (generator, solar panels, extra firewood)		
I have increased my food security with a garden or stockpiling nonperishable foods		
I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event		
A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event		
Other		
<b>What are some of Hawley's greatest strengths?</b>		
Wastewater infrastructure (septic systems)		Road crew
Emergency facilities, including the Fire Station		People and sports – but I honestly don't know other details
Communications infrastructure, including the Town's Emergency Notification System		
Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries		
Public facilities		
Public support systems, including Council of Aging		
Transportation infrastructure, including roads and bridges		
Agriculture, including local farms		
Local businesses		

SURVEY RESULTS	Notes Summarized
Other	
<b>What are some of Hawley's greatest vulnerabilities?</b>	
Culverts, undersized drainage infrastrucutre, impervious surfaces, and stormwater runoff	Loss of phone unless you have an old phone. Cell phone service is not dependable and needs power to charge it.
Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns	Heavy goods vehicles using 8A as a shortcut and speeding, Hallockville dugway road health. Best way to deal with ticks, mosquitos without Deet
Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents	I got Lyme's disease here in Hawley
Potential dam failure	Japanese Knotweed Phragmites
Erosion of land surrounding bridges and roadways	For emergencies – caching logistical support throughout the town
Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma	
Invasive species, crop disease, and pest infestations	
New development in hazard-prone areas	
Private drinking water wells	
Power outages due to extreme wind or winter weather events	
Communications/Phone outages due to extreme wind or winter weather events	
Spills along transportation routes	
Degradation or loss of priority natural areas and core wildlife habitat	
Other	

SURVEY RESULTS	Notes Summarized
<b>What do you think Hawley's top priorities should be for building climate resilience? Please select your top three.</b>	
Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps	Really all of the above. The Town is unique – big data less useful than using eyes and ears. Backup power? Provided by Town? Individuals?
Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards	
Planning to address invasive species and their impacts on natural resources	
Educating the public on hazard impacts and emergency preparedness	
Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas	
Updating bylaws and regulations to incorporate climate change considerations	
Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power	
Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests	
Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change	
Assessing watershed protection opportunities and developing regional partnerships to improve water quality	
Conducting a town-wide water supply analysis	
Investigating opportunities for renewable energy	
Other	
<b>How would you like to receive information about climate change risks and resiliency projects in Hawley?</b>	
Interactive online webinars	Large print for newsletters. Sometimes I don't have internet.
Pre-recorded videos posted online	
Online Surveys	
PDFs available online	
Printed media shared via mail	
Information posted to the Town of Hawley website	
Newsletters from the Town	
Through social media, including Facebook	
Through the newsletters and meetings of local groups and regional organizations	
In-person events	
Other	
<b>Additional comments or questions about planning for climate resiliency that you would like to share with the project team.</b>	
	<p>I would love SOMEDAY to have solar panels and backup batteries for all.</p> <p>Our biggest vulnerability is poor ambulance service but this is not related to climate.</p> <p>Flood maps you listed under 'pursuing data' seem very helpful.</p> <p>Advice on best products or peoples' experiences on air conditions, etc. How specifically are people solving specific problems.</p> <p>We are worried about the erosion behind our house. I wanted to dump earth or rocks but I was told I need to get a permit from the state. I get that we want to protect the river, but what about protecting our houses? I think that should be equally important, and easier/more accessible for homeowners.</p> <p>Address the Route 8A dugway. Route 8A is the State of MA's backup if Route 2 is lost again. One house on top of hill is vulnerable.</p> <p>Are you working with the Pioneer Valley Planning Commission?</p> <p>Resilience planning should work with the environment, not obliterate it. I am appalled to see beavers listed as a liability. Educate yourselves! They reduce flooding, protect groundwater, clean toxins from water and provide natural barriers to wildfires. Forest "management" increases erosion and fire risk. It also provides the kind of soil disturbance that encourages invasive plants.</p> <p>It seems like Hawley is doing a good job taking care of the infrastructure it has - roads, bridge, fire station, culverts, line clearing, etc. The lack of reliable ambulance service is deeply disturbing. 100% broadband access should be a priority. Though it may be futile to mention it, 100% cell phone coverage should be right up there too. While these may not be directly part of climate change they certainly will only be more and more critical as climate change advances. We need redundancy in communication infrastructure.</p>
<b>If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email.</b>	
<b>Optional Demographic Questions</b>	
<b>Please tell us about your connection to Hawley</b>	
I rent a home or apartment in Hawley	
I own a home (primary residence) in Hawley	

SURVEY RESULTS	Notes Summarized
I work in Hawley	
I own a business in Hawley	
I own a home (secondary residence) in Hawley	
<b>How would you describe yourself?</b>	
White	
Black or African-American	
American Indian or Alaskan Native	
Asian	
Native Hawaiian or other Pacific Islander	
Multiple races	
<b>Are you of Hispanic, Latino, or of Spanish origin?</b>	
Yes	
No	
<b>Please select your age</b>	
Under 18 years old	
18-35	
36-55	
56-65	
66-75	
Over 75	
How would you describe yourself?	

## Hawley Municipal Vulnerability Preparedness (MVP) Survey

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

1 Flooding

3 Extreme temperatures

2 Winter weather

6 Drought

5 Brushfires and wildfires

4 Severe wind events (tornado, hurricane)

— Others \_\_\_\_\_

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

flooded cellar

trees down, loss of electricity

**What steps have you taken to prepare for extreme events? Check all that apply.**

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)

I receive news, updates, and information about emergency preparedness in Hawley

I know where the nearest local shelter is

I know what the local evacuation routes are

I know what community resources and/or support are available to me

I have backup power options (generator, solar panels, extra firewood)

I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

①  Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps

Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards

②  Planning to address invasive species and their impacts on natural resources

Educating the public on hazard impacts and emergency preparedness

Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas

③  Updating bylaws and regulations to incorporate climate change considerations

Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power

Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests

Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change

Assessing watershed protection opportunities and developing regional partnerships to improve water quality

Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

Interactive online webinars

Pre-recorded videos posted online

Online surveys

PDFs available online

Printed media shared via mail

Information posted to the Town of Hawley website

Newsletters from the Town

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Leslie Cooper Email address: lesliefcooper67@gmail.com

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?

active



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## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

2 Flooding

6 Extreme temperatures

4 Winter weather

7 Drought

5 Brushfires and wildfires

1 Severe wind events (tornado, hurricane)

3 Others Trees falling on people, houses, roads

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Hurricane Irene did cause roads + bridges to be rendered

unusable; ice storms have knocked out power; trees have come down - also knock out power.

**What steps have you taken to prepare for extreme events? Check all that apply.**

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)

I receive news, updates, and information about emergency preparedness in Hawley

I know where the nearest local shelter is

I know what the local evacuation routes are

I know what community resources and/or support are available to me

I have backup power options (generator, solar panels, extra firewood)

I have increased my food security with a garden or stockpiling nonperishable foods

<sup>can</sup> I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor <sup>can</sup> checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities - ?

Public support systems, including Council on Aging ?

Transportation infrastructure, including roads and bridges

Agriculture, including local farms - *Meadowsweet Farm Store*

Local businesses ?

Other: *Road crew* \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |   |  |
|---|--|
| <input type="checkbox"/> Interactive online webinars                  | <input checked="" type="checkbox"/> Printed media shared via mail                    |
| <input checked="" type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input checked="" type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online                        |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Suzy Groden Email address: suzygroden@gmail.com

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

**How would you describe yourself?**

81 years old, relatively healthy + mobile, living comfortably with spouse, willing to act on expert advice to reduce the dangers of climate change to individuals and community, + willing to support town efforts in pursuit of greater community safety + resilience.

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>7</u> Flooding             | <u>4</u> Brushfires and wildfires                |
| <u>1</u> Extreme temperatures | <u>5</u> Severe wind events (tornado, hurricane) |
| <u>3</u> Winter weather       | <u>6</u> Others <u>?</u>                         |
| <u>2</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Spring (water supply) dried up 2 yrs ago;

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**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
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- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail                    |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

How would you describe yourself?



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## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>1</u> Flooding             | <u>4</u> Brushfires and wildfires                |
| <u>5</u> Extreme temperatures | <u>3</u> Severe wind events (tornado, hurricane) |
| <u>2</u> Winter weather       | — Others _____                                   |
| <u>6</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

basement flooding

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**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |   |
|--|---|
| <input type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail         |
| <input type="checkbox"/> Pre-recorded videos posted online | <input type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town             |
| <input type="checkbox"/> PDFs available online             |   |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

How would you describe yourself?

# Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

1 Flooding

6 Extreme temperatures

3 Winter weather

5 Drought

4 Brushfires and wildfires

2 Severe wind events (tornado, hurricane)

7 Others \_\_\_\_\_

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

FLOODING\*, ICE STORMS

\* CAUSED BY A HURRICANE (IRENE)

**What steps have you taken to prepare for extreme events? Check all that apply.**

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)

I receive news, updates, and information about emergency preparedness in Hawley

I know where the nearest local shelter is

I know what the local evacuation routes are

I know what community resources and/or support are available to me

I have backup power options (generator, solar panels, extra firewood)

I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
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**What are some of Hawley's greatest strengths? Check all that apply.**

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- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
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- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
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- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
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- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: HENRY EGGERT Email address: HMEGGERT211@GMAIL.COM

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
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**Please select your age range:**

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- 18-35
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- Yes
- No

How would you describe yourself?



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## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |   |  |
|---|--|
| <input type="checkbox"/> Flooding             | <input checked="" type="checkbox"/> Brushfires and wildfires     |
| <input type="checkbox"/> Extreme temperatures | <input type="checkbox"/> Severe wind events (tornado, hurricane) |
| <input type="checkbox"/> Winter weather       | <input type="checkbox"/> Others _____                            |
| <input checked="" type="checkbox"/> Drought   |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

CERTAINLY ALL OF THE ABOVE

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is ?
- I know what the local evacuation routes are ?
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

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- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
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- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps

Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards

Planning to address invasive species and their impacts on natural resources

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Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas

Updating bylaws and regulations to incorporate climate change considerations

Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power

Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests

Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change

Assessing watershed protection opportunities and developing regional partnerships to improve water quality

Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

Interactive online webinars

Pre-recorded videos posted online

Online surveys

PDFs available online

Printed media shared via mail

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Newsletters from the Town

- Through social media, including Facebook
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- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
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- White
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- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

How would you describe yourself? **SERIOUSLY?**

# Hawley Municipal Vulnerability Preparedness (MVP) Survey

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## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>3</u> Flooding             | <u>2</u> Brushfires and wildfires                |
| <u>5</u> Extreme temperatures | <u>4</u> Severe wind events (tornado, hurricane) |
| <u>1</u> Winter weather       | — Others _____                                   |
| <u>6</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

*no except power outages*

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
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- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
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- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
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- Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

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- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
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| <input type="checkbox"/> PDFs available online             |  |

*LARGE PRINT!*

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

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**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

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- Yes
- No

How would you describe yourself?



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- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Flooding       | — Brushfires and wildfires                |
| <input type="checkbox"/> Extreme temperatures      | — Severe wind events (tornado, hurricane) |
| <input checked="" type="checkbox"/> Winter weather | — Others _____                            |
| <input type="checkbox"/> Drought                   |   |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

*If it really floods, our home is safe, but we can't drive anywhere.*

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies) *working on this*
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is *N.A.*
- I know what the local evacuation routes are *N.A.*
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

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**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
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- Through social media, including Facebook
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- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

I would love SOMEDAY to have solar panels + backup batteries for all —

**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

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**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

**How would you describe yourself?**

Resilient, like the town —

# Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

Please return your survey to the designated drop box at Hawley Town Hall's ramp side by **Friday, April 15th**.

Stay up to date on this planning process by checking the Town's website at <http://www.townofhawley.com/>, and please plan to join your neighbors who make up the MVP team and participate in the **public MVP Listening Session, scheduled for 6:30 PM, Wednesday, April 27<sup>th</sup>**.

If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

2 Flooding

7 Extreme temperatures

3 Winter weather

4 Drought

5 Brushfires and wildfires

1 Severe wind events (tornado, hurricane)

4 Others ICE STORMS

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

LONG LOSS OF POWER BOTH W/HURICANE &

ICE STORM TOWN GARAGE BETWEEN 2 BROOKS

THAT WASH OUT POLEVENTS.

**What steps have you taken to prepare for extreme events? Check all that apply.**

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)

I receive news, updates, and information about emergency preparedness in Hawley WHEN MY INTERNET

I know where the nearest local shelter is

I know what the local evacuation routes are

I know what community resources and/or support are available to me

I have backup power options (generator, solar panels, extra firewood)

I have increased my food security with a garden or stockpiling nonperishable foods

WORKS.

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

Loss of phone unless you have an old phone. Cell phone service is not dependable & need power to change it.

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Interactive online webinars</li> <li><input type="checkbox"/> Pre-recorded videos posted online</li> <li><input type="checkbox"/> Online surveys</li> <li><input type="checkbox"/> PDFs available online</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Printed media shared via mail</li> <li>? <input checked="" type="checkbox"/> Information posted to the Town of Hawley website</li> <li><input checked="" type="checkbox"/> Newsletters from the Town</li> </ul> | <p><i>SOMETIMES<br/>I DON'T HAVE<br/>INTERNET</i></p> |
|---|--|---|

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

OUR BIGGEST VULNERABILITY IS POOR  
AMBULANCE SERVICE BUT THAT IS NOT  
RELATED TO CLIMATE

**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: GAIL RICE Email address: TOWN ON WEB SITE

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?



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### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

1 / 5 Flooding

5 Extreme temperatures

6 Winter weather

4 Drought

3 Brushfires and wildfires

2 Severe wind events (tornado, hurricane)

— Others \_\_\_\_\_

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Roads washed away during Irene, No power for 2 1/2 days, no phone for 17 days

**What steps have you taken to prepare for extreme events? Check all that apply.**

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)

I receive news, updates, and information about emergency preparedness in Hawley

I know where the nearest local shelter is

I know what the local evacuation routes are

I know what community resources and/or support are available to me

I have backup power options (generator, solar panels, extra firewood)

I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
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- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
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| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Christopher Tissue Email address: bm1556@yahoo.com

### **Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

How would you describe yourself?

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### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                                   |  |
|-----------------------------------|--|
| <del>2</del> Flooding             | <del>4</del> Brushfires and wildfires                |
| <del>5</del> Extreme temperatures | <del>3</del> Severe wind events (tornado, hurricane) |
| <del>1</del> Winter weather       | — Others _____                                       |
| <del>6</del> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Loss of power during ice storms. Impossible roads  
from extreme flooding

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
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- I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: Chainsaws and Tractor

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

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New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

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Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change

Assessing watershed protection opportunities and developing regional partnerships to improve water quality

Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

Interactive online webinars

Pre-recorded videos posted online

Online surveys

PDFs available online

Printed media shared via mail

Information posted to the Town of Hawley website

Newsletters from the Town

Through social media, including Facebook

Through the newsletters and meetings of local groups and regional organizations

In-person events

Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

### **Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

How would you describe yourself?



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## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>1</u> Flooding             | <u>6</u> Brushfires and wildfires                |
| <u>2</u> Extreme temperatures | <u>4</u> Severe wind events (tornado, hurricane) |
| <u>3</u> Winter weather       | — Others _____                                   |
| <u>5</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

IRENE

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**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps

Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards

Planning to address invasive species and their impacts on natural resources

Educating the public on hazard impacts and emergency preparedness

Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas

Updating bylaws and regulations to incorporate climate change considerations

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Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

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Online surveys

PDFs available online

Printed media shared via mail

Information posted to the Town of Hawley website

Newsletters from the Town

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: LISA JOHNSON Email address: \_\_\_\_\_

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

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- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

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- Asian
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- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

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- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

How would you describe yourself?

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- |                               |  |
|-------------------------------|--|
| <u>1</u> Flooding             | <u>3</u> Brushfires and wildfires                |
| <u>5</u> Extreme temperatures | <u>2</u> Severe wind events (tornado, hurricane) |
| <u>4</u> Winter weather       | <u>7</u> Others _____                            |
| <u>6</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

*bridges lost from flooding, alterations to river, erosion around roadways, community disagreement over repairs management, power loss, travel in and out of town impossible,*

**What steps have you taken to prepare for extreme events? Check all that apply.**

- no items easy to find - yes*
- I have <sup>no</sup> [a kit] in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
  - I receive news, updates, and information about emergency preparedness in Hawley
  - I know where the nearest local shelter is
  - I know what the local evacuation routes are
  - I know what community resources and/or support are available to me
  - I have backup power options (generator, solar panels, extra firewood)
  - I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: <sup>(1)</sup> woodstove for heat, <sup>(2)</sup> cell phone to navigate route out over land

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems) <sup>(3)</sup> trying to improve drainage some

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges ~~culverts could~~

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure ?? where + what are the impacts?

Erosion of land surrounding bridges and roadways dug way

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: heavy goods vehicles using 8A as a shortcut - speeding

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps

Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards

Planning to address invasive species and their impacts on natural resources

Educating the public on hazard impacts and emergency preparedness

Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas

Updating bylaws and regulations to incorporate climate change considerations

Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power

Developing a tree and forest management plan in partnership with (utility companies) to manage potentially hazardous areas and preserve forests

Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change

Assessing watershed protection opportunities and developing regional partnerships to improve water quality

Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

Interactive online webinars

Pre-recorded videos posted online

Online surveys

PDFs available online

Printed media shared via mail

Information posted to the Town of Hawley website

Newsletters from the Town

*Hallock  
dugway  
road health*

*links to*

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

flood maps you listed under 'pursuing data' seem <sup>very</sup> helpful.

**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Travers Email address: p.travers@mac.com  
gc.travers@icloud.com

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

**How would you describe yourself?**

active, healthy, aging fast.  
work at home (full-time) towards as much  
self-sufficiency as possible + affordable.



# Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

Please return your survey to the designated drop box at Hawley Town Hall's ramp side by **Friday, April 15th**.

Stay up to date on this planning process by checking the Town's website at <http://www.townofhawley.com/>, and please plan to join your neighbors who make up the MVP team and participate in the **public MVP Listening Session, scheduled for 6:30 PM, Wednesday, April 27<sup>th</sup>**.

If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)

- |                             |   |
|-----------------------------|---|
| <del>1</del> Flooding — (5) | 1 Brushfires and wildfires                |
| 3 Extreme temperatures      | 2 Severe wind events (tornado, hurricane) |
| 6 Winter weather            | — Others <u>Communications</u>            |
| 4 Drought                   |   |

roads ok for emergency vehicles

How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.

Ice storms - rely on generator - length of time

In very heavy weather we can lose land lines - Verizon needs to step up, but they don't

What steps have you taken to prepare for extreme events? Check all that apply.

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies) — *could do this - we do keep extra water*
- I receive news, updates, and information about emergency preparedness in Hawley — *if we get recorded call*
- I know where the nearest local shelter is — *? Hawley store?*
- I know what the local evacuation routes are — *?*
- I know what community resources and/or support are available to me — *sort of*
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event *could help w/ food - but we are "senior" neighborhood*

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event *probably - ?*

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System *yes. ->*

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: People + spirit - but I honestly don't know

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

*Other details*

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma *yes! Best way - without Deet - > to deal*

*Maybe*  Invasive species, crop disease, and pest infestations *with*

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events *- but we're not alone in this*

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- ⑤ Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps  
*can be simultaneous with other actions -*
- ② Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- ③ Planning to address invasive species and their impacts on natural resources
- 43  Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- ⑤ Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- 2/A  Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: Really ↑ all data about

*The town is unique - big data less useful than using*

**How would you like to receive information about climate change risks and resiliency projects in Hawley?**

**Check all that apply.**

*eyes + ears >*

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | π Printed media shared via mail                    |
| <input type="checkbox"/> Pre-recorded videos posted online | β Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | 5 Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

*advice on best products - on people's experiences ~~etc~~ etc.  
 How specifically are people solving air conditions etc.  
 specific problem? etc*

**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Jody Stewart Email address: ninedogsnow@msw.com

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley — *housemate works from home*
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself? *kind of stay-at-home over 75 - finding I rely on others more than I used to very interested, but not a joiner for committees etc. + public events. But 2 others live here - I have at home office*

## Hawley Municipal Vulnerability Preparedness (MVP) Survey

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### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Flooding | — Brushfires and wildfires                |
| — Extreme temperatures                       | — Severe wind events (tornado, hurricane) |
| — Winter weather                             | — Others _____                            |
| — Drought                                    |   |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

*We are worried about the erosion directly behind our house on 2 Savoy Rd.*

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

*(I got Lyme's disease here in Hawley)*

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail                    |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

We are worried about the erosion behind our house.  
I wanted to dump Earth or Rock, but I was told I need to get a Permit from the State.

If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.

Name: Dan Mojallali Email address: djm1979@djm@gmail.com

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

How would you describe yourself?

I get that we want to protect the river, but what about protecting our houses? I think that should be equally important, and easier/more accesable for home owners.

Thankyou\*



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### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                        |   |
|------------------------|---|
| — Flooding             | — Brushfires and wildfires                |
| — Extreme temperatures | — Severe wind events (tornado, hurricane) |
| — Winter weather       | — Others <u>WIND - TREES</u>              |
| — Drought              |   |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

We have had all of the above, but most frequent trouble comes from falling TREES

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods  
↳ driven by COVID

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power *provided by town? or individuals?*
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input type="checkbox"/> Printed media shared via mail                               |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Rick Kean Email address: Rick@rickkean.com

### **Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

How would you describe yourself?

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### Survey Questions

What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)

1 Flooding

4 Extreme temperatures

6 Winter weather

5 Drought

3 Brushfires and wildfires

2 Severe wind events (tornado, hurricane)

— Others \_\_\_\_\_

How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.

*Flooding and severe wind events that blocked our (and others) exit from Hawley have occurred in recent memory (the 2008 ice storm & tropical storm Irene)*

What steps have you taken to prepare for extreme events? Check all that apply.

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is — The Grove ? The Fire Station?
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event *at 6 Pond Rd, if it's occupied at that time*

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
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- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail                    |
| <input checked="" type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                               | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online                        |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Kirby Thurman Email address: kthurmanjr@gmail.com  
Beth Thurman beththurman@gmail.com

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?



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## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>1</u> Flooding             | <u>2</u> Brushfires and wildfires                          |
| <u>6</u> Extreme temperatures | <u>3</u> Severe wind events (tornado, hurricane)           |
| <u>5</u> Winter weather       | <u>4</u> Others <i>disease + pest infestation to trees</i> |
| <u>7</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Hurricane Irene, ice storms, culvert failure

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms - *as part of our infrastructure?*
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps

Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards

Planning to address invasive species and their impacts on natural resources

Educating the public on hazard impacts and emergency preparedness

Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas

Updating bylaws and regulations to incorporate climate change considerations

Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power

Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests

Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change

Assessing watershed protection opportunities and developing regional partnerships to improve water quality

Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

Interactive online webinars

Pre-recorded videos posted online

Online surveys

PDFs available online

Printed media shared via mail

Information posted to the Town of Hawley website

Newsletters from the Town

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

Address the Rt 8A dugway. Rt 8A is the state of MA's back up if Rt 2 is lost again. One house on top of hill is vulnerable.

**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Ellen Scott Purinton Email address: purinton@gmail.com

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

**How would you describe yourself?**

## Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> 1 Flooding | <input type="checkbox"/> Brushfires and wildfires                             |
| <input type="checkbox"/> Extreme temperatures  | <input checked="" type="checkbox"/> 2 Severe wind events (tornado, hurricane) |
| <input type="checkbox"/> Winter weather        | <input type="checkbox"/> Others _____   |
| <input type="checkbox"/> Drought               |   |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Ice storm, flooding

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**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations *Japanese Knotweed*  
*Phragmites*
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail                    |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input checked="" type="checkbox"/> Online surveys         | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input checked="" type="checkbox"/> PDFs available online  |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Raymond Poudrier Email address: vintagersray@hotmail.com

### **Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

How would you describe yourself?



## Hawley Municipal Vulnerability Preparedness (MVP) Survey

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### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>1</u> Flooding             | <u>4</u> Brushfires and wildfires                |
| <u>6</u> Extreme temperatures | <u>2</u> Severe wind events (tornado, hurricane) |
| <u>3</u> Winter weather       | — Others _____                                   |
| <u>5</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Tropical Storm Irene - Flooding, destruction of roads; ice storm that snapped off the tops of white pines + other trees; dying trees from disease that then fall across power lines + roads

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is There is none
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging *volunteers, good neighbors*
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
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- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |   |  |
|---|--|
| <input type="checkbox"/> Interactive online webinars                  | <input type="checkbox"/> Printed media shared via mail                               |
| <input checked="" type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                               | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input checked="" type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: John Sears Email address: jsears7@gmail.com

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races
- 

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

How would you describe yourself?

## Hawley Municipal Vulnerability Preparedness (MVP) Survey

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### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>1</u> Flooding             | <u>5</u> Brushfires and wildfires                |
| <u>6</u> Extreme temperatures | <u>2</u> Severe wind events (tornado, hurricane) |
| <u>3</u> Winter weather       | — Others _____                                   |
| <u>4</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

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**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
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- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
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- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
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- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail                    |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
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- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?



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### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                        |   |
|------------------------|---|
| — Flooding             | — Brushfires and wildfires                |
| — Extreme temperatures | — Severe wind events (tornado, hurricane) |
| — Winter weather       | — Others _____                            |
| — Drought              |   |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

---

---

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
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I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

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- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |   |  |
|---|--|
| <input type="checkbox"/> Interactive online webinars                  | <input type="checkbox"/> Printed media shared via mail                               |
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| <input type="checkbox"/> Online surveys                               | <input type="checkbox"/> Newsletters from the Town                                   |
| <input checked="" type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: LESLIE CLARK Email address: leclark24@gmail.com

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?

# Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

Please return your survey to the designated drop box at Hawley Town Hall's ramp side by **Friday, April 15th**.

Stay up to date on this planning process by checking the Town's website at <http://www.townofhawley.com/>, and please plan to join your neighbors who make up the MVP team and participate in the **public MVP Listening Session, scheduled for 6:30 PM, Wednesday, April 27<sup>th</sup>**.

If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)

- |   |   |                      |   |   |   |
|---|---|----------------------|---|---|---|
| 4 | ✓ | Flooding             | 1 | ✓ | Brushfires and wildfires                          |
| 6 | ✓ | Extreme temperatures | 2 | ✓ | Severe wind events (tornado, hurricane)           |
| 5 | ✓ | Winter weather       | 7 | ✓ | Others <u>Supply-chain/Logistics Interruption</u> |
| 3 | ✓ | Drought              |   |   |   |

How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.

Basement Flooding - ~~ED~~ Electricity loss (no water, no heat)  
Roof Damage -

What steps have you taken to prepare for extreme events? Check all that apply.

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat

Other: FOR EMERGENCIES - CACHING LOGISTICAL SUPPORT THROUGHOUT THE TOWN.

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input type="checkbox"/> Printed media shared via mail                               |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input checked="" type="checkbox"/> Online surveys         | <input type="checkbox"/> Newsletters from the Town                                   |
| <input checked="" type="checkbox"/> PDFs available online  |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Philip Lacerà Email address: phil814@aol.com

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
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- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

**How would you describe yourself?**

*Retired, Aging.*



## Hawley Municipal Vulnerability Preparedness (MVP) Survey

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |   |                      |   |   |
|---|----------------------|---|---|
| 1 | Flooding             | 3 | Brushfires and wildfires                |
| 2 | Extreme temperatures | 4 | Severe wind events (tornado, hurricane) |
| 5 | Winter weather       | 7 | Others <u>Increased rain</u>            |
| 6 | Drought              |   |   |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

As the only access to our property is via a bridge over the Chickley, Irene was a wake-up call

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
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- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input type="checkbox"/> Printed media shared via mail                               |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input type="checkbox"/> Newsletters from the Town                                   |
| <input type="checkbox"/> PDFs available online             |  |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

are you working with the Pioneer Valley Planning Commission?

**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: LIDA LEWIS Email address: lida.lewis@comcast.net

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?

# Hawley Municipal Vulnerability Preparedness (MVP) Survey

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |  |   |
|--|---|
| <input type="checkbox"/> Flooding                  | <input type="checkbox"/> Brushfires and wildfires                           |
| <input type="checkbox"/> Extreme temperatures      | <input checked="" type="checkbox"/> Severe wind events (tornado, hurricane) |
| <input checked="" type="checkbox"/> Winter weather | <input type="checkbox"/> Others _____                                       |
| <input type="checkbox"/> Drought                   |   |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

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**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
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- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |   |
|--|---|
| <input type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail         |
| <input type="checkbox"/> Pre-recorded videos posted online | <input type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town             |
| <input type="checkbox"/> PDFs available online             |   |

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Ronald Gorevic Email address: rgorevic@smith.edu

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

How would you describe yourself?



## Hawley Municipal Vulnerability Preparedness (MVP) Survey

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

### Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

2 Flooding

3 Extreme temperatures

4 Winter weather

6 Drought

5 Brushfires and wildfires

1 Severe wind events (tornado, hurricane)

— Others \_\_\_\_\_

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

Physical isolation during hurricane Irene

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
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- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
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- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps

Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards

Planning to address invasive species and their impacts on natural resources

Educating the public on hazard impacts and emergency preparedness

Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas

Updating bylaws and regulations to incorporate climate change considerations

Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power

Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests

Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change

Assessing watershed protection opportunities and developing regional partnerships to improve water quality

Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

Interactive online webinars

Pre-recorded videos posted online

Online surveys

PDFs available online

Printed media shared via mail

Information posted to the Town of Hawley website

Newsletters from the Town

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: PETER PURDY  
SUSAN PURDY Email address: pjpurdy285@gmail.com  
sspurdy285@gmail.com

**Optional Demographic Questions**

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

**How would you describe yourself?**

## Hawley Municipal Vulnerability Preparedness (MVP) Survey

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If you have additional input, questions, or barriers to participating, please contact Will Cosby at 413-339-8757 or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

### Survey Questions

What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)

- |                               |  |
|-------------------------------|--|
| <u>1</u> Flooding             | <u>3</u> Brushfires and wildfires                |
| <u>4</u> Extreme temperatures | <u>2</u> Severe wind events (tornado, hurricane) |
| <u>6</u> Winter weather       | — Others _____                                   |
| <u>5</u> Drought              |  |

How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.

Flooding of roads and landslide on property.

What steps have you taken to prepare for extreme events? Check all that apply.

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods
- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other: \_\_\_\_\_

What are some of Hawley's greatest strengths? Check all that apply.

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities, including the library
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other: \_\_\_\_\_

What are some of Hawley's greatest vulnerabilities? Check all that apply.

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events
- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes

- Degradation or loss of priority natural areas and core wildlife habitat
- Gas transmission pipeline
- Other: \_\_\_\_\_

What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.

- Interactive online webinars
- PDFs available online
- Pre-recorded videos posted online
- Printed media shared via mail
- Online surveys

- Information posted to the Town of Hawley website
- Newsletters from the Town
- Through social media, including Facebook

- Through the newsletters and meetings of local groups and regional organizations
- In-person events
- Other: \_\_\_\_\_

Additional comments or questions about planning for climate resiliency that you would like to share with the project team:

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If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

### **Optional Demographic Questions**

Please tell us about your connection to Hawley by selecting all that apply:

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

Please select your age range:

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races
- 

Are you of Hispanic, Latino, or of Spanish origin?

- Yes
- No



# Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

Please return your survey to the designated drop box at Hawley Town Hall's ramp side by **Friday, April 15th**.

Stay up to date on this planning process by checking the Town's website at <http://www.townofhawley.com/>, and please plan to join your neighbors who make up the MVP team and participate in the **public MVP Listening Session, scheduled for 6:30 PM, Wednesday, April 27<sup>th</sup>**.

If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |                               |  |
|-------------------------------|--|
| <u>4</u> Flooding             | <u>5</u> Brushfires and wildfires                |
| <u>3</u> Extreme temperatures | <u>1</u> Severe wind events (tornado, hurricane) |
| <u>6</u> Winter weather       | — Others _____                                   |
| <u>2</u> Drought              |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

The two summers of drought (the two prior to last summer) were absolute hell on the native wildflowers.

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is
- I know what the local evacuation routes are
- I know what community resources and/or support are available to me
- I have backup power options (generator, solar panels, extra firewood)
- I have increased my food security with a garden or stockpiling nonperishable foods

- I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event
- A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event
- Other:

**What are some of Hawley's greatest strengths? Check all that apply.**

- Wastewater infrastructure (septic systems)
- Emergency facilities, including the Fire Station
- Communications infrastructure, including the Town's Emergency Notification System
- Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries
- Public facilities
- Public support systems, including Council on Aging
- Transportation infrastructure, including roads and bridges
- Agriculture, including local farms
- Local businesses
- Other:

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

- Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff
- Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns *?! Who knew beavers are such a hazard?!*
- Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents
- Potential dam failure
- Erosion of land surrounding bridges and roadways
- Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma
- Invasive species, crop disease, and pest infestations
- New development in hazard-prone areas
- Private drinking water wells
- Power outages due to extreme wind or winter weather events

- Communications/Phone outages due to extreme wind or winter weather events
- Spills along transportation routes
- Degradation or loss of priority natural areas and core wildlife habitat
- Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

- Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps
- Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards
- #3  Planning to address invasive species and their impacts on natural resources
- Educating the public on hazard impacts and emergency preparedness
- Developing plans and actions to protect habitat corridors and reduce development in hazard-prone areas
- #1 ✓✓  Updating bylaws and regulations to incorporate climate change considerations
- Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power
- Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests
- Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change
- #2  Assessing watershed protection opportunities and developing regional partnerships to improve water quality
- Conducting a town-wide water supply analysis
- Investigating opportunities for renewable energy
- Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Interactive online webinars       | <input checked="" type="checkbox"/> Printed media shared via mail                    |
| <input type="checkbox"/> Pre-recorded videos posted online | <input checked="" type="checkbox"/> Information posted to the Town of Hawley website |
| <input type="checkbox"/> Online surveys                    | <input checked="" type="checkbox"/> Newsletters from the Town                        |
| <input checked="" type="checkbox"/> PDFs available online  |  |

and provide natural barriers to wildfires.

groundwater clean from well

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

Resilience planning should work with the environment, not obliterate it. I am appalled to see beavers listed as a liability. Educate yourselves! They reduce flooding, protect

Forest "management" increases erosion and fire risk. It also provides the kind of soil disturbance that encourages invasive plants.

If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.

Name: \_\_\_\_\_ Email address: \_\_\_\_\_

### Optional Demographic Questions

Please tell us about your connection to Hawley by selecting all that apply:

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?

~~Environmentalist~~ environmentalist. Very concerned about our non-human neighbors.  
An

# Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

Please return your survey to the designated drop box at Hawley Town Hall's ramp side by **Friday, April 15th**.

Stay up to date on this planning process by checking the Town's website at <http://www.townofhawley.com/>, and please plan to join your neighbors who make up the MVP team and participate in the **public MVP Listening Session, scheduled for 6:30 PM, Wednesday, April 27<sup>th</sup>**.

If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

1 Flooding

3 Extreme temperatures

4 Winter weather

5 Drought

6 Brushfires and wildfires

2 Severe wind events (tornado, hurricane)

— Others \_\_\_\_\_

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

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**What steps have you taken to prepare for extreme events? Check all that apply.**

I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)

I receive news, updates, and information about emergency preparedness in Hawley

I know where the nearest local shelter is

I know what the local evacuation routes are

I know what community resources and/or support are available to me

I have backup power options (generator, solar panels, extra firewood)

I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

Communications infrastructure, including the Town's Emergency Notification System

Natural features, including open space, trails, trees, ponds, wetlands, streams, and fisheries

Public facilities

Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

Increased public health hazards posed by climate change, including ticks, mosquitos, and asthma

Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

Pursuing data or studies showing the projected impacts of future climate hazards in Hawley, such as updated flood maps

Assessing and redesigning critical infrastructure including roads, bridges, and culverts to improve stormwater management and prepare for future hazards

Planning to address invasive species and their impacts on natural resources

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Updating bylaws and regulations to incorporate climate change considerations

Identifying needs for public facilities and services to better support vulnerable residents during an extreme event, such as emergency shelters and backup power

Developing a tree and forest management plan in partnership with utility companies to manage potentially hazardous areas and preserve forests

Strategic planning to identify how regional agriculture can be resilient to natural hazards and climate change

Assessing watershed protection opportunities and developing regional partnerships to improve water quality

Conducting a town-wide water supply analysis

Investigating opportunities for renewable energy

Other: \_\_\_\_\_

**How would you like to receive information about climate change risks and resiliency projects in Hawley? Check all that apply.**

Interactive online webinars

Pre-recorded videos posted online

Online surveys

PDFs available online

Printed media shared via mail

Information posted to the Town of Hawley website

Newsletters from the Town

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

**Additional comments or questions about planning for climate resiliency that you would like to share with the project team:**

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**If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.**

Name: Will Coshy Email address: \_\_\_\_\_

### Optional Demographic Questions

**Please tell us about your connection to Hawley by selecting all that apply:**

- I rent a home or apartment in Hawley
- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
- I own a home (secondary residence) in Hawley

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

**Are you of Hispanic, Latino, or of Spanish origin?**

- Yes
- No

**Please select your age range:**

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

How would you describe yourself?



# Hawley Municipal Vulnerability Preparedness (MVP) Survey

Severe weather events such as Hurricane Irene and climate change have the potential to impact our economy, how we support our community's health and vulnerable residents, how we build our infrastructure, and how we protect our natural resources. Your voice represents a unique perspective from the Hawley community, and by taking this survey you will help us prepare for a more resilient future—your opinion counts!

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If you have additional input, questions, or help with barriers preventing you from participating, please contact MVP team leader Will Cosby at 413-339-8757, or [wilvis413@gmail.com](mailto:wilvis413@gmail.com).

## Survey Questions

**What climate hazard are you most concerned about impacting Hawley? Please rank the following options from most concerning (number 1) to least concerning (number 7)**

- |  |  |
|--|--|
| <u>2</u> Flooding  | — Brushfires and wildfires                       |
| <u>1</u> Extreme temperatures <i>not so much heat but definitely cold.</i> | <u>3</u> Severe wind events (tornado, hurricane) |
| <u>1</u> Winter weather  | — Others _____                                   |
| — Drought  |  |

**How have these hazards impacted you or your community? Memories of climate hazards could include flooding of local roads, heat waves, heavy snowfall or ice storms, high winds, drought conditions, business and school disruptions, and more.**

road flooding, ice storms, heavy snowfall, high winds,

**What steps have you taken to prepare for extreme events? Check all that apply.**

- I have a kit in case of emergencies (which may include food, water, flashlights, batteries, and other supplies)
- I receive news, updates, and information about emergency preparedness in Hawley
- I know where the nearest local shelter is *we would like to*
- I know what the local evacuation routes are *only one road*
- I know what community resources and/or support are available to me *besides 911?*
- I have backup power options (generator, solar panels, extra firewood) *not power for but wood left*
- I have increased my food security with a garden or stockpiling nonperishable foods

I check on a vulnerable neighbor and help them with food, snow removal, or other support during an extreme event

A neighbor checks in on me and helps with food, snow removal, or other support during an extreme event

Other: \_\_\_\_\_

**What are some of Hawley's greatest strengths? Check all that apply.**

Wastewater infrastructure (septic systems)

Emergency facilities, including the Fire Station

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Public support systems, including Council on Aging

Transportation infrastructure, including roads and bridges

Agriculture, including local farms

Local businesses

Other: \_\_\_\_\_

**What are some of Hawley's greatest vulnerabilities? Check all that apply.**

Culverts, undersized drainage infrastructure, impervious surfaces, and stormwater runoff

Impacts from beavers, including flooding, damage to electrical or gas generation equipment, and water quality concerns

Vulnerable populations, including identifying shelter capacity, meeting medical needs, and reaching at-risk residents

Potential dam failure

Erosion of land surrounding bridges and roadways

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Invasive species, crop disease, and pest infestations

New development in hazard-prone areas

Private drinking water wells

Power outages due to extreme wind or winter weather events

Communications/Phone outages due to extreme wind or winter weather events

Spills along transportation routes

Degradation or loss of priority natural areas and core wildlife habitat

Other: \_\_\_\_\_

**What do you think Hawley's top priorities should be for building climate resilience? Please select your top three actions.**

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PDFs available online

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Information posted to the Town of Hawley website

Newsletters from the Town

while these may not seem be directly part of climate change they certainly will only be more and more critical as climate change advances. we need RESILIENT infrastructure in communication infrastructure

- Through social media, including Facebook
- Through the newsletters and meetings of local groups and regional organizations

- In-person events
- Other: \_\_\_\_\_

Additional comments or questions about planning for climate resiliency that you would like to share with the project team:

It seems like Hawley is doing a good job taking care of the infrastructure it has - roads, bridges, fire station, etc.   
 The lack of reliable ambulance service is deeply disturbing. 100% broadband access should be a priority.   
 Though it may be futile to mention it, <sup>100%</sup> cell phone coverage should be right up there too.

If you are interested in receiving additional updates related to climate or planning initiatives in Hawley, please enter your name and email below.

Name: Charles Cutler Email address: ccutler@smith.edu  
Name: Susan Olson Email address: solson954@gmail.com

### Optional Demographic Questions

Please tell us about your connection to Hawley by selecting all that apply:

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- I own a home (primary residence) in Hawley
- I work in Hawley
- I own a business in Hawley
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- Asian
- Native Hawaiian or other Pacific Islander
- Multiple races

Are you of Hispanic, Latino, or of Spanish origin?

Please select your age range:

- Under 18 years old
- 18-35
- 36-55
- 56-65
- 66-75
- Over 75

- Yes
- No

How would you describe yourself?



## **ATTACHMENT 10: CRB WORKSHOP PRESENTATIONS, HANDOUTS, NOTES, ATTENDANCE**

# Agenda – Workshop 1

## March 9, 2022

- 2:00 – 2:15 Welcome and Introductions
- 2:15 – 2:40 MVP Overview and Workshop Goals
- 2:40 – 2:55 Risk Matrix Overview
- 2:55 – 3:40 Group Exercise
  - Presentation Overview Hazards
  - Identify and Prioritize Hazards (Exercise)
- 3:40 – 3:45 Break
- 3:45 – 4:50 Group Exercise
  - Introductions (5 minutes)
  - Identify Infrastructure Vulnerabilities and Strengths (20 minutes)
  - Identify Environmental Vulnerabilities and Strengths (20 minutes)
  - Identify Social Vulnerabilities and Strengths (20 minutes)
- 4:50 – 5:00 Closing Remarks and Next Steps

# Workshop 1- Attendee List

## March 9, 2022

- Rosalie Starvish, Senior Project Manager, GZA
- Theresa Albanese, Senior Project Manager, GZA
- Will Cosby, Core Team Leader. Served on Conservation Commission and Green Communities
- John Sears, former Select Board Chair
- Sarah Ohmann, Resident, Conservation Commission Member
- Elizabeth (Liz) Billings, Resident and Town Clerk
- Constance Emmett, Resident
- Dean Desmarais, Resident and Emergency Management Director.
- Lloyd Crawford, Resident and former Chair of the Conservation Commission, served on Planning Board and Board of Assessors
- Hussain Hamdan, Resident, Chair of the Select Board, and Serve on Fire Department and Emergency Management

# Community Resilience Building Workshop 1

Town of Hawley, Massachusetts

March 9, 2022

Known for Excellence. Built on Trust.



Photo credit: Hawley Bog (Ken Kuttner, July 2021)

Rosalie Starvish, P.E., CFM, CPMSM  
Theresa Albanese, Senior PWS  
GZA GeoEnvironmental, Inc.

1

## Workshop Agenda

- 2:00 – 2:15 Welcome and Introductions
- 2:15 – 2:40 MVP Overview and Workshop Goals
- 2:40 – 2:55 Risk Matrix Overview
- 2:55 – 3:40 Group Exercise
  - Presentation Overview Hazards
  - Identify and Prioritize Hazards (Exercise)
- 3:40 – 3:45 Break
- 3:45 – 4:50 Group Exercise
  - Introductions (5 minutes)
  - Identify Infrastructure Vulnerabilities and Strengths (20 minutes)
  - Identify Environmental Vulnerabilities and Strengths (20 minutes)
  - Identify Social Vulnerabilities and Strengths (20 minutes)
- 4:50 – 5:00 Closing Remarks and Next Steps

2



## Welcome and Introductions

3

## Hawley Introductions

Williams Cosby, MVP Team Leader

### Core Team Members:

- Liz Billings, Town Clerk
- Sarah Ohmann, Resident
- Gary Mitchell, Highway Superintendent
- Constance Emmett, Resident
- Lloyd Crawford, Conservation Commission
- Greg Cox, Volunteer Fire Chief
- Brandon Root, Volunteer Fire Department

4

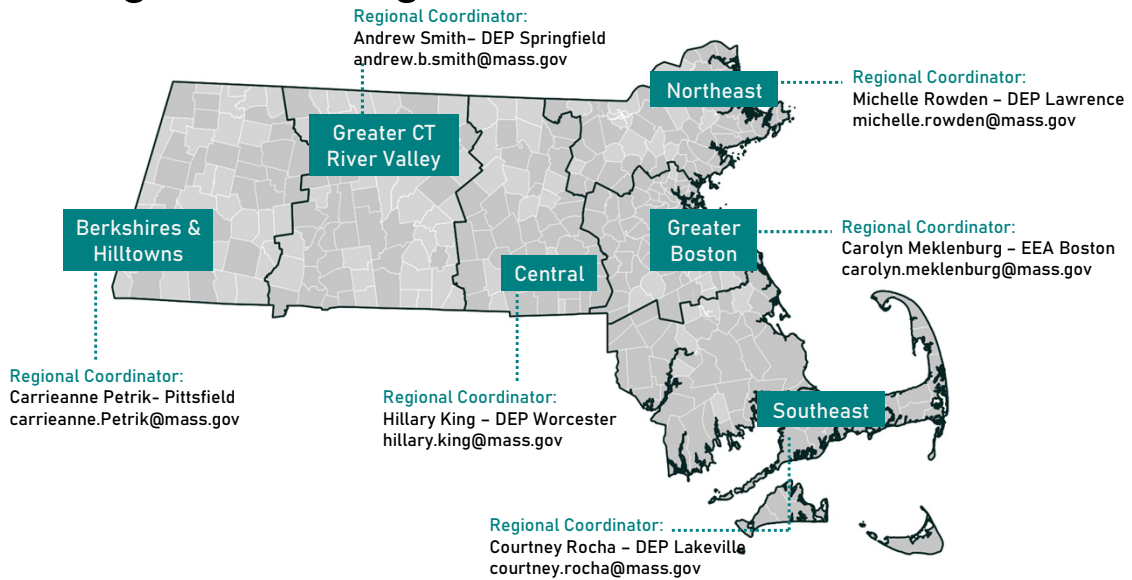


# Municipal Vulnerability Preparedness Program



5

## MVP Regions & Regional Coordinators



6

# Massachusetts State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) - September 2018



- Acknowledges that climate change is already worsening natural hazards, **integrating information and planning elements** for 14 natural hazards that affect the Commonwealth
- Uses **best scientific data and projections** to assess risk and vulnerability
- Evaluates the Commonwealth's existing capabilities to implement **agency-specific and statewide activities** to reduce risk and increase resilience

7



## MA 2050 Decarbonization Plan



EEA is conducting an **80x50 Study** to identify the strategies, policies, and implementation pathways for MA to achieve at least 80% Greenhouse Gas reductions by 2050.

The results of that research will be published in a **2050 Roadmap report** and will inform the setting of a **2030 GHG emissions limit** and the development of the **Clean Energy and Climate Plan for 2030**.

More information and opportunities to get involved:

[www.mass.gov/2050Roadmap](http://www.mass.gov/2050Roadmap)



8

# MVP Principles

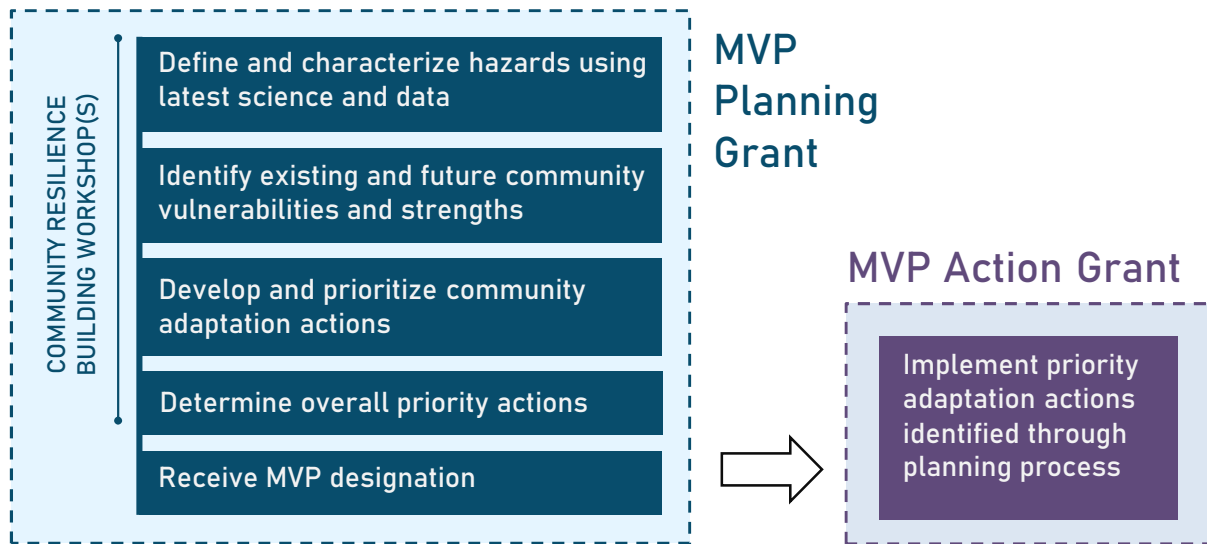
A community-led, accessible process that

- Employs local knowledge and buy-in
- Utilizes partnerships and leverages existing efforts
- Is based in best available climate projections and data
- Incorporates principles of nature-based solutions
- Demonstrates pilot potential and is proactive
- Reaches and responds to risks faced by EJ communities and vulnerable populations

**Why nature-based?**  
 Where appropriate, nature-based solutions can be more cost-effective, protect water quality and quantity, sustain lands that provide food and recreation opportunities, reduce erosion, and minimize temperature increases associated with developed areas and climate change.

9

# MVP Process/ Grant Types



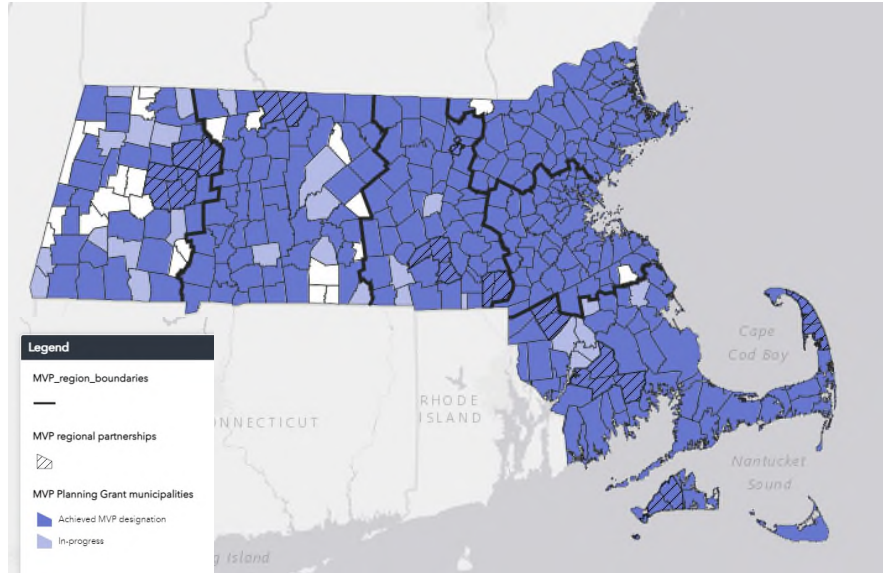
10

# MVP Program Status

MVP Designations  
89% of the  
Commonwealth  
312 communities

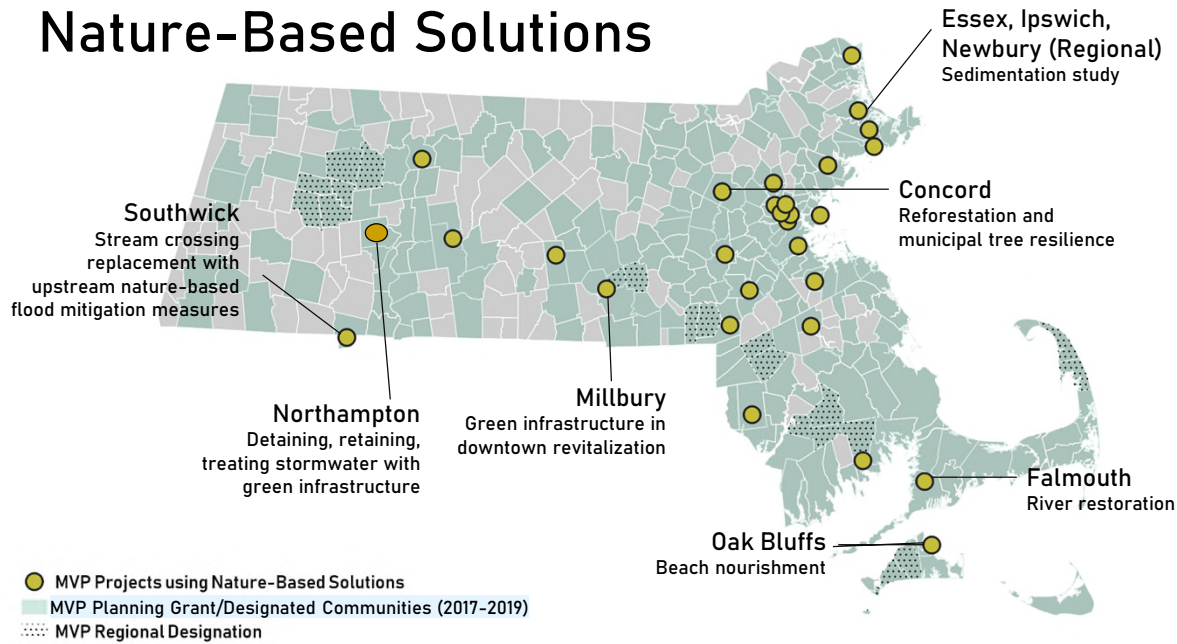
Action Grant Projects  
FY 18: 37  
FY 19: 36  
FY 20: 53  
FY 21: 41

Total Awards  
\$44M in planning and  
action grants to date



11

# Nature-Based Solutions



12

## CRB Workshop Overview

### Community-led Process:

#### **CRB Workshops 1 & 2.**

Today, March 9 & Wednesday, March 30

#### **Public Listening session**

- April 27 at 6:30 pm (virtual using Zoom)
- to present overview of the workshop results, resilience actions, and implementation plan.
- to provide opportunity for the public to ask questions and provide input

## CRB Workshop Overview

### Objectives:


- 1. Define top hazards.** Understand connections between ongoing issues, hazards, and local planning and actions in your Community.
- 2. Identify and map vulnerabilities and strengths** to develop infrastructure, societal and environmental risk profiles for your Community.
- 3. Develop and prioritize actions** that reduce vulnerabilities and reinforce strengths for your community - local organizations, academic institutions, businesses, private citizens, neighborhoods, and community groups.
- 4. Identify opportunities** to advance actions that further reduce the impact of hazards and increase resilience in your Community.

# CRB Workshop Overview

## Hawley – Resources:

- GIS
- Hazard Mitigation Plan

**THE TOWN OF HAWLEY**  
**2014 MULTI-HAZARD MITIGATION PLAN**



Prepared by:  
**The Hawley Multi-Hazard Mitigation Planning Committee**  
Gregory Cox, Emergency Management Director  
Lloyd Crawford, Conservation Commission and Planning Board  
John Sears, Select Board and Hawley Historical Commission  
Virginia Gabert, Select Board Assistant

and

**The Franklin Regional Council of Governments**  
Peggy Sloan, Director of Planning & Development  
Kimberly Noake MacPhee, P.G., Natural Resources & Land Use  
Program Manager  
Gretchen Johnson, Planning Grant Administrator  
Alyssa Larose, Land Use Planner  
Ryan Clary, Senior GIS Specialist

*This project was funded by a grant received from the Massachusetts Emergency Management Agency (MEMA)*

# Risk Matrix Overview



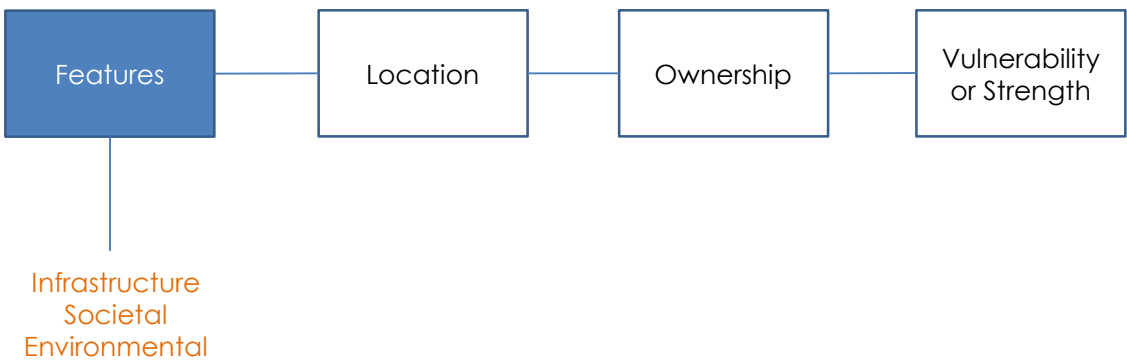


### Risk Matrix – Features

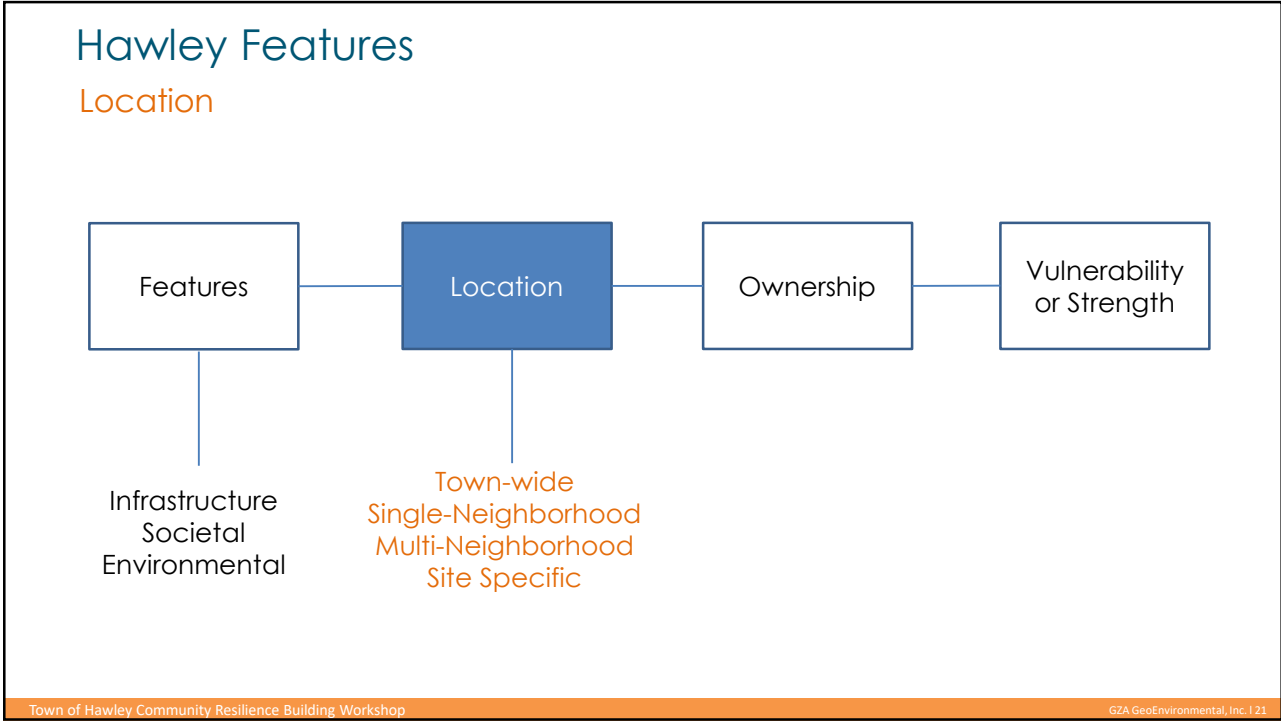
Features	Location	Ownership	V or S
Infrastructural			
Societal			
Environmental			

19

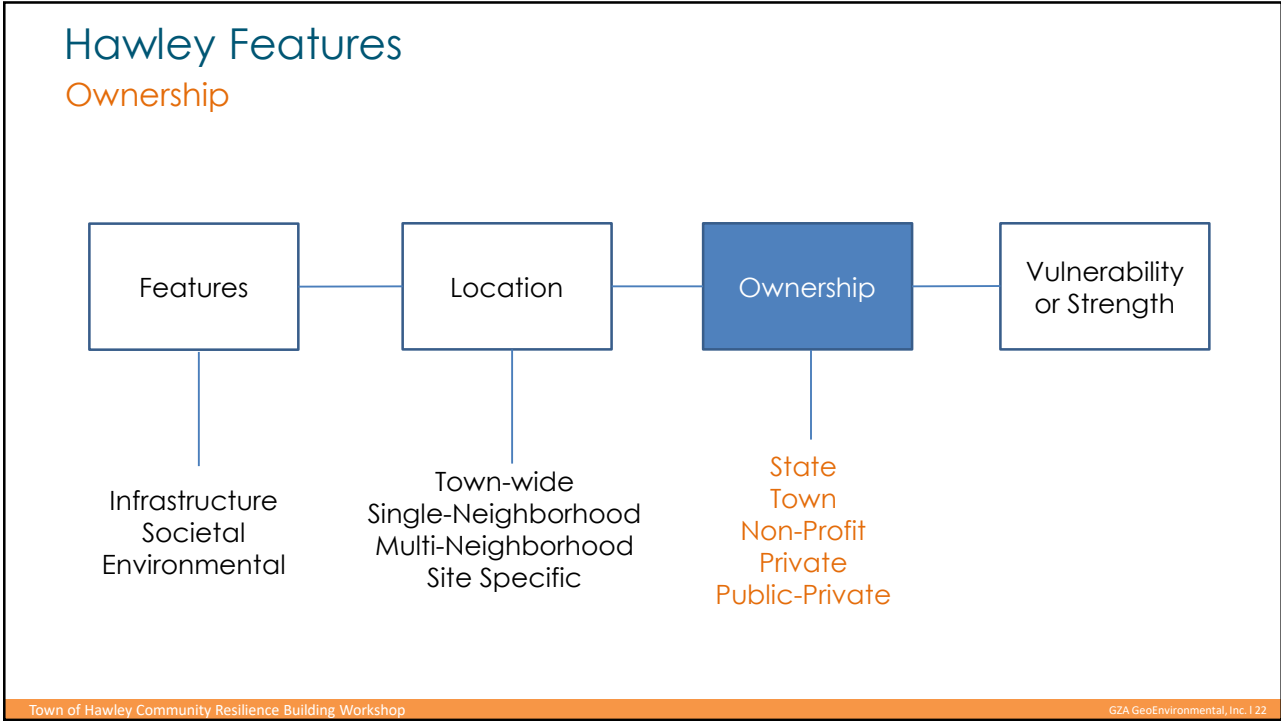
### Hawley Features



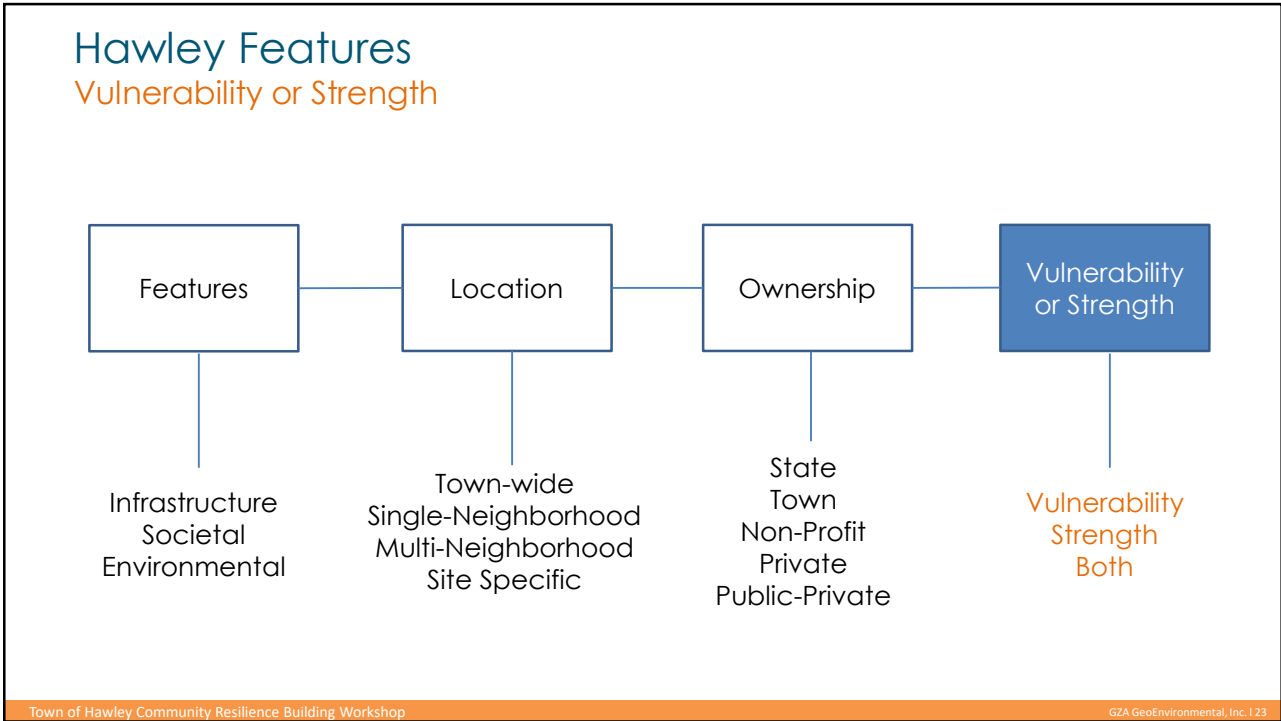
20



21



22



23

## Infrastructure Features - examples

- Transportation Systems including roadways and bridges
- Utilities
- Stormwater Infrastructure

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## Societal Features - examples

- Neighborhoods
- Police and Fire Departments
- Vulnerable Populations including elderly and children
- Emergency Medical Services
- Low to Moderate Income Areas
- Special Needs



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## Environmental Features

- Hawley Bog
- Chickley River
- Clesson Brook
- State Forest



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## Group Exercise

+/- 45 Minutes  
Identify and Prioritize Hazards

1. Hazard Overview (presentation)
2. Identify and Prioritize Hazards (exercise)

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### 2014 TOWN OF HAWLEY MULTI - HAZARD MITIGATION PLAN Primary Hazards Identified

- Hurricane / Tropical Storm
- Dam Failure
- Microburst and Thunderstorms (wind related)
- Flooding
- Wildfire/Brush Fire
- Severe Winter Storm
- Landslides
- Ice Jams
- Tornados
- Earthquakes
- Drought
- Beaver Dams
- Extreme Temperature



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## HAWLEY HAZARD MITIGATION PLAN UPDATE Risk Assessment - Hazard Index Summary

Likelihood/Frequency		
Point Value	Category	Characteristics
0	Very Low	Events that occur less frequently than once in 1,000 years (Less than 0.1% probability per year)
1	Low	Events that occur from once in 100 years to once in 1,000 years (0.1% to 1% probability per year)
2	Medium	Events that occur from once in 10 years to once in 100 years (1% to 10% probability per year)
3	High	Events that occur more frequently than once in 10 years (Greater than 10% probability per year)

Severity		
Point Value	Category	Characteristics
0	Minor	Limited and scattered property damage; no damage to public infrastructure (roads, bridges, trains, airports, public parks, etc.); contained geographic area; essential services (utilities, hospitals, schools, etc.) not interrupted; no injuries or fatalities.
1	Serious	Scattered major property damage (more than 50% destroyed); some minor infrastructure damage; wider geographic area; essential services are briefly interrupted; some injuries and/or fatalities.
2	Extensive	Consistent major property damage; major damage to public infrastructure (up to several days for repairs); essential services are interrupted from several hours to several days; many injuries and fatalities.
3	Catastrophic	Property and public infrastructure destroyed; essential services stopped, multiple injuries and fatalities.

Impact Area Assessment		
Point Value	Category	Characteristics
1	Small	In localized, unpopulated or lightly areas of Town, without structures or critical facilities
2	Medium	Impacting only portions of the Town
3	Large	Town-wide and/or essential and lifeline facilities

## HAWLEY HAZARD MITIGATION PLAN UPDATE Risk Assessment - Hazard Index Summary

Natural Hazard	Likelihood/ Frequency	Impact Area Assessment	Severity/ Magnitude	Hazard Index
<b>SEVERE WEATHER HAZARDS</b>				
<b>Severe Wind</b>				
Hurricanes/ Tropical Storms	2	3	2	7
Thunderstorms	3	2	1	6
Tornadoes	3	2	1	6
<b>Severe Weather</b>				
Lightning	3	2	0	5
Intense Rainfall	3	2	0	5
Hail	3	2	0	5

## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment - Hazard Index Summary

Natural Hazard	Likelihood/ Frequency	Impact Area Assessment	Severity/ Magnitude	Hazard Index
<b>SEVERE WEATHER HAZARDS</b>				
<b>Flood Hazards</b>				
Riverine Flooding	3	3	1	7
Poor Drainage Flooding	3	2	1	6
Beaver Dams	3	2	1	6
Dam Failures	1	2	2	5
<b>Severe Winter Weather</b>				
Snow and Blizzards	3	3	1	7
Ice Storms	3	3	1	7

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## HAWLEY HAZARD MITIGATION PLAN UPDATE

### Risk Assessment - Hazard Index Summary

Natural Hazard	Likelihood/ Frequency	Impact Area Assessment	Severity/ Magnitude	Hazard Index
<b>CLIMATE RELATED HAZARDS</b>				
Extreme Cold	3	3	0	6
Extreme Heat	1	3	0	4
Drought	1	3	0	4
Wildfire	1	1	0	2
<b>GEOLOGIC HAZARDS</b>				
Earthquakes	1	3	1	5
Landslides	1	1	0	2
Tsunami	0	0	0	0

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### 2022 Risk Assessment Hazard Index Summary

- **Flooding (7 / 6)**
- **Dam Failure (5)**
- **Ice Jams**
- **Hurricane / Tropical Storm (7)**
- **Tornados (6)**
- **Severe Thunderstorms / High Winds/ Hail (6 / 5)**
- **Winter Hazards (Heavy Snow / Nor'easters / Blizzard / Ice) (7)**
- **Earthquakes (5)**
- **Landslides (2)**
- **Wildfires (2)**
- **Drought (4)**
- **Beaver Dams (6)**
- **Extreme Cold (6)**
- **Extreme Heat (4)**



### 2022 Risk Assessment Hazard Index Summary

- **Hurricane / Tropical Storm (7)**
- **Winter Hazards (Heavy Snow / Nor'easters / Blizzard / Ice) (7)**
- **Flooding (7 / 6)**
- **Tornados (6)**
- **Beaver Dams (6)**
- **Severe Thunderstorms / High Winds/ Hail (6 / 5)**
- **Extreme Cold (6)**
- **Dam Failure (5)**
- **Extreme Heat (4)**
- **Drought (4)**
- **Earthquakes (5)**
- **Brush Fires (2)**
- **Landslides (2)**
- **Ice Jams**

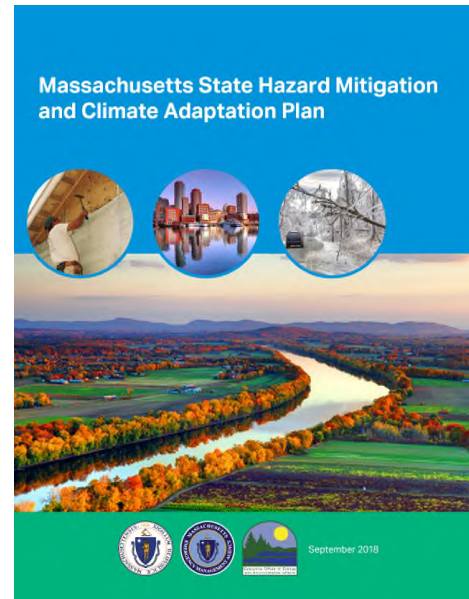




## Massachusetts 2018 Hazards Rankings

### Top 5 Hazards 2018 State Hazard Mitigation and Climate Adaptation Plan

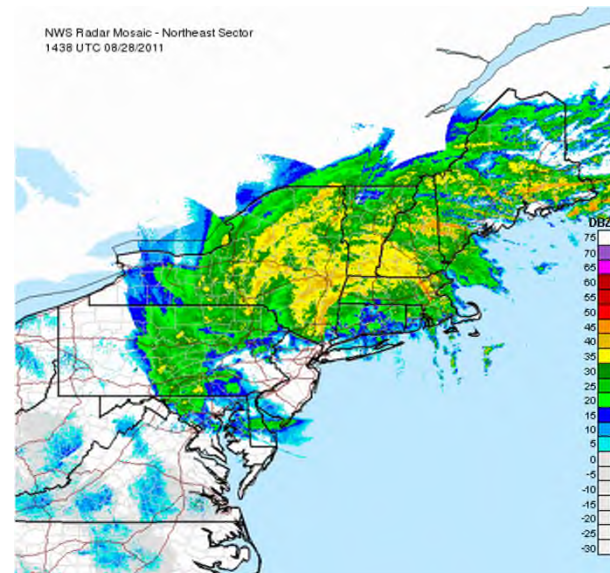
- Extreme Precipitation
- Hurricanes/Tropical Storms
- Nor'easters
- Ice Storms
- Severe Winter Storm



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## Climate Change


- Hot Temperatures +
- Precipitation Intensity +
- Heavy Precipitation Frequency +
- Snowfall -



Irene; By NWS - <http://weatherinnyc.blogspot.hk/2011/08/aug-27-hurricane-irene-updates.html>, Public Domain,  
<https://commons.wikimedia.org/w/index.php?curid=68686636>

36

# Heat



Average/Extreme  
Temperatures

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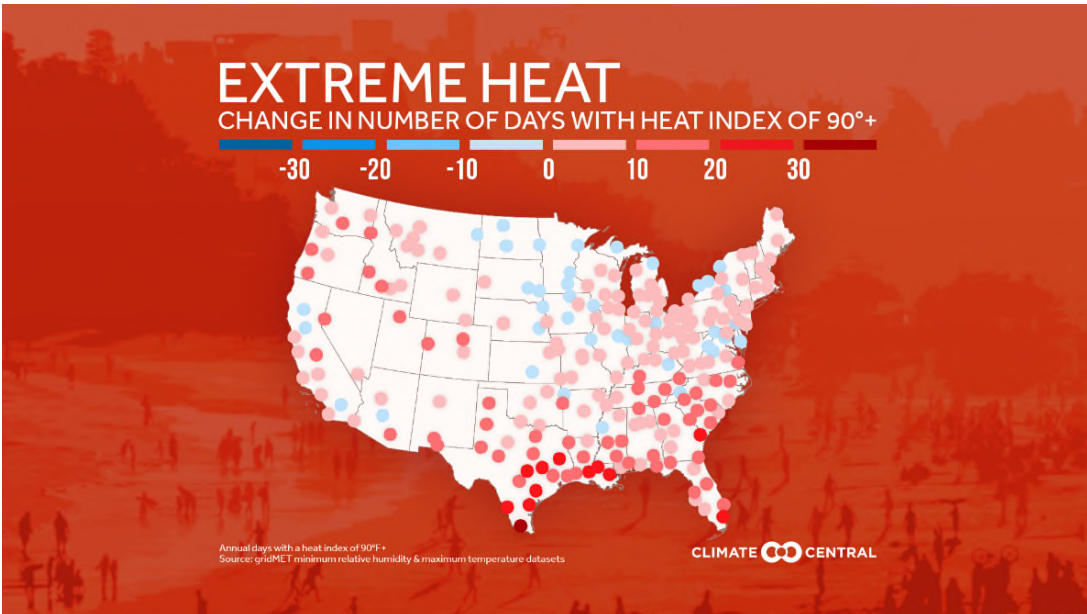
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## Increased Temperatures/Extreme Heat

### EXTREME HEAT

CHANGE IN NUMBER OF DAYS WITH HEAT INDEX OF 90°+



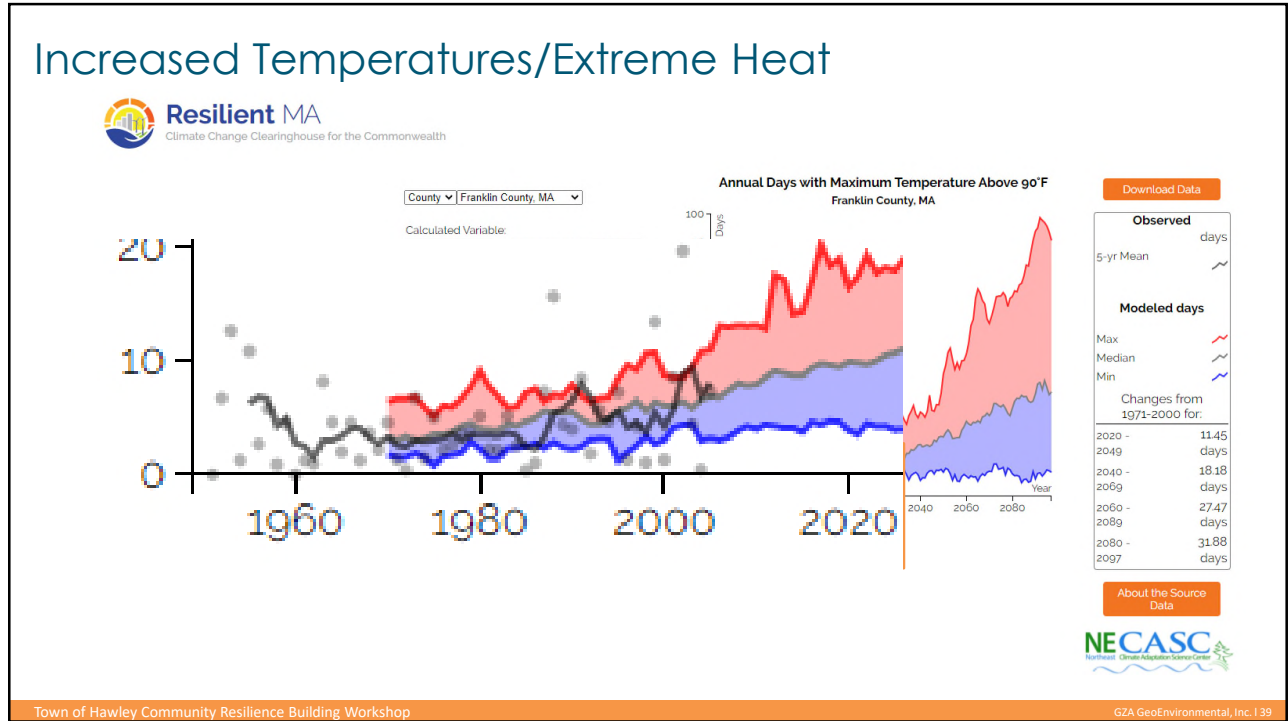
Annual days with a heat index of 90°F+  
Source: gridMET minimum relative humidity & maximum temperature datasets

CLIMATE CENTRAL

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## Winter Hazards

Severe Winter Storm

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# Snowfall

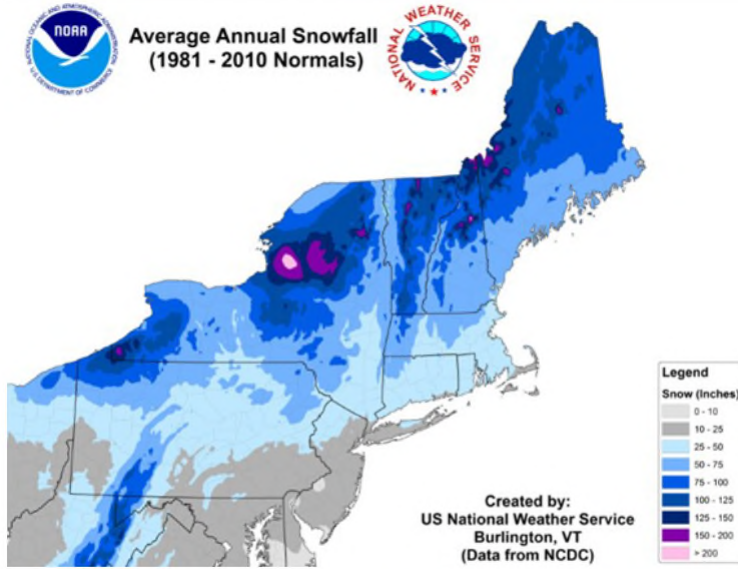


Figure 2-13: Average Annual Snowfall (<http://www.weather.gov/btv/winter>)

# Wind



## Wind Speed

Sustained Wind Speed	Annual Recurrence Interval (years)	Physical Effects
6-38 kts (30-44 mph)	<1	Trees in motion. Light-weight loose objects (e.g., lawn furniture) tossed or toppled.
39-49 kts (45-57 mph)	2 to 10	Large trees bend; twigs, small limbs break, and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roof, doors). Building partially under construction may be damaged. A few loose shingles removed from houses. Carports may be uplifted; minor cosmetic damage to mobile homes and pool lanai cages.
50-64 kts (58-74 mph)	10 to 70	Large limbs break; shallow rooted trees pushed over. Semi-trucks overturned. More significant damage to old/weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas; mobile homes, carports incur minor structural damage; large billboard signs may be toppled
65-77 kts (75-89 mph)	70 to 300	Widespread damage to trees with trees broken/uprooted. Mobile homes may incur more significant structural damage; be pushed off foundations or overturned. Roof may be partially peeled off industrial/commercial/warehouse buildings. Some minor roof damage to homes. Weak structures (e.g., farm buildings, airplane hangars) may be severely damaged.
78+ kts (90+ mph)	>300	Many large trees broken and uprooted. Mobile homes severely damaged; moderate roof damage to homes. Roofs partially peeled off homes and buildings. Moving automobiles pushed off dry roads. Barns, sheds demolished.

Table 3-5: Physical Effects associated with different wind speeds

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## Flood



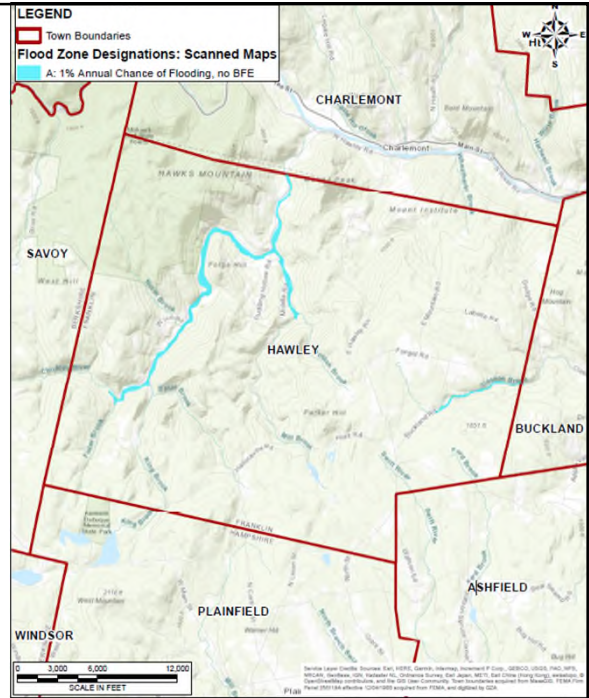
Inland Flooding



Coastal Flooding

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# FEMA Flood Hazard Zones



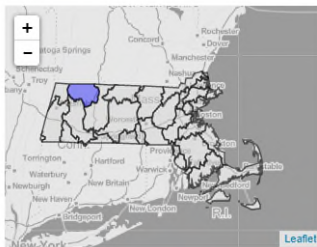
45

# Flooding Frequency: Future

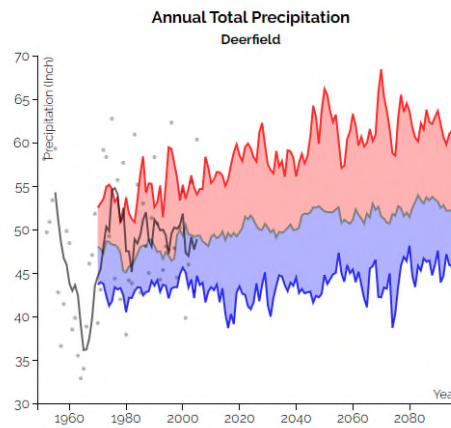
Basin: Deerfield

Calculated Variable: Total Precipitation

Season: Annual



Add Chart



Download Data

Observed	
Inches	
5-yr Mean	~
Modeled Inches	
Max	~
Median	~
Min	~
Changes from 1971-2000 for:	
2020 - 2049	1.64"
2040 - 2069	3.23"
2060 - 2089	3.44"
2080 - 2097	4.29"

About the Source Data



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**Group Exercise**  
+/- 45 Minutes  
Identify and Prioritize Hazards

1. Hazard Overview (presentation)  
2. Identify and Prioritize Hazards (exercise)

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**BREAK 3:40 to 3:45 PM**

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Group Exercise  
+/- 1 hr  
Identify Feature Vulnerabilities and Strengths

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Closing Remarks and Next Steps

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## Next Steps

Workshop 2: March 30, 2022

Community Actions Overview

Group Exercise

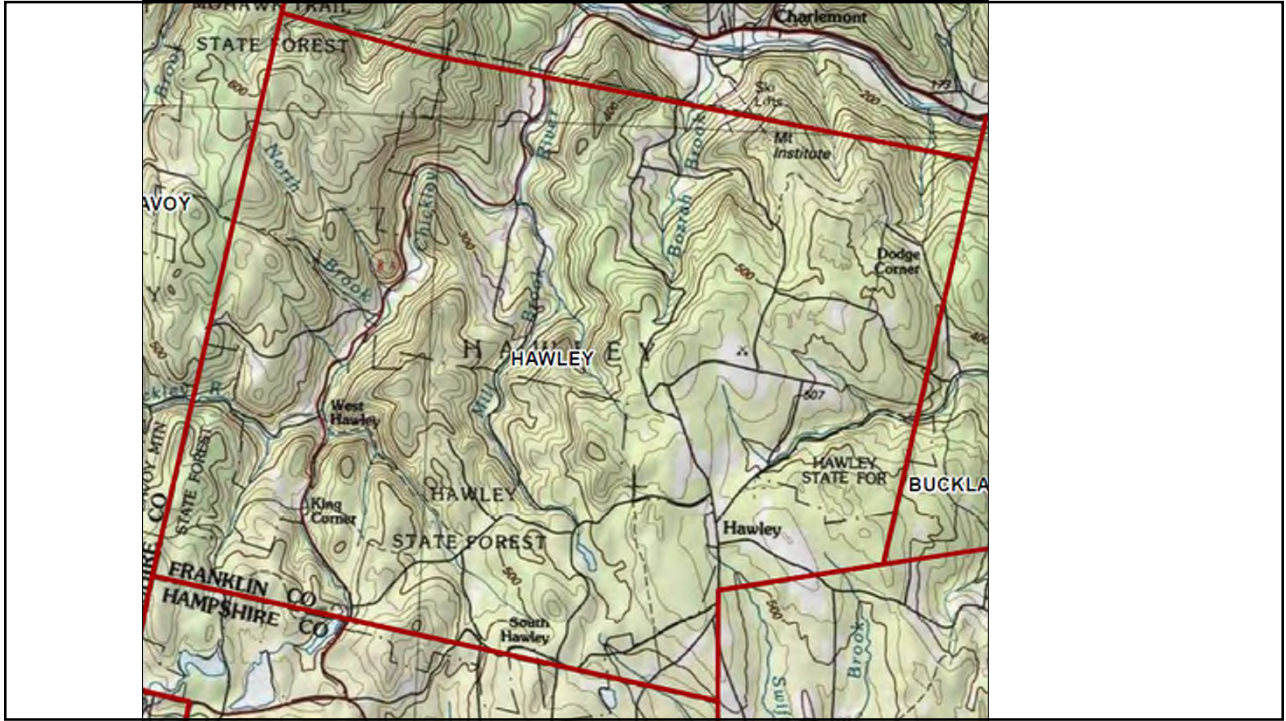
Define and prioritize actions



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Handouts

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# Workshop 1- Notes

## March 9, 2022

- Solar Flares – fire hazard
- High precipitation – flooding, erosion, landslides
- High winds – storms, tornado, hurricane
  - Residents see increase in high winds and tropical rains
  - Hazardous trees; tree trimming/removal
- Severe winter weather – snow and ice; severe ice storm in the past; extreme cold is incidental to severe winter weather.
- High temperatures/drought – wildfires; agriculture
- Budgets for sand/salt/fuel have been going up and up; biggest expenditures for town in winter category, a ton of money on road maintenance
- Fluctuations in temperature – freeze/thaw – a lot more work on roads.
- A number of little dams in Hawley – not expected to be an issue.
- One dam in West Hawley – would damage 8A- Fullerville dam – only one with risk of damage, low probability of failure – neighborhood Route 8A/Savoy Road
- Ice jams happen but do not do damage
- Beaver dams come up as an issue every year or two threatening public roads/infrastructure; could also be nature-based solutions/assets.



Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

H-M-L priority for action over the Short or Long term (and Ongoing)  
 V = Vulnerability S = Strength

Features	Location	Ownership	V or S	Significant Precipitation	High Winds	Extreme Temperatures/Drought	Severe Winter Storms	Priority	Time
								H - M - L	Short Long Ongoing
<b>Infrastructural</b>									
Roadway embankments			V	rainfall events and flooding, land slides (Dugway Area)	severe ice storms; trees felled (2008)	wildfires	travel interruption; services impacted/lost;		
Dams (none with power gen); smaller ones- one in E. Hawley- could be damage; Fullerville Dam pond- damage to 8A, residences (neighborhood) Kings brook to Chickley River; Savoy Road		Public Land DCR (Camp)	V				recurring expenses/resources for treatment, road maint.- more sand, salt and fuel		
beaver dams- threatening roadways			V/S						
Dugway area-state highway Hawley Road- has very steep hillside lands right at edge of road, no shoulder, river on other side of steel guardrail, runs 1/4 mile, very steep and wet (springs), slope is held up by railroad ties			V						
Undersized or degraded culverts generally-example is near Rt 8A/Stetson Road - Kings Corner Culvert (Kings Brook under Rt. 8)-applying for grant to design/permit 24-ft bridge to replace 8-ft metal culvert			V	feeder streams culverts are hydraulically inadequate and subject to clogging					
Town garage; storage of diesel; salt shed. This is also the West Hawley Fire Station	247 West Hawley Road (northern building) (southern bldg is salt shed)	Town of Hawley	V/S	Highly damaged during Irene; highest asset, stores equipment, most vulnerable perched on river; bank was armored (some riprap but also willow plantings) with grant from FEMA. This garage is needed to respond to rest of damage in Town.	Garage is needed to respond to all hazards.	Garage is needed to respond to all hazards.	Garage is needed to respond to all hazards.		
E. Hawley Road near Hawley Haus -hairpin curve in road - very steep		Town-owned	V	Both side of hairpin quite steep and has ditches on either side - undermining during high precip					
Labelle Road		Town-owned	V	Tendency to wash out; very close to Clesson Brook - road is down in ravine. This road is in accessible from West Hawley without going around 1.5-2 hr trip through other towns. Requires a lot of maintenance to remain possible; culverts don't function, ditches fill in. People live on this road so can't shut it down	Road is narrow, dirt, and has trees right at edges. Only one way out on this road, especially in winter (other side is closed).				
East Road (portions are dirt road)		Town-owned	V	Along a brook, badly damaged in Irene -very steep and doesn't shed water effectively; was rebuilt but should be evaluated			can't get through in winter/mud season		
Foot of Forge Hill Road before it meets West Hawley Road			V	Chickley Riverbank was undermined in Irene, road washed out; 2 culverts located there draining wetland that saturated the bank; culverts were replaced with compliant stream xing stds; problem was largely solved and no houses.					
East Hawley Meeting House - used by Sons and Daughters, 1848 National Register, former Church		Sons and Daughters of Hawley	S						
Roadways - limited access into town or across town - one culvert failure could be devastating			V						
Hawley Fire Department	Ashfield and Plainfield Road		S	no flood risk	one of two radio communications; could potentially be damaged by high winds	can't be used for cooling center	can't be used for emergency shelter		
<b>Societal</b>									
No facilities that would qualify as emergency shelters in town, but town offices could be used short-term as possible warming/cooling center for minimal amount of people		Town	V						
Private ownership of equipment, many people are self-sufficient; a lot of goodwill-neighborly (List and capabilities of volunteers available)			S						
Sons and Daughters of Hawley- volunteer work-maintain East Hawley meeting house and another building that has a heated kitchen	John Sears is president		S						
High population over the age of 60, many individuals with medical vulnerability			V	lack of electricity or transportation can affect those people					
Communications infrastructure has improved but is fragile, limited cellular service, many dependent on landlines			S/V						
Hawley Grove, former meeting house for summer camp, has a heated kitchen but no potable water.		Sons and Daughters of Hawley							
<b>Environmental</b>									
Beaver Dams (assets)			S						
Chickley River access for swimming									
Deerfield River tubing, swimming access (not in Hawley)									
State forest									
No town-owned recreational areas									
Sons and Daughters walking tour of Old Town Common	Google Earth shows it on east side of E Hawley Road, most of town common is actually on west side of rd		S						

# Agenda – Workshop 2

## March 30, 2022

- 2:00 - 2:10 Welcome and Introductions
- 2:10 – 2:25 MVP Overview and Workshop Goals
- 2:25 – 2:45 Review Workshop 1 Outputs
- 2:45 – 3:05 Community Actions Overview
- 3:05 – 3:10 Break
- 3:10 – 4:00 Group Exercise
  - Define actions
- 4:00-4:30 Group Exercise
  - Prioritize Actions
- 4:30 – 4:50 Group Exercise
  - Finalize Top Action Priorities
- 4:50 – 5:00 Closing Remarks and Next Steps

# Workshop 2 - Attendee List

## March 30, 2022

- Rosalie Starvish, Senior Project Manager, GZA
- Theresa Albanese, Senior Project Manager, GZA
- Will Cosby, Core Team Leader. Served on Conservation Commission and Green Communities
- John Sears, former Select Board Chair
- Sarah Ohmann, Resident, Conservation Commission Member
- Elizabeth (Liz) Billings, Resident and Town Clerk
- Kevin Richardson,
- Constance Emmett, Resident
- Carrieanne Petrick, Regional Coordinator - MVP
- Lloyd Crawford, Resident and former Chair of the Conservation Commission, served on Planning Board and Board of Assessors
- Hussain Hamdan, Resident, Chair of the Select Board, and Serve on Fire Department and Emergency Management
- Bob Root
- Lark Thwing

# Community Resilience Building Workshop 2

Town of Hawley, Massachusetts

March 30, 2022

Known for Excellence. Built on Trust.



Photo credit: Hawley Bog (Ken Kuttner, July 2021)

Rosalie Starvish, P.E., CFM, CPMSM  
Theresa Albanese, Senior PWS  
GZA GeoEnvironmental, Inc.

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## Workshop Agenda

- 2:00 – 2:10 Welcome and Introductions
- 2:10 – 2:25 MVP Overview and Workshop Goals
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  - Finalize Top Action Priorities
- 4:50 – 5:00 Closing Remarks and Next Steps

2

## Welcome and Introductions

3

## Hawley Introductions

Williams Cosby, MVP Team Leader

### Core Team Members:

- Liz Billings, Town Clerk
- Sarah Ohmann, Resident
- Gary Mitchell, Highway Superintendent
- Constance Emmett, Resident
- Lloyd Crawford, Conservation Commission
- Greg Cox, Volunteer Fire Chief
- Brandon Root, Volunteer Fire Department
- Dean Desmaris, Emergency Management Director
- John Sears, former Select Board Chair

4





## Municipal Vulnerability Preparedness Program



5

## MVP Principles

A community-led, accessible process that

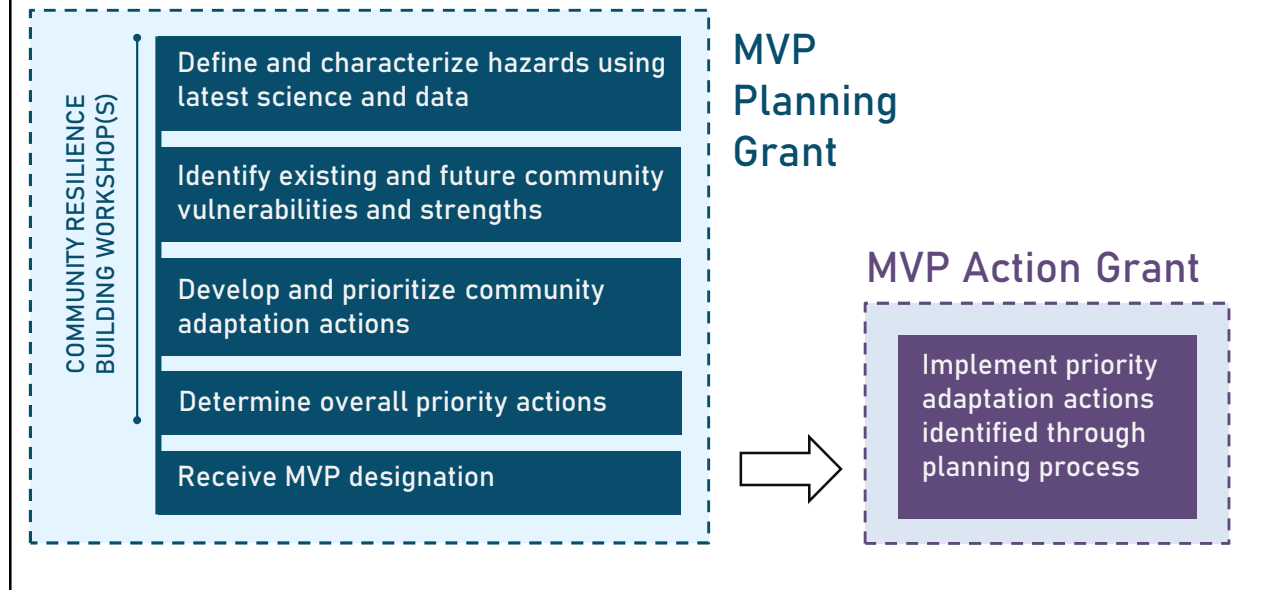
- Employs local knowledge and buy-in
- Utilizes partnerships and leverages existing efforts
- Is based in best available climate projections and data
- Incorporates principles of nature-based solutions
- Demonstrates pilot potential and is proactive
- Reaches and responds to risks faced by EJ communities and vulnerable populations

### Why nature-based?

Where appropriate, nature-based solutions can be more cost-effective, protect water quality and quantity, sustain lands that provide food and recreation opportunities, reduce erosion, and minimize temperature increases associated with developed areas and climate change.

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## MVP Process/ Grant Types



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## CRB Workshop Overview

### Community-led Process:

#### **CRB Workshops 1 & 2.**

Today, March 9 & Wednesday, March 30

#### **Public Listening session**

- April 27 at 6:30 pm (virtual using Zoom)
- to present overview of the workshop results, resilience actions, and implementation plan.
- to provide opportunity for the public to ask questions and provide input

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## CRB Workshop Overview

### Objectives:

1. **Define top hazards.** Understand connections between ongoing issues, hazards, and local planning and actions in your Community.
2. **Identify and map vulnerabilities and strengths** to develop infrastructure, societal and environmental risk profiles for your Community.
3. **Develop and prioritize actions** that reduce vulnerabilities and reinforce strengths for your community - local organizations, academic institutions, businesses, private citizens, neighborhoods, and community groups.
4. **Identify opportunities** to advance actions that further reduce the impact of hazards and increase resilience in your Community.

## Workshop Agenda

- 2:00 – 2:10 Welcome and Introductions
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# Workshop #1 Recap Community Resilience Building Risk Matrix:

The screenshot shows an Excel spreadsheet with the following content:

- Title Bar:** Q2\_CFB Workshop Risk Matrix for Hawley - poster to print-Archi Styles - Compatibility Mode
- Formulas Bar:** =beaver dams-threatening roadways
- Worksheet Title:** Community Resilience Building Risk Matrix
- URL:** www.CommunityResilienceBuilding.org
- Priority Legend:**
  - High Priority (Red)
  - Medium Priority (Yellow)
  - Low Priority (Green)
- Table Headers:**
  - Location
  - Ownership
  - Year 1
  - Year 2
  - Year 3
  - Year 4
  - Year 5
  - Year 6
  - Year 7
  - Year 8
  - Year 9
  - Year 10
  - Year 11
  - Year 12
  - Year 13
  - Year 14
  - Year 15
  - Year 16
  - Year 17
  - Year 18
  - Year 19
  - Year 20
  - Year 21
  - Year 22
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  - Year 32
  - Year 33
  - Year 34
  - Year 35
  - Year 36
  - Year 37
  - Year 38
  - Year 39
  - Year 40
  - Year 41
  - Year 42
  - Year 43
  - Year 44
  - Year 45
  - Year 46
  - Year 47
  - Year 48
  - Year 49
  - Year 50
- Table Content:**
  - Infrastructure:**
    - Roadway embankments: Significant Precipitation (partial events and flooding, land slides (Dugway Area)), High Winds (severe ice storms, trees felled (2008)), Extreme Temperatures/Drought (transformation, control, impact/diffusion)
    - Dams (none with power gen) smaller ones in E. Hawley could be damaged. Public Land (Camp) - damage to SR, residences (neighborhood) (Camp Brook to Chalky River, State Road)
    - Public Land (SORIC camp): Severe Winter Storms (requiring equipment/resources for treatment, road maintenance, more sand, salt and fuel)
    - beaver dams-threatening roadways
  - Societal:** (Empty rows)
  - Environmental:** (Empty rows)
- Watermark:** Page 1
- Footer:** Town of Hawley Community Resilience Building Workshop | GZA GeoEnvironmental, Inc. | 11

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This is a clean, empty version of the risk matrix spreadsheet. It contains the same headers and structure as the screenshot above, but with no data entered. The categories 'Infrastructure', 'Societal', and 'Environmental' are clearly visible with their respective sub-headers.

- Worksheet Title:** Community Resilience Building Risk Matrix
- URL:** www.CommunityResilienceBuilding.org
- Priority Legend:** High (Red), Medium (Yellow), Low (Green)
- Table Headers:** Location, Ownership, Year 1-50
- Table Content:** Empty rows under Infrastructure, Societal, and Environmental categories.
- Footer:** Town of Hawley Community Resilience Building Workshop | GZA GeoEnvironmental, Inc. | 12

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## Risk Matrix – Features

Infrastructure



- Roadway embankments
- Dams
- Dugway area
- Culverts
- Town garage/W. Hawley Fire Station
- Roadways (East Hawley Rd (hairpin curve); Labelle Road; East Road; Forge Hill Road)
- East Hawley Meeting House
- Hawley Fire Department

Features	Location	Ownership	Vulnerability
Infrastructure			
Societal			
Environmental			

## Risk Matrix – Features

Societal



- No emergency shelter
- Self-sufficient, neighborly citizens
- Sons and Daughters of Hawley
- Elderly population
- Weak Communications infrastructure
- Hawley Grove

Features	Location	Ownership	Vulnerability
Infrastructure			
Societal			
Environmental			



## Workshop Agenda

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- 4:50 – 5:00 Closing Remarks and Next Steps

## Community Actions Overview

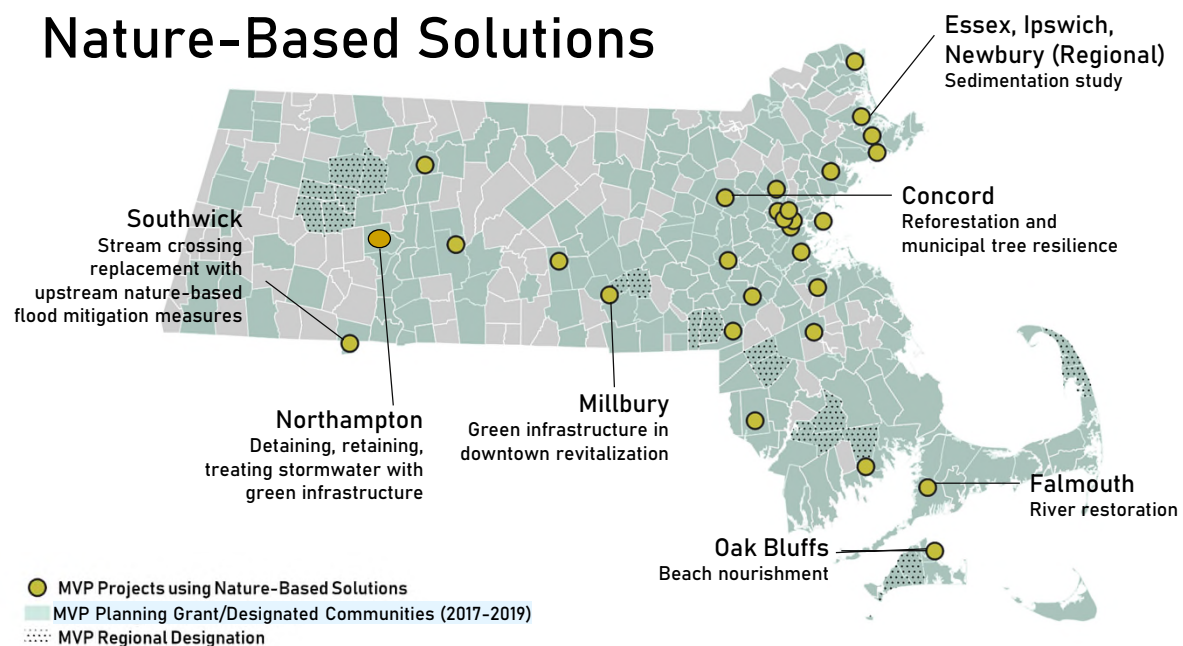


## MVP Action Grants: Core Principles

- Furthering a **community identified priority action** to address climate change impacts.
- Utilizing **climate change data** for a proactive solution.
- Employing **nature-based solutions**.
- Increasing **equitable outcomes** for and supporting **strong partnerships** with Environmental Justice (EJ) Populations and Climate Vulnerable Populations.
- Conducting robust **community engagement**.
- Achieving broad and multiple community benefits.
- Committing to **monitoring** project success and **maintaining** the project into the future.
- Utilizing **regional solutions** for regional benefit.
- Pursuing **innovative, transferable** approaches.

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## Nature-Based Solutions



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## MVP Action Grants: Project Types

1. Planning, Assessments, Capacity-Building, and Regulatory Updates
2. Design and Permitting
3. Construction and On-the-Ground Implementation



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## Planning, Assessments, Capacity-Building, and Regulatory Updates

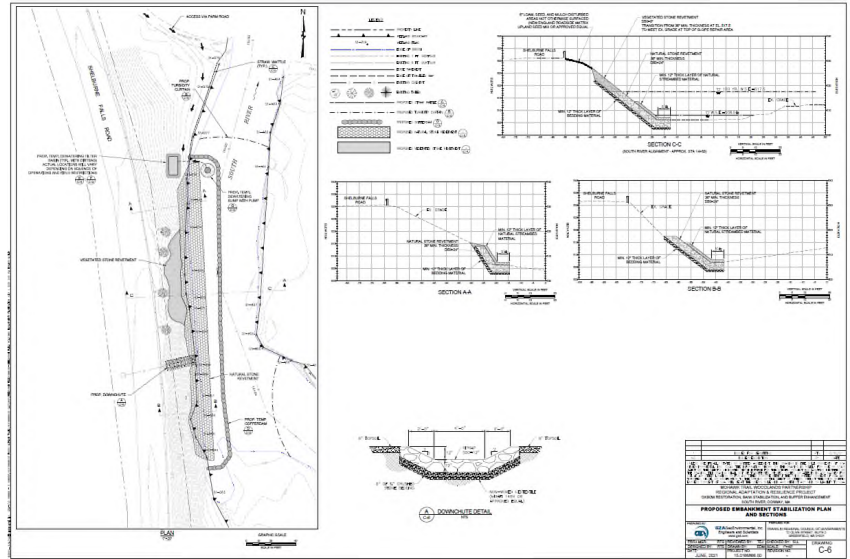


- Identification, assessment, and prioritization of vulnerabilities
- Feasibility studies
- Incorporate climate change adaptation in town plans and regulations
- Capacity-building for social resiliency
  - Education/training
  - Partnerships/collaboration
  - Communications

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## Design and Permitting

- Design Plans and Permit Applications



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## Construction and Implementation

- Site preparation, construction, monitoring
- Energy Resilience Projects
- Relocation out of flood prone areas
- Land acquisition
- Tree planting
- Pilot projects



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## Previously Funded MVP Action Grants

<https://www.mass.gov/doc/mvp-action-grant-project-descriptions/download>



### Municipal Vulnerability Preparedness Grant Program

Executive Office of Energy and Environmental Affairs

#### MVP Action Grant Funded Project Descriptions

##### FY22 MVP Action Grant Projects

Grantee: Acton (8 Acton-Boxborough Regional School District)

Project Title: Climate Action Plan and Electrification Roadmap

Award: \$157,940

The Town of Acton and ABISO will use MVP Action Grant funding to support the: 1) development of a Climate plan to reach net zero carbon emissions as quickly as possible while enhancing local resilience; and 2) development of an Electrification Roadmap, an analysis of action steps and priorities for electrification of seven key existing public buildings.

Grantee: Andover

Project Title: Shawheen River Watershed Land Conservation Planning and Prioritization for Climate Resilience and Environmental Justice

Award: \$131,700

The grant will fund an assessment of properties along the Shawheen River to identify and prioritize parcels for future land acquisition, with the goal of increasing climate and flood resiliency. The assessment will focus on properties that could provide flooding relief to the most flood-prone areas in downtown Andover, including repetitive loss areas, as well as down-stream environmental justice communities in neighboring Lawrence.

Grantee: Ashfield

Project Title: Baptist Corner Road Stream Crossing Ecological Improvements

Award: \$445,600

The project will involve the replacement of the Baptist Corner Road Culvert over a tributary to the Bear River to fully meet the Massachusetts Stream Crossing Standards and future modeled climatic conditions. The design will increase flood resiliency, reduce community risk, and restore natural habitats.

Grantee: Athol

Project Title: Greening Lord Pond Plaza Phase 2

Award: \$213,630

Phase 2 of the Greening Lord Pond Plaza is intended to advance the findings from Phase 1 planning efforts to a 100% construction design plan and secure the necessary funds to move the project into construction in 2024. The Greening Lord Pond Plaza Climate Resilience Plan developed for Phase 1 presents preliminary feasibility analysis and conceptual design for the plaza. Phase 2 will finalize a design that achieves infrastructural, social, and environmental conditions to increase the climate resilience of Lord Pond Plaza and downtown Athol.

1

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## 2014 Hazard Mitigation Plan - Mitigation Actions

- HIGH PRECIP./FLOOD Hazard Mitigation Actions
  - Study of Fluvial Erosion Hazards for Chickley River
  - Debris flow measures/stabilize slopes
  - Dugway area road relocation or bank stabilization
  - Drainage improvements and bank stabilization techniques along Hawks Brook below East Road
  - Town Garage/Fire Station and Salt Shed – install flood barriers/bank stabilization measures to prevent undermining of the bank by the Chickley River
  - Hydraulic analysis of the drainage structures on Route 8A, Buckland Road and Forge Hill Road

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## 2014 Hazard Mitigation Plan - Mitigation Actions

- HIGH WINDS
  - Improve public awareness of the risk of high wind events
- EXTREME TEMPS./DROUGHT
  - Educate homeowners about the risk of wildfires
- SEVERE WINTER STORMS
  - Annual tree pruning program with utility companies

BREAK 3:05PM to 3:10PM

## Workshop Agenda

- 2:00 – 2:10 Welcome and Introductions
- 2:10 – 2:25 MVP Overview and Workshop Goals
- 2:25 – 2:45 Review Workshop 1 Outputs
- 2:45 – 3:05 Community Actions Overview
- 3:05 – 3:10 Break
- 3:10 – 4:00 Group Exercise
  - Define actions
- 4:00-4:30 Group Exercise
  - Prioritize Actions
- 4:30 – 4:50 Group Exercise
  - Finalize Top Action Priorities
- 4:50 – 5:00 Closing Remarks and Next Steps

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## Group Exercise

Identify Community Actions

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## Workshop Agenda

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## Group Exercise

### Prioritize Actions

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## Workshop Agenda

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  - Finalize Top Action Priorities
- 4:50 – 5:00 Closing Remarks and Next Steps

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## Large Group Exercise

Finalize Top Action Priorities

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## Workshop Agenda

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  - Finalize Top Action Priorities
- 4:50 – 5:00 Closing Remarks and Next Steps

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## Closing Remarks and Next Steps

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## Next Steps

1. Prepare Summary of Findings Report (Combination Hazard Mitigation Plan)
2. Facilitate Public Listening Session on April 27, 2022
3. Revise Summary of Findings Report
4. Submit Final Summary of Findings Report to EEA
5. Receive MVP Designation by EEA
6. Apply for MVP Action Grants



## **ATTACHMENT 11: CRB WORKSHOP RISK MATRICES**

H-M-L priority for action over the Short or Long term (and Ongoing)  
 V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Significant Precipitation	High Winds	Extreme Temperatures/Drought	Severe Winter Storms	Priority	Time
								H - M - L	Short Long Ongoing
<b>Infrastructural</b>									
Roadway embankments			V	rainfall events and flooding, land slides (Dugway Area)	severe ice storms; trees felled (2008)	wildfires	travel interruption; services impacted/lost;		
Dams (none with power gen); smaller ones- one in E. Hawley- could be damage; Fullerville Dam pond- damage to 8A, residences (neighborhood) Kings brook to Chickley River; Savoy Road		Public Land DCR (Camp)	V				recurring expenses/resources for treatment, road maint- more sand, salt and fuel		
beaver dams- threatening roadways			V/S						
Dugway area-state highway Hawley Road- has very steep hillside lands right at edge of road, no shoulder, river on other side of steel guardrail, runs 1/4 mile, very steep and wet (springs), slope is held up by railroad ties			V						
Undersized or degraded culverts generally-example is near Rt 8A/Stetson Road - Kings Corner Culvert (Kings Brook under Rt. 8)-applying for grant to design/permit 24-ft bridge to replace 8-ft metal culvert			V	feeder streams culverts are hydraulically inadequate and subject to clogging					
Town garage; storage of diesel; salt shed. This is also the West Hawley Fire Station	247 West Hawley Road (northern building) (southern bldg is salt shed)	Town of Hawley	V/S	Highly damaged during Irene; highest asset, stores equipment, most vulnerable perched on river; bank was armored (some riprap but also willow plantings) with grant from FEMA. This garage is needed to respond to rest of damage in Town.	Garage is needed to respond to all hazards.	Garage is needed to respond to all hazards.	Garage is needed to respond to all hazards.		
E. Hawley Road near Hawley Haus -hairpin curve in road - very steep		Town-owned	V	Both side of hairpin quite steep and has ditches on either side - undermining during high precip					
Labelle Road		Town-owned	V	Tendency to wash out; very close to Clesson Brook - road is down in ravine. This road is in accessible from West Hawley without going around 1.5-2 hr trip through other towns. Requires a lot of maintenance to remain possible; culverts don't function, ditches fill in. People live on this road so can't shut it down	Road is narrow, dirt, and has trees right at edges. Only one way out on this road, especially in winter (other side is closed).				
East Road (portions are dirt road)		Town-owned	V	Along a brook, badly damaged in Irene -very steep and doesn't shed water effectively; was rebuilt but should be evaluated			can't get through in winter/mud season		
Foot of Forge Hill Road before it meets West Hawley Road			V	Chickley Riverbank was undermined in Irene, road washed out; 2 culverts located there draining wetland that saturated the bank; culverts were replaced with compliant stream xing stds; problem was largely solved and no houses.					
East Hawley Meeting House - used by Sons and Daughters, 1848 National Register, former Church		Sons and Daughters of Hawley	S						
Roadways - limited access into town or across town - one culvert failure could be devastating			V						
Hawley Fire Department	Ashfield and Plainfield Road		S	no flood risk	one of two radio communications; could potentially be damaged by high winds	can't be used for cooling center	can't be used for emergency shelter		
<b>Societal</b>									
No facilities that would qualify as emergency shelters in town, but town offices could be used short-term as possible warming/cooling center for minimal amount of people		Town	V						
Private ownership of equipment, many people are self-sufficient; a lot of goodwill-neighborly (List and capabilities of volunteers available)			S						
Sons and Daughters of Hawley- volunteer work-maintain East Hawley meeting house and another building that has a heated kitchen	John Sears is president		S						
High population over the age of 60, many individuals with medical vulnerability			V	lack of electricity or transportation can affect those people					
Communications infrastructure has improved but is fragile, limited cellular service, many dependent on landlines			S/V						
Hawley Grove, former meeting house for summer camp, has a heated kitchen but no potable water.		Sons and Daughters of Hawley							
<b>Environmental</b>									
Beaver Dams (assets)			S						
Chickley River access for swimming									
Deerfield River tubing, swimming access (not in Hawley)									
State forest									
No town-owned recreational areas									
Sons and Daughters walking tour of Old Town Common	Google Earth shows it on east side of E Hawley Road, most of town common is actually on west side of rd		S						



H - M - L priority for action over the Short or Long term (and Ongoing)  
 V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Significant Precipitation	High Winds	Extreme Temperatures/Drought	Severe Winter Storms	Priority	Time
								H - M - L	Short Long Ongoing
<b>Infrastructural</b>									
Roadway embankments			V						
Dams (none with power gen); smaller ones- one in E. Hawley- could be damage; Fullerville Dam pond-damage to 8A, residences (neighborhood) Kings brook to Chickley River; Savoy Road		Public Land DCR (Camp)	V						
beaver dams- threatening roadways			V/S	Cox Pond - address beaver dam between the culvert and the pond (Pond Road)				L	L
Dugway area-state highway Hawley Road- has very steep hillside lands right at edge of road, no shoulder, river on other side of steel guardrail, runs 1/4 mile, very steep and wet (springs), slope is held up by railroad ties			V	Engineering to design reconstruction of Dugway retaining wall (state previously did geotech evaluation-7 prior studies)				H	L
Undersized or degraded culverts generally-example is near Rt 8A/Stetson Road - Kings Corner Culvert (Kings Brook under Rt. 8)-applying for grant to design/permit 24-ft bridge to replace 8-ft metal culvert			V	Design and permitting of specific culvert replacements (select priorities from prior studies) (H/O); Replace Sears Rd Culvert (construction) (M/S); Chickley Watershed culvert assessment - build on FRCOG's work-develop solutions (H/L).			King's corner culvert construction (H/S)- Town has applied for CRMA for design/permitting		
Town garage; storage of diesel; salt shed. This is also the West Hawley Fire Station	247 West Hawley Road (northern building) (southern bldg is salt shed)	Town of Hawley	V/S	Search for piece of land, then purchase land, then design and build new town garage; analysis of existing nature-based bank stabilization; develop plan for rapidly removing mobile equipment from the building				H	O
E. Hawley Road near Hawley Haus -hairpin curve in road - very steep		Town-owned	V						
Labelle Road		Town-owned	V						
East Road (portions are dirt road)		Town-owned	V						
Foot of Forge Hill Road before it meets West Hawley Road			V						
East Hawley Meeting House - used by Sons and Daughters, 1848 National Register, former Church		Sons and Daughters of Hawley	S						
Roadways - limited access into town or across town - one culvert failure could be devastating			V						
Hallockville Dam		MA DCR	V						
Hawley Fire Department	Ashfield and Plainfield Road		S			East Hawley Fire Station can't fit newer fire trucks, Town also needs an emergency shelter-project to construct addition to existing building that includes meeting room and storage space. Shelter		M	O
<b>Societal</b>									
No facilities that would qualify as emergency shelters in town, but town offices could be used short-term as possible warming/cooling center for minimal amount of people		Town	V		Feasibility study to develop emergency shelters in town, including cataloging of what exists, including private facilities			M	L
Private ownership of equipment, many people are self-sufficient; a lot of goodwill-neighborly (List and capabilities of volunteers available)			S						
Sons and Daughters of Hawley- volunteer work-maintain East Hawley meeting house and another building that has a heated kitchen	John Sears is president		S						
High population over the age of 60, many individuals with medical vulnerability			V						
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<b>Environmental</b>									
Beaver Dams (assets)			S						
Chickley River access for swimming									
Deerfield River tubing, swimming access (not in Hawley)									
State forest						Establishment of fire ponds to address potential forest fires; training and education (build upon existing partnerships)- study for locations, then		L	L
No town-owned recreational areas									
Sons and Daughters walking tour of Old Town Common	Google Earth shows it on east side of E Hawley Road, most of town common is actually on west side of rd		S						





## **ATTACHMENT 12: LISTENING SESSION PRESENTATION, COMMENTS, ATTENDANCE**

Hawley's Combined MVP/HMP

# Public Listening Session - Attendee List April 28, 2022

- Rosalie Starvish, GZA
- Theresa Albanese, GZA
- Will Cosby, Core Team Leader
- Kevin Richardson
- Sarah Ohmann, Core Team Member
- Elizabeth (Liz) Billings, Core Team Member
- Constance Emmett, Core Team Member
- Lloyd Crawford, Core Team Member
- Hussain Hamdan, Core Team Member
- Bob Root
- Brandon Root, Core Team Member
- Christie Beaumier
- Kenny Velez
- Scott Purinton
- Ellen Purinton
- Peggy Travers

# Hazard Mitigation Plan Update Municipal Vulnerability Preparedness Plan Public Listening Session

Town of Hawley, Massachusetts  
April 27, 2022

Known for Excellence. Built on Trust.



Rosalie Starvish, P.E., CFM, CPMSM  
Theresa Albanese, Senior PWS  
GZA GeoEnvironmental, Inc.

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## Public Listening Session Agenda

- MVP Program Overview
- HMP Overview
- Joint Hazard Mitigation Plan / Municipal Vulnerability Plan
  - Core Team
  - Project Timeline
  - Stakeholders
  - Hazards
  - Strengths and Vulnerabilities
  - Priority Actions
- Next Steps
- Public Comments and Questions

2



## MVP Program Overview

3

## MVP Principles

A community-led, accessible process that

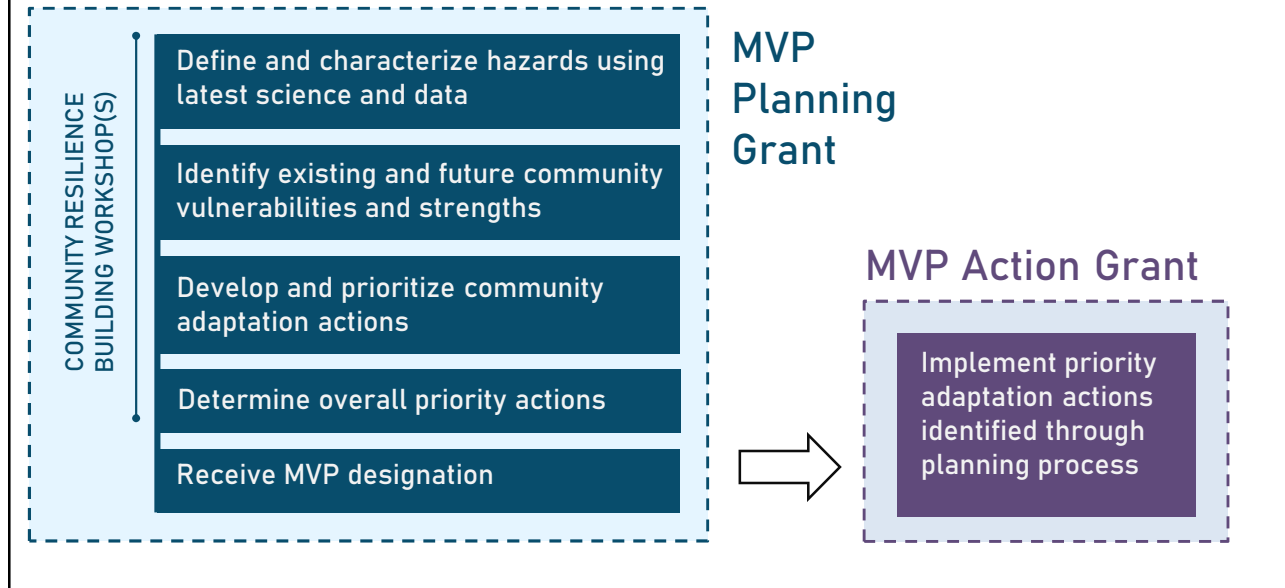
- Employs local knowledge and buy-in
- Utilizes partnerships and leverages existing efforts
- Is based on best available climate projections and data
- Incorporates principles of nature-based solutions
- Demonstrates pilot potential and is proactive
- Reaches and responds to risks faced by Environmental Justice (EJ) communities and vulnerable populations

### Why nature-based?

Where appropriate, nature-based solutions can be more cost-effective, protect water quality and quantity, sustain lands that provide food and recreation opportunities, reduce erosion, and minimize temperature increases associated with developed areas and climate change.

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# MVP Process/ Grant Types



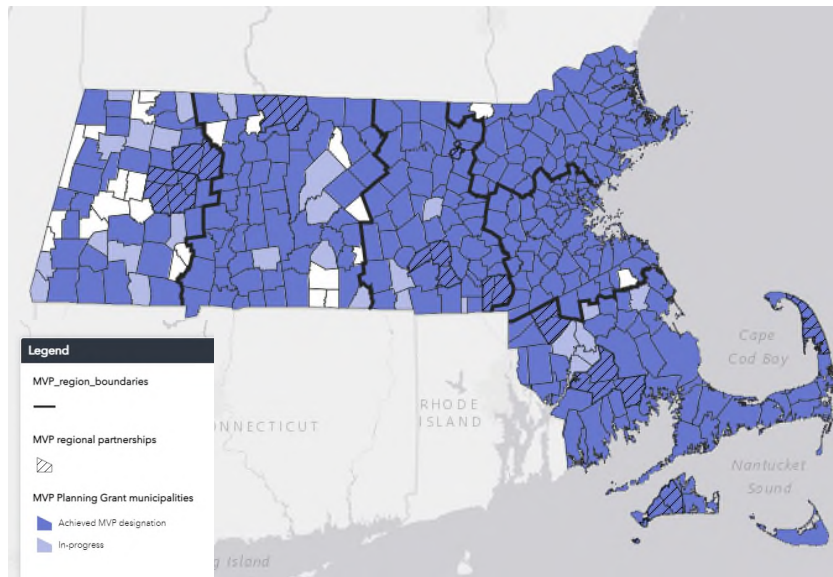
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# MVP Program Status

**MVP Designations**  
 89% of the  
 Commonwealth  
 312 communities

**Action Grant Projects**  
 FY 18: 37  
 FY 19: 36  
 FY 20: 53  
 FY 21: 41

**Total Awards**  
 \$44M in planning and  
 action grants to date



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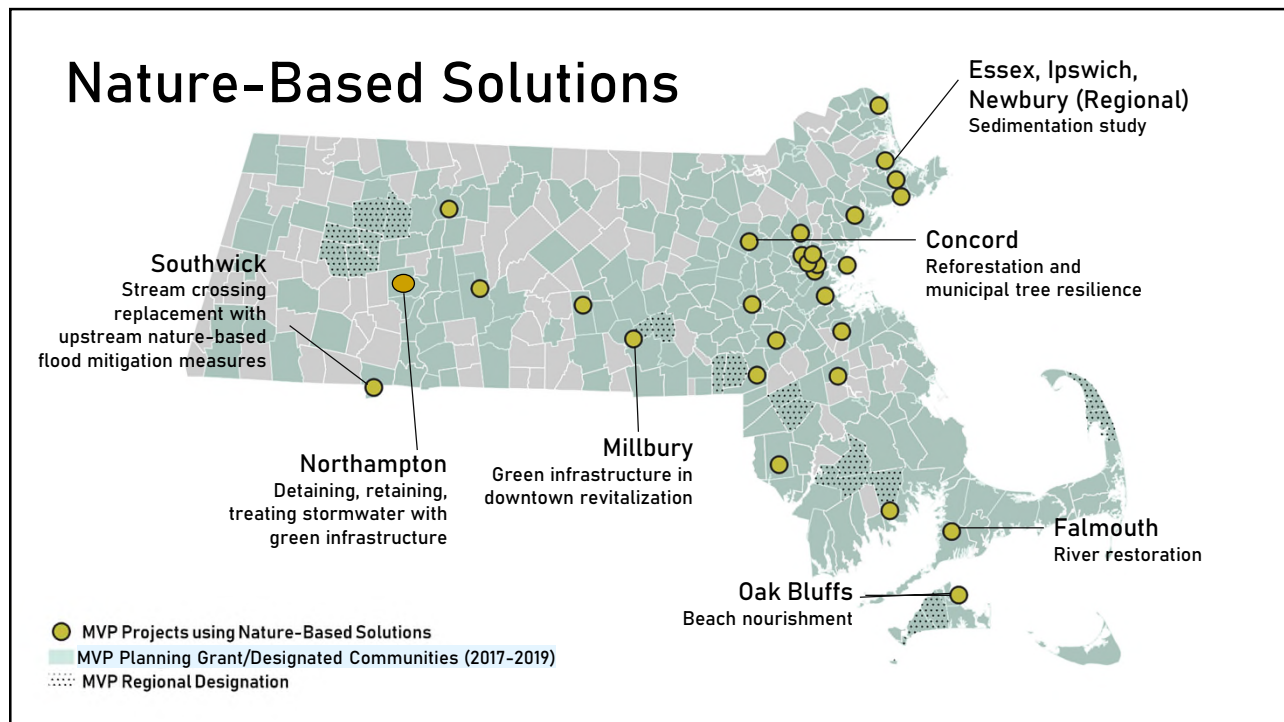
## MVP Action Grants: Project Types

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## MVP Action Grants: Core Principles

- Furthering a **community identified priority action** to address climate change impacts.
- Utilizing **climate change data** for a proactive solution.
- Employing **nature-based solutions**.
- Increasing **equitable outcomes** for and supporting **strong partnerships** with Environmental Justice (EJ) Populations and Climate Vulnerable Populations.
- Conducting robust **community engagement**.
- Achieving broad and multiple community benefits.
- Committing to **monitoring** project success and **maintaining** the project into the future.
- Utilizing **regional solutions** for regional benefit.
- Pursuing **innovative, transferable** approaches.

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## MVP Action Grants: Project Types

1. Planning, Assessments, Capacity-Building, and Regulatory Updates
2. Design and Permitting
3. Construction and On-the-Ground Implementation

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# Planning, Assessments, Capacity-Building, and Regulatory Updates

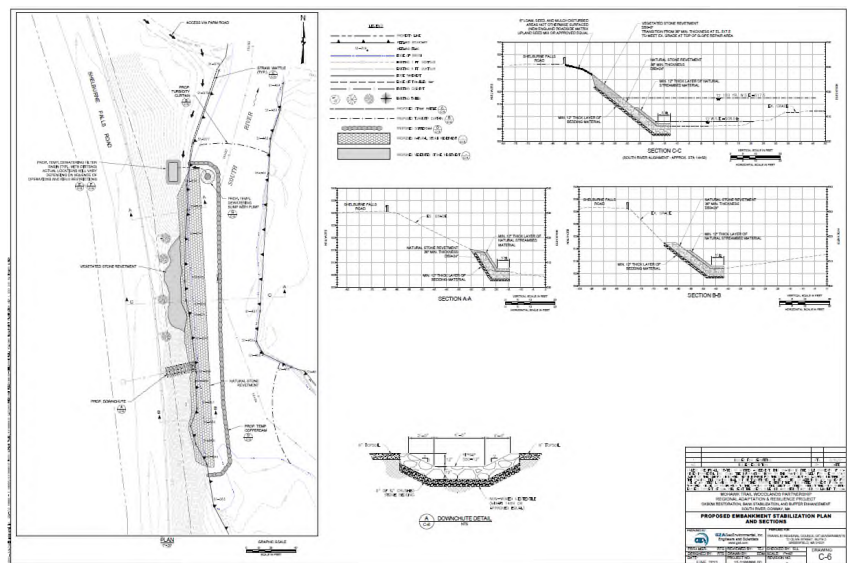


- Identification, assessment, and prioritization of vulnerabilities
- Feasibility studies
- Incorporate climate change adaptation in town plans and regulations
- Capacity-building for social resiliency
  - Education/training
  - Partnerships/collaboration
  - Communications

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# Design and Permitting

- Design Plans and Permit Applications



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## Construction and Implementation

- Site preparation, construction, monitoring
- Energy Resilience Projects
- Relocation out of flood prone areas
- Land acquisition
- Tree planting
- Pilot projects



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## HMP Overview

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## HAZARD MITIGATION PLANNING BACKGROUND

**PURPOSE:** Hazard Mitigation planning is a proactive effort to identify actions that can reduce the dangers to life and property from natural hazard events, such as hurricanes, tornadoes, winter storms and earthquakes.

**REQUIREMENTS:** The [Federal Disaster Mitigation Act of 2000](#) requires all municipalities that wish to be eligible to receive FEMA funding for hazard mitigation grants, to adopt a local multi-hazard mitigation plan and update this plan in five year intervals.

### THE TOWN OF HAWLEY 2014 MULTI-HAZARD MITIGATION PLAN



Prepared by:  
**The Hawley Multi-Hazard Mitigation Planning Committee**  
 Gregory Cox, Emergency Management Director  
 Lloyd Crawford, Conservation Commission and Planning Board  
 John Sears, Select Board and Hawley Historical Commission  
 Virginia Gabert, Select Board Assistant

and

**The Franklin Regional Council of Governments**  
 Peggy Sloan, Director of Planning & Development  
 Kimberly Nozke MacPhee, P.G., Natural Resources & Land Use  
 Program Manager  
 Gretchen Johnson, Planning Grant Administrator  
 Alyssa Larose, Land Use Planner  
 Ryan Clary, Senior GIS Specialist

This project was funded by a grant received from the Massachusetts Emergency Management Agency (SEEMA)

## HAZARD MITIGATION PLANNING BACKGROUND

### FEMA UNIFIED HAZARD MITIGATION ASSISTANCE (HMA) GRANTS

PROGRAM		DESCRIPTION	FUNDING SOURCE	HMP STATUS
HAZARD MITIGATION GRANT PROGRAM	HMGP	Assists in implementing long-term hazard mitigation planning and projects	Tied to Disaster Declaration	Approved Plan must be in place at time of grant award*
PRE-DISASTER MITIGATION	PDM	Being replaced by BRIC (see below)		
FLOOD MITIGATION ASSISTANCE	FMA	Provides funds for planning and projects to reduce or eliminate risk of flood damage to buildings that are insured annually under the National Flood Insurance Program.	Re-authorization ongoing in Congress	Approved Plan must be in place by the grant application deadline and at the time of grant award*
HMGP POST FIRE GRANT		Assistance available to help communities implement hazard mitigation measures after wildfire disasters.	States, federally-recognized tribes and territories affected by fires resulting in an Fire Management Assistance Grant (FMAG) declaration on or after October 5, 2018, are eligible to apply.	
BUILDING RESILIENT INFRASTRUCTURE & COMMUNITIES	BRIC	Support for states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face		Approved Plan must be in place by the grant application deadline and at the time of grant award

\*except for planning grants to update a HMP

## Joint Hazard Mitigation Plan / Municipal Vulnerability Plan

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Local Planning Team / Core Team	Name
Core Team Leader; Conservation Commission	Williams Cosby
Hawley Town Clerk	Liz Billings
Resident	Sarah Ohmann
Highway Department	Gary Mitchell, Superintendent
Resident	Constance Emmett
Conservation Commission	Lloyd Crawford
Volunteer Fire Department	Greg Cox, Chief
Volunteer Fire Department	Brandon Root
Emergency Management	Dean Desmaris, Director
Former Select Board Chair	John Sears

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## Project Timeline

- Town establishes Core Team – January 2022
- Project Kick-off Meeting – February 2022
- Stakeholder Outreach – February – May 2022
- Community Resilience Building Workshop – March 9 & 30, 2022
- Public Listening Session – February April 27, 2022
- Final Combined HMP/MVP plan for public review – Late May 2022

## CRB Workshop Overview

### Objectives:

- 1. Define top hazards.** Understand connections between ongoing issues, hazards, and local planning and actions in your Community.
- 2. Identify and map vulnerabilities and strengths** to develop infrastructure, societal and environmental risk profiles for your Community.
- 3. Develop and prioritize actions** that reduce vulnerabilities and reinforce strengths for your community - local organizations, academic institutions, businesses, private citizens, neighborhoods, and community groups.
- 4. Identify opportunities** to advance actions that further reduce the impact of hazards and increase resilience in your Community.

## Hawley Natural Hazards Rankings

### Top Hazards – 2022 Hazard Mitigation Plan Update

- **Flooding** - High Frequency & Serious Severity
- **Hurricanes/Tropical Storms** – Medium Frequency & Extensive Severity
- **Ice Storms** – High Frequency & Serious Severity
- **Landslides** – Medium Frequency & Extensive Severity

### Top Priority Hazards – MVP Community Resilience Building Workshop

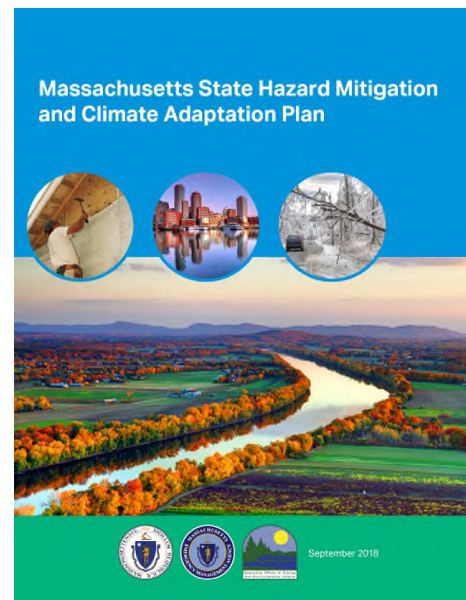
- **Significant Precipitation** – Triggers flooding and landslides
- **High Winds**
- **Severe Winter Storms**
- **Extreme Temperatures/Drought**

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## Massachusetts 2018 Hazards Rankings

### Top 5 Hazards 2018 State Hazard Mitigation and Climate Adaptation Plan

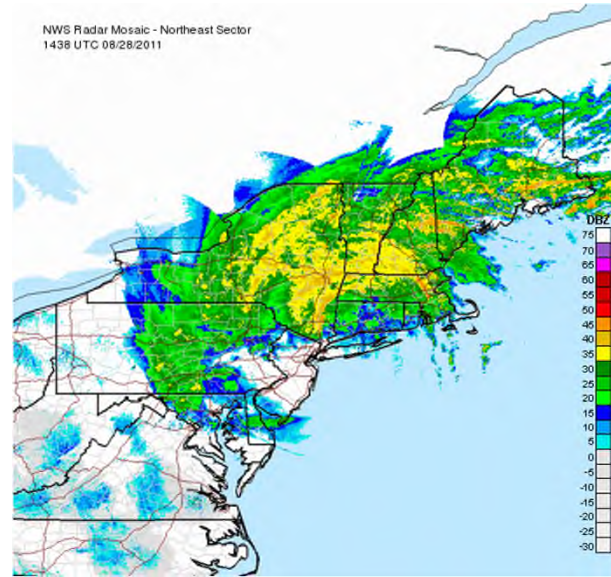
- **Extreme Precipitation**
- **Hurricanes/Tropical Storms**
- **Nor'easters**
- **Ice Storms**
- **Severe Winter Storm**



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## Climate Change

- Hot Temperatures +
- Precipitation Intensity +
- Heavy Precipitation Frequency +
- Snowfall -

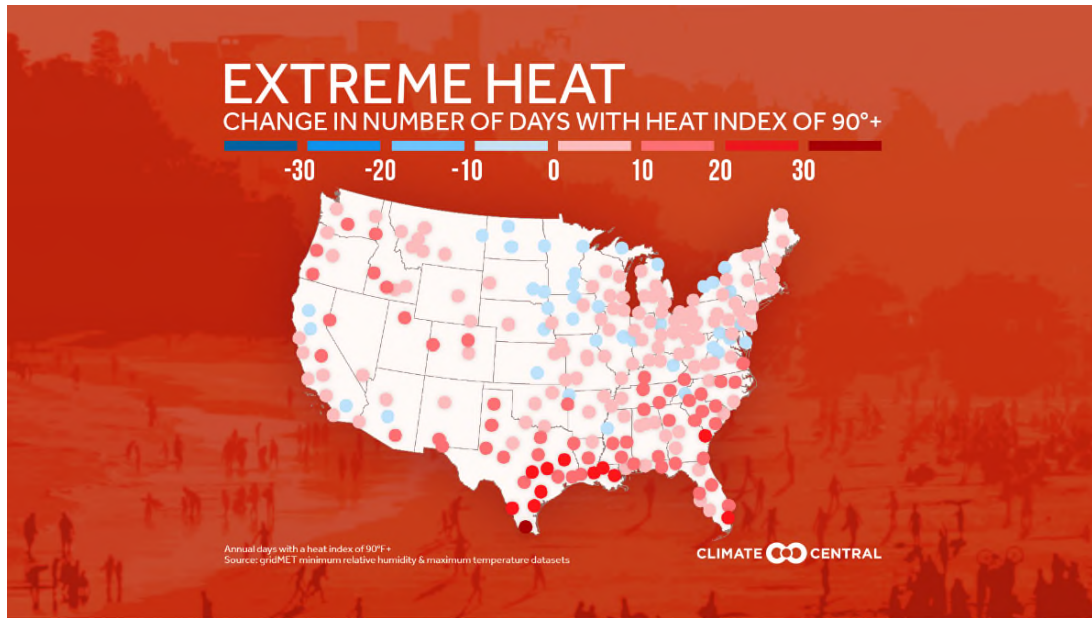


Irene; By NWS - <http://weatherinnyc.blogspot.hk/2011/08/aug-27-hurricane-irene-updates.html>, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=68686636>

## Heat



## Increased Temperatures/Extreme Heat

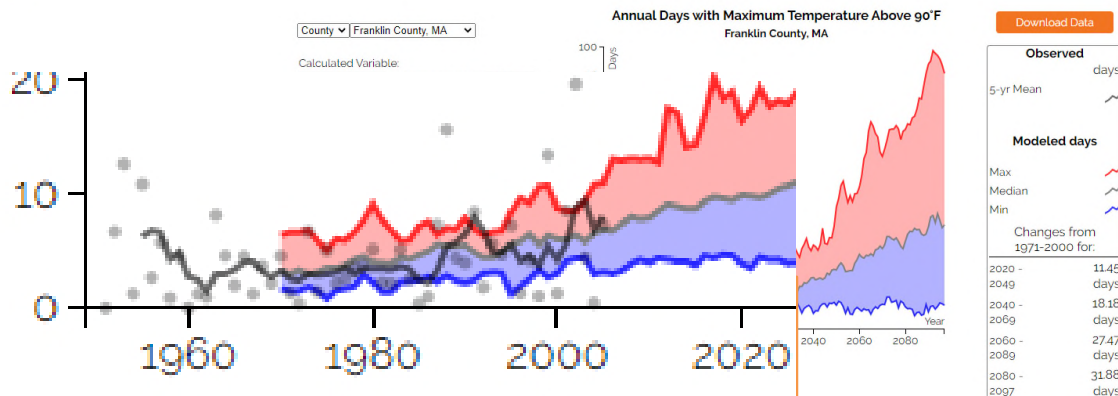


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## Increased Temperatures/Extreme Heat




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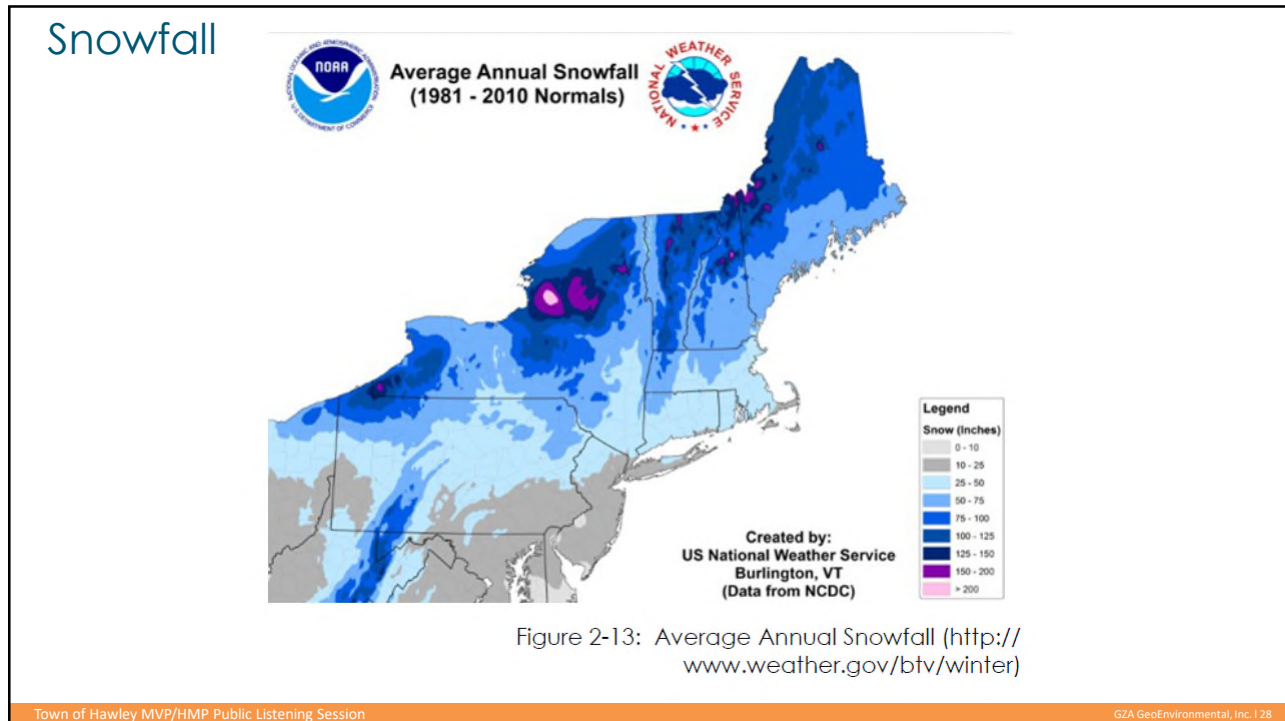
# Winter Hazards



Severe Winter Storm

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# Wind




Hurricanes/Tropical Storms      Severe Winter Storm

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## Wind Speed

Sustained Wind Speed	Annual Recurrence Interval (years)	Physical Effects
6-38 kts (30-44 mph)	<1	Trees in motion. Light-weight loose objects (e.g., lawn furniture) tossed or toppled.
39-49 kts (45-57 mph)	2 to 10	Large trees bend; twigs, small limbs break, and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roof, doors). Building partially under construction may be damaged. A few loose shingles removed from houses. Carports may be uplifted; minor cosmetic damage to mobile homes and pool lanai cages.
50-64 kts (58-74 mph)	10 to 70	Large limbs break; shallow rooted trees pushed over. Semi-trucks overturned. More significant damage to old/weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas; mobile homes, carports incur minor structural damage; large billboard signs may be toppled
65-77 kts (75-89 mph)	70 to 300	Widespread damage to trees with trees broken/uprooted. Mobile homes may incur more significant structural damage; be pushed off foundations or overturned. Roof may be partially peeled off industrial/commercial/warehouse buildings. Some minor roof damage to homes. Weak structures (e.g., farm buildings, airplane hangars) may be severely damaged.
78+ kts (90+ mph)	>300	Many large trees broken and uprooted. Mobile homes severely damaged; moderate roof damage to homes. Roofs partially peeled off homes and buildings. Moving automobiles pushed off dry roads. Barns, sheds demolished.

Table 3-5: Physical Effects associated with different wind speeds

Town of Hawley MVP/HMP Public Listening Session
GZA GeoEnvironmental, Inc. | 30

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Flood

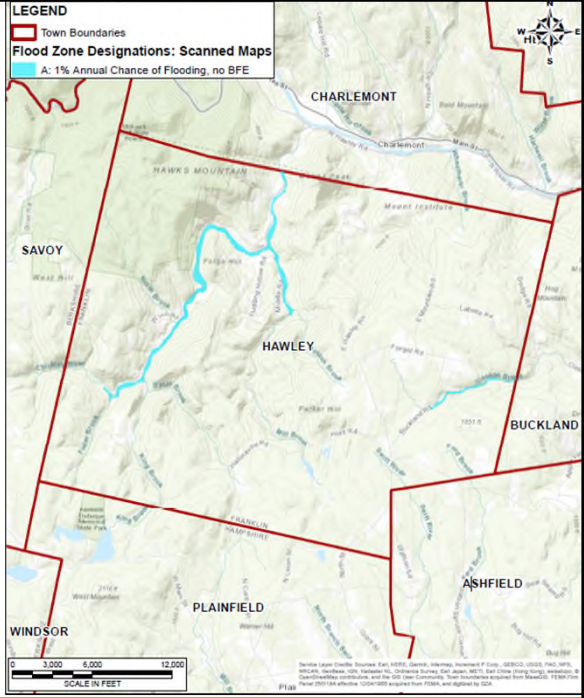


Inland Flooding

Town of Hawley MVP/HMP Public Listening Session GZA GeoEnvironmental, Inc. | 31

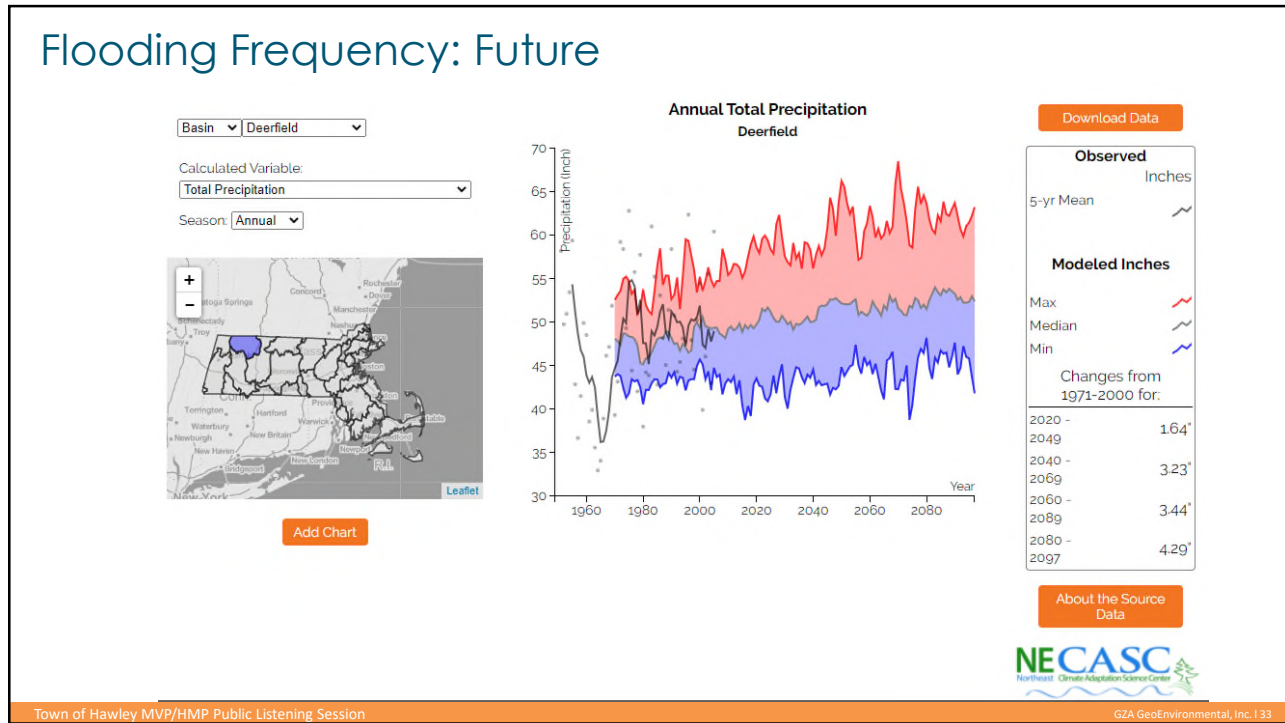
31

## FEMA Flood Hazard Zones

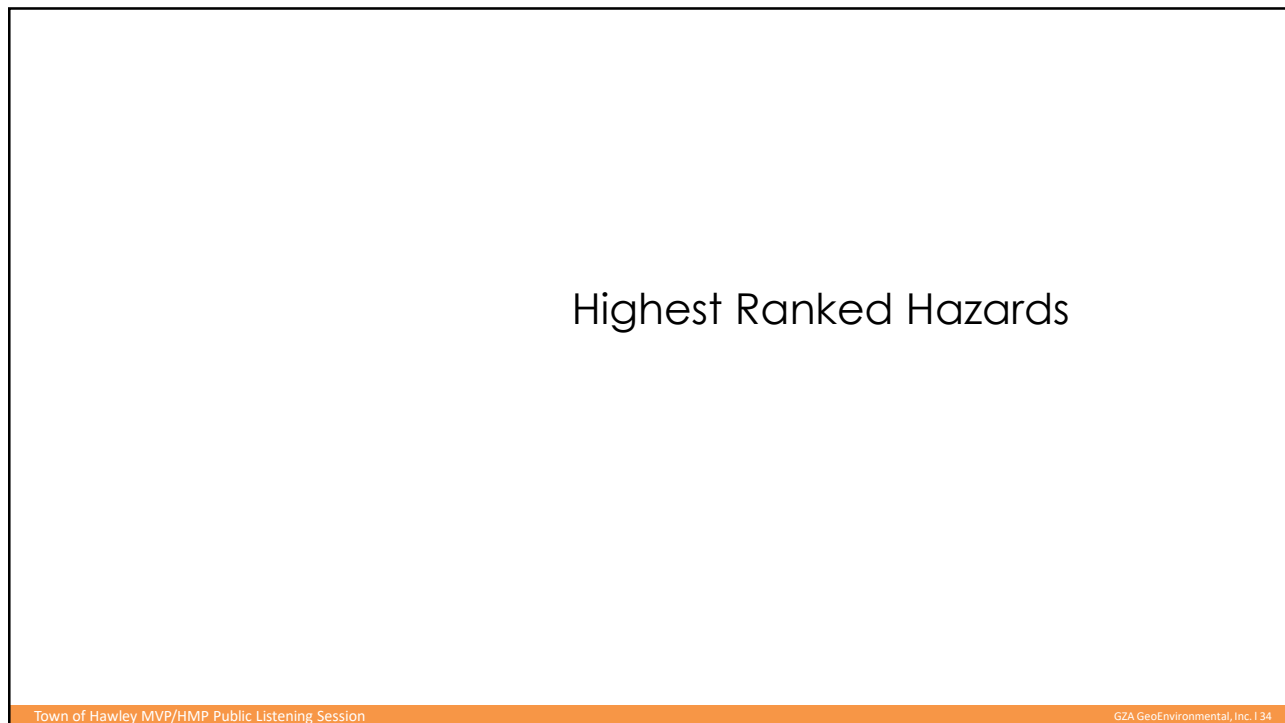


Town of Hawley MVP/HMP Public Listening Session GZA GeoEnvironmental, Inc. | 32

32



33

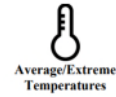


34



## Highest Ranked Hazards

Extreme Temperatures/Drought



Significant Precipitation



High Winds



Severe Winter Storms



## Vulnerabilities and Strengths

## Vulnerabilities & Strengths – Infrastructure

### Infrastructure Vulnerabilities

- Town Garage/West Hawley Fire Station
- Roads & Roadway embankments
  - East Hawley Road hairpin curve
  - Labelle Road
  - East Road
  - Forge Hill Road
- The Dugway
- Culverts
- Dams



### Infrastructure Strengths

- East Hawley Meeting House
- Hawley Fire Department

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## Vulnerabilities & Strengths – Societal

### Societal Vulnerabilities

- No emergency shelters
- Aged population
- Fragile communications infrastructure

### Societal Strengths

- Self-sufficient, neighborly residents
- Sons & Daughters of Hawley



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## Vulnerabilities & Strengths – Environmental

### Environmental Vulnerabilities

- Beaver dams
- No Town-owned recreational areas

### Environmental Strengths

- Beaver dams
- Chickley River for swimming
- Abundant tree canopy – State forest
- Old Town Common



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## Priority Actions

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## Priority Actions

- 10 Total Priority Actions
  - 5 High Priority Actions
  - 3 Medium Priority Actions
  - 2 Low Priority Actions



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## High Priority Actions

- ***“The Dugway” Slope Stabilization Assessment and Engineering Design.*** (Long Term)
- ***Select Priority Culverts from Prior Studies for Replacement Design and Permitting.*** (Ongoing)
- ***Chickley Watershed Culvert Assessment and Prioritization.*** – (Long Term)
- ***King’s Corner Culvert Construction*** – (Short Term)
- ***Town Garage Relocation Feasibility Study, Chickley River bank stabilization monitoring and emergency action plan*** - (Ongoing)

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## Medium Priority Actions

- **Replace Sears Road culvert.** (Short Term)
- **Improve East Hawley Fire Station with addition to provide meeting room and emergency shelter.** (Ongoing)
- **Feasibility Study to Develop Emergency Shelters.** (Short Term)

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## Low Priority Actions

- **Assessment of beaver dam at Cox Pond, between the culvert and the pond (Pond Road).** (Long Term)
- **Establishment of Fire Ponds.** (Long Term)

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## Top Priority Actions

1. ***“The Dugway” Slope Stabilization Assessment and Engineering Design.*** (Long Term)
2. ***King’s Corner Culvert Construction*** – (Short Term)
3. ***Town Garage Relocation Feasibility Study, Chickley River bank stabilization monitoring and emergency action plan*** -(Ongoing)
4. ***Replace Sears Road culvert.*** (Short Term)
5. ***Select Priority Culverts from Prior Studies for Replacement Design and Permitting.*** (Ongoing)
6. ***Assessment of beaver dam at Cox Pond, between the culvert and the pond (Pond Road).*** (Long Term)
7. ***Chickley Watershed Culvert Assessment and Prioritization.*** – (Long Term)
8. ***Feasibility Study to Develop Emergency Shelters.*** (Long Term)

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## Next Steps

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## Next Steps

1. Draft Summary of Findings Report will be available at the Town of Hawley website
2. Submit your ideas and comments to Will Cosby
3. Provide Report to EEA for review
4. Receive Designation as an MVP Community
5. Apply for MVP Action Grants in May 2022

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## Questions and Answers

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## **ATTACHMENT 13: FEMA NATIONAL RISK INDEX REPORT FOR CENSUS TRACT 040100**



# National Risk Index

April 21, 2022



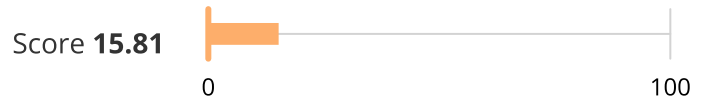
## Census tract 25011040100, Franklin County, Massachusetts

### Summary

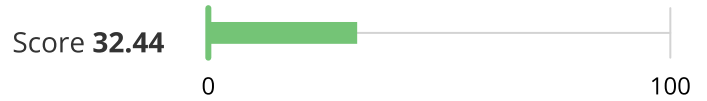
Risk Index is **Relatively Low**



Expected Annual Loss is **Relatively Low**



Social Vulnerability is **Relatively Moderate**



Community Resilience is **Very High**

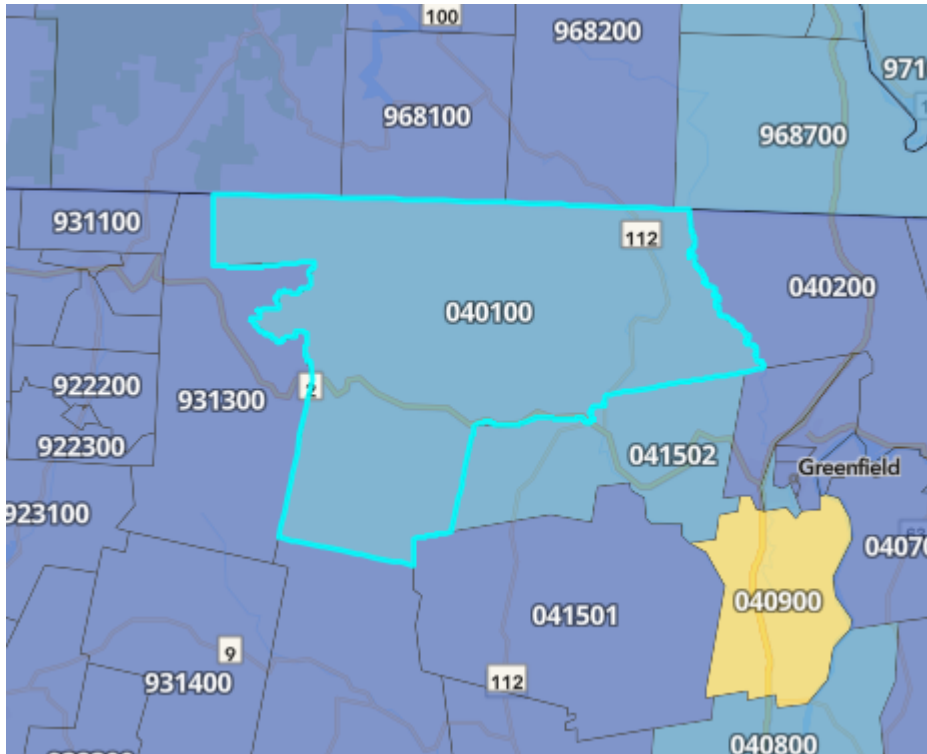


**While reviewing this report, keep in mind that low risk is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience.**

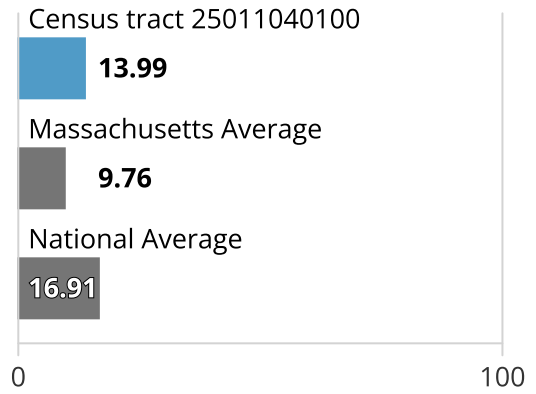
For more information about the National Risk Index, its data, and how to interpret the information it provides, please review the **About the National Risk Index** and **How to Take Action** sections at the end of this report. Or, visit the National Risk Index website at [hazards.fema.gov/nri/learn-more](https://hazards.fema.gov/nri/learn-more) to access supporting documentation and links.

# Risk Index

The Risk Index rating is **Relatively Low** for **Census tract 25011040100** when compared to the rest of the U.S.



Score **13.99**



**41.1%** of U.S. Census tracts have a lower Risk Index

**94.1%** of Census tracts in Massachusetts have a lower Risk Index

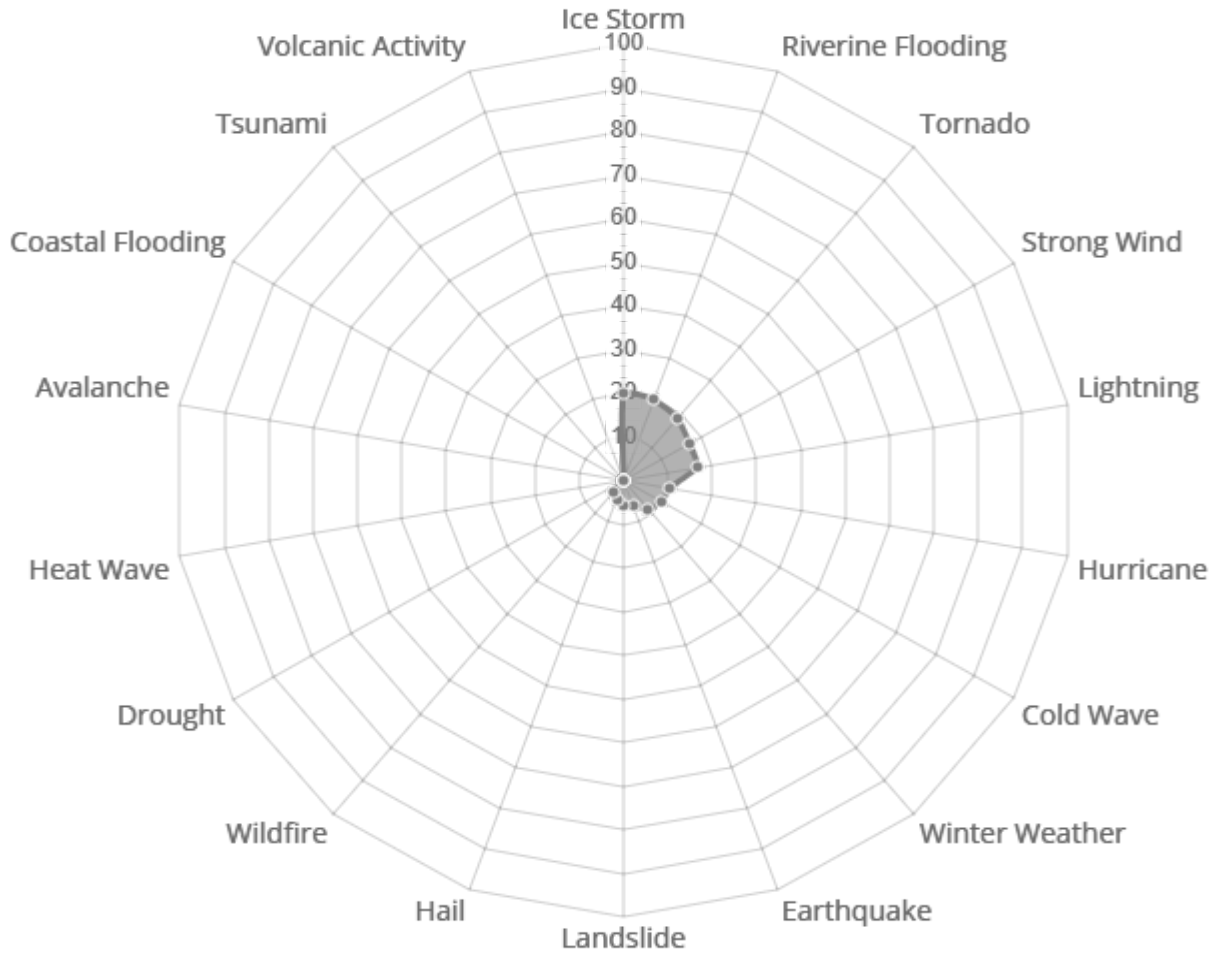
## Risk Index Legend

- Very High
- Relatively High
- Relatively Moderate
- Relatively Low
- Very Low
- No Rating
- Not Applicable
- Insufficient Data

# Hazard Type Risk Index

Hazard type Risk Index scores are calculated using data for only a single hazard type, and reflect a community's relative risk for only that hazard type.

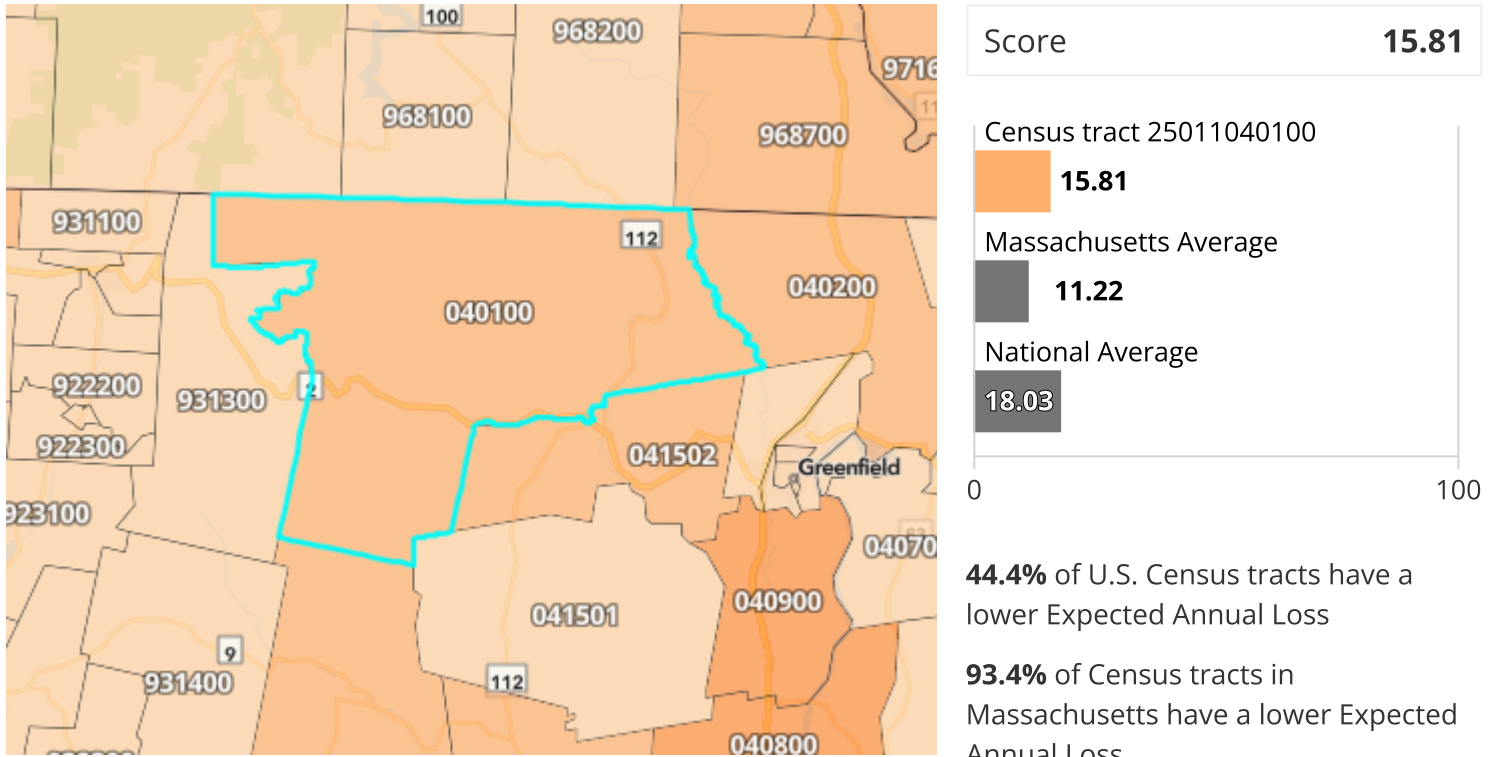
Hazard Type	Risk Index Rating	Risk Index Score		
<b>Avalanche</b>	Not Applicable	--		
<b>Coastal Flooding</b>	Not Applicable	--		
<b>Cold Wave</b>	Relatively Low	9.67	0	100
<b>Drought</b>	No Rating	0.00	0	100
<b>Earthquake</b>	Very Low	6.28	0	100
<b>Hail</b>	Very Low	4.52	0	100
<b>Heat Wave</b>	No Rating	0.00	0	100
<b>Hurricane</b>	Relatively Low	10.18	0	100
<b>Ice Storm</b>	Relatively Moderate	20.16	0	100
<b>Landslide</b>	Relatively Moderate	5.94	0	100
<b>Lightning</b>	Relatively Low	16.70	0	100
<b>Riverine Flooding</b>	Relatively Moderate	19.75	0	100
<b>Strong Wind</b>	Relatively Low	17.04	0	100
<b>Tornado</b>	Relatively Low	18.69	0	100
<b>Tsunami</b>	Not Applicable	--		
<b>Volcanic Activity</b>	Not Applicable	--		
<b>Wildfire</b>	Relatively Low	3.40	0	100
<b>Winter Weather</b>	Relatively Low	8.47	0	100



The chart above demonstrates the relative distribution of hazard type Risk Index scores for **Census tract 25011040100**. Risk Index scores are plotted for each hazard type included in the National Risk Index. Higher relative risk corresponds to larger colored areas inside a given hazard type chart slice.

# Expected Annual Loss

In **Census tract 25011040100**, expected loss each year due to natural hazards is **Relatively Low** when compared to the rest of the U.S.



**Expected Annual Loss Legend**

- Very High
- Relatively High
- Relatively Moderate
- Relatively Low
- Very Low
- No Expected Annual Losses
- Not Applicable
- Insufficient Data

<b>Composite Expected Annual Loss</b>		<b>\$198,930.04</b>	
Building Value	<b>\$151,461.08</b>	Population	<b>0.00 fatalities</b>
Population Equivalence	<b>\$33,395.13</b>	Agriculture Value	<b>\$14,073.83</b>

# Expected Annual Loss for Hazard Types

Expected Annual Loss scores for hazard types are calculated using data for only a single hazard type, and reflect a community's relative expected annual loss for only that hazard type. **14 of 18** hazard types contribute to the expected annual loss for **Census tract 25011040100**.

Hazard Type	Expected Annual Loss Rating	Expected Annual Loss Score	
<b>Avalanche</b>	Not Applicable	--	
<b>Coastal Flooding</b>	Not Applicable	--	
<b>Cold Wave</b>	Relatively Low	10.95	
<b>Drought</b>	No Expected Annual Losses	0.00	
<b>Earthquake</b>	Very Low	6.30	
<b>Hail</b>	Very Low	4.79	
<b>Heat Wave</b>	No Expected Annual Losses	0.00	
<b>Hurricane</b>	Relatively Low	8.47	
<b>Ice Storm</b>	Relatively Moderate	27.59	
<b>Landslide</b>	Relatively Moderate	7.74	
<b>Lightning</b>	Relatively Low	23.59	
<b>Riverine Flooding</b>	Relatively High	23.76	
<b>Strong Wind</b>	Relatively Low	16.84	
<b>Tornado</b>	Relatively Low	17.83	
<b>Tsunami</b>	Not Applicable	--	
<b>Volcanic Activity</b>	Not Applicable	--	
<b>Wildfire</b>	Relatively Low	3.89	
<b>Winter Weather</b>	Relatively Low	15.73	

## Expected Annual Loss Values

Hazard Type	Total	Building Value	Population Equivalence	Population	Agriculture Value
<b>Avalanche</b>	--	--	--	--	--
<b>Coastal Flooding</b>	--	--	--	--	--
<b>Cold Wave</b>	\$2,042	\$21	\$994	0.00	\$1,026
<b>Drought</b>	\$0	n/a	n/a	n/a	\$0
<b>Earthquake</b>	\$3,516	\$3,400	\$116	0.00	n/a
<b>Hail</b>	\$413	\$43	\$68	0.00	\$302
<b>Heat Wave</b>	\$0	\$0	\$0	0.00	\$0
<b>Hurricane</b>	\$9,059	\$1,242	\$59	0.00	\$7,759
<b>Ice Storm</b>	\$8,289	\$7,644	\$645	0.00	n/a
<b>Landslide</b>	\$4,025	\$28	\$3,997	0.00	n/a
<b>Lightning</b>	\$3,021	\$1,144	\$1,877	0.00	n/a
<b>Riverine Flooding</b>	\$145,724	\$122,608	\$18,500	0.00	\$4,617
<b>Strong Wind</b>	\$5,318	\$1,444	\$3,658	0.00	\$217
<b>Tornado</b>	\$15,676	\$12,759	\$2,769	0.00	\$148
<b>Tsunami</b>	--	--	--	--	--
<b>Volcanic Activity</b>	--	--	--	--	--
<b>Wildfire</b>	\$883	\$809	\$74	0.00	\$0
<b>Winter Weather</b>	\$965	\$320	\$639	0.00	\$6

## Exposure Values

Hazard Type	Total	Building Value	Population Equivalence	Population	Agriculture Value
<b>Avalanche</b>	--	--	--	--	--
<b>Coastal Flooding</b>	--	--	--	--	--
<b>Cold Wave</b>	\$34,743,176,458	\$576,769,908	\$34,154,398,035	4,494.00	\$12,008,515
<b>Drought</b>	\$0	n/a	n/a	n/a	\$0
<b>Earthquake</b>	\$34,731,170,000	\$576,770,000	\$34,154,400,000	4,494.00	n/a
<b>Hail</b>	\$34,743,178,515	\$576,770,000	\$34,154,400,000	4,494.00	\$12,008,515
<b>Heat Wave</b>	\$0	\$0	\$0	0.00	\$0
<b>Hurricane</b>	\$34,729,296,708	\$576,632,740	\$34,140,655,453	4,492.19	\$12,008,515
<b>Ice Storm</b>	\$34,731,167,943	\$576,769,908	\$34,154,398,035	4,494.00	n/a
<b>Landslide</b>	\$28,977,301,766	\$453,013,127	\$28,524,288,639	3,753.20	n/a
<b>Lightning</b>	\$34,731,170,000	\$576,770,000	\$34,154,400,000	4,494.00	n/a
<b>Riverine Flooding</b>	\$1,583,679,779	\$31,383,428	\$1,551,585,625	204.16	\$710,726
<b>Strong Wind</b>	\$34,743,178,515	\$576,770,000	\$34,154,400,000	4,494.00	\$12,008,515
<b>Tornado</b>	\$34,743,178,515	\$576,770,000	\$34,154,400,000	4,494.00	\$12,008,515
<b>Tsunami</b>	--	--	--	--	--
<b>Volcanic Activity</b>	--	--	--	--	--
<b>Wildfire</b>	\$1,071,885,996	\$17,203,791	\$1,054,438,858	138.74	\$243,347
<b>Winter Weather</b>	\$34,743,176,458	\$576,769,908	\$34,154,398,035	4,494.00	\$12,008,515



## Annualized Frequency Values

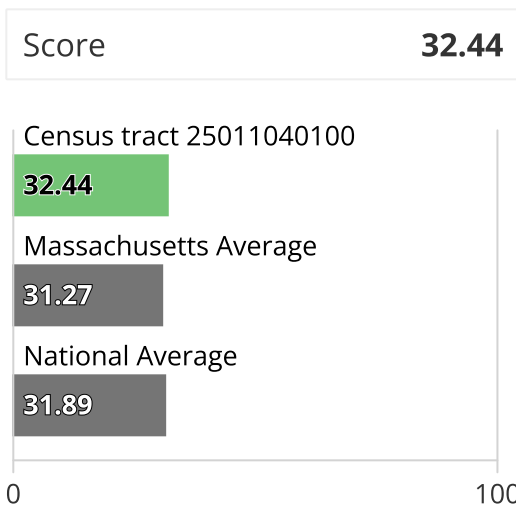
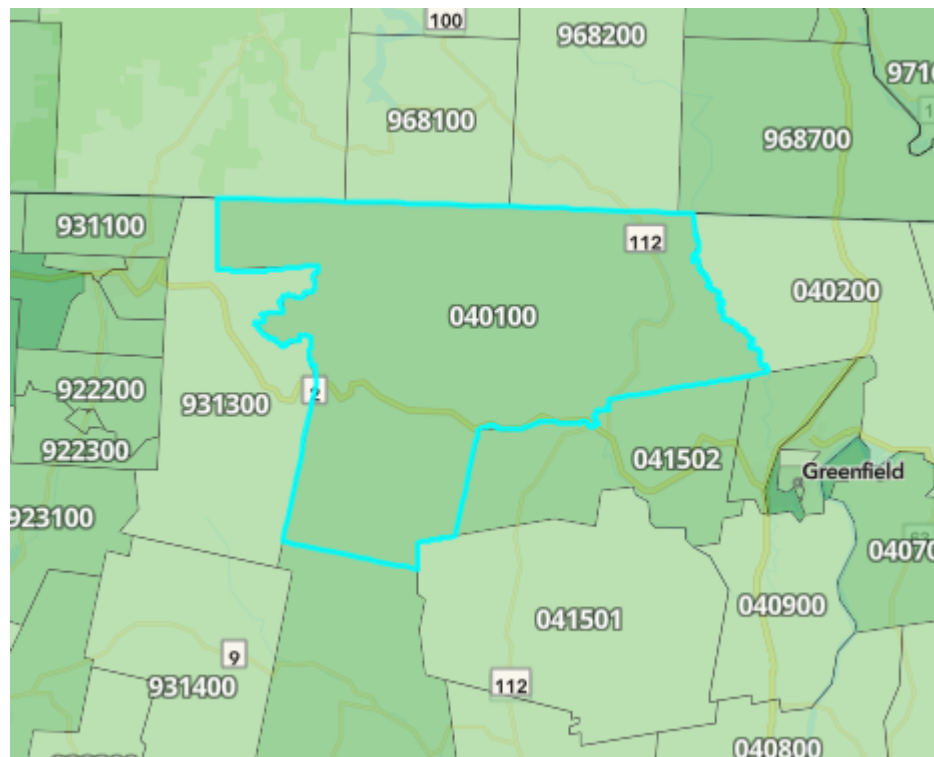
Hazard Type	Annualized Frequency	Events on Record	Period of Record
<b>Avalanche</b>	--	--	--
<b>Coastal Flooding</b>	--	--	--
<b>Cold Wave</b>	0.5 events per year	26	2005-2017 (12 years)
<b>Drought</b>	0 events per year	0	2000-2017 (18 years)
<b>Earthquake</b>	0.029% chance per year	n/a	2017 dataset
<b>Hail</b>	3.3 events per year	108	1986-2017 (32 years)
<b>Heat Wave</b>	0 events per year	2	2005-2017 (12 years)
<b>Hurricane</b>	0.1 events per year	9	East 1851-2017 (167 years) / West 1949-2017 (69 years)
<b>Ice Storm</b>	1.5 events per year	103	1946-2014 (67 years)
<b>Landslide</b>	0 events per year	0	2010-2019 (10 years)
<b>Lightning</b>	19.5 events per year	430	1991-2012 (22 years)
<b>Riverine Flooding</b>	1.7 events per year	40	1996-2019 (24 years)
<b>Strong Wind</b>	1.2 events per year	39	1986-2017 (32 years)
<b>Tornado</b>	0 events per year	3	1986-2019 (34 years)
<b>Tsunami</b>	--	--	--
<b>Volcanic Activity</b>	--	--	--
<b>Wildfire</b>	0.005% chance per year	n/a	2016 dataset
<b>Winter Weather</b>	6.8 events per year	293	2005-2017 (12 years)

## Historic Loss Ratios

Hazard Type	Overall Rating	Building Value	Population	Agriculture Value
<b>Avalanche</b>	--	--	--	--
<b>Coastal Flooding</b>	--	--	--	--
<b>Cold Wave</b>	Very Low	\$7.42 per \$100M	5.89 per 100M	\$1.73 per \$10K
<b>Drought</b>	No Rating	n/a	n/a	\$9.42 per \$1K
<b>Earthquake</b>	Very Low	\$1.68 per \$100	1.40 per 10K	n/a
<b>Hail</b>	Very Low	\$2.19 per \$100M	5.89 per 10B	\$7.44 per \$1M
<b>Heat Wave</b>	No Rating	\$3.86 per \$100B	3.43 per 100M	\$9.92 per \$100K
<b>Hurricane</b>	Very Low	\$2.67 per \$100K	2.14 per 100M	\$7.96 per \$1K
<b>Ice Storm</b>	Very Low	\$7.99 per \$1M	1.15 per 100M	n/a
<b>Landslide</b>	Very Low	\$6.18 per \$1M	1.40 per 100K	n/a
<b>Lightning</b>	Very Low	\$1.05 per \$10M	2.89 per 1B	n/a
<b>Riverine Flooding</b>	Very Low	\$2.34 per \$1K	7.15 per 1M	\$3.90 per \$1K
<b>Strong Wind</b>	Very Low	\$2.09 per \$1M	8.92 per 100M	\$1.51 per \$100K
<b>Tornado</b>	Very Low	\$6.96 per \$10K	2.55 per 1M	\$3.87 per \$10K
<b>Tsunami</b>	--	--	--	--
<b>Volcanic Activity</b>	--	--	--	--
<b>Wildfire</b>	Very Low	\$4.00 per \$10	6.04 per 10K	\$1.36 per \$100
<b>Winter Weather</b>	Very Low	\$8.11 per \$100M	2.74 per 1B	\$7.05 per \$100M

# Social Vulnerability

Social groups in **Census tract 25011040100** have a **Relatively Moderate** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.



**57.3%** of U.S. Census tracts have a lower Social Vulnerability

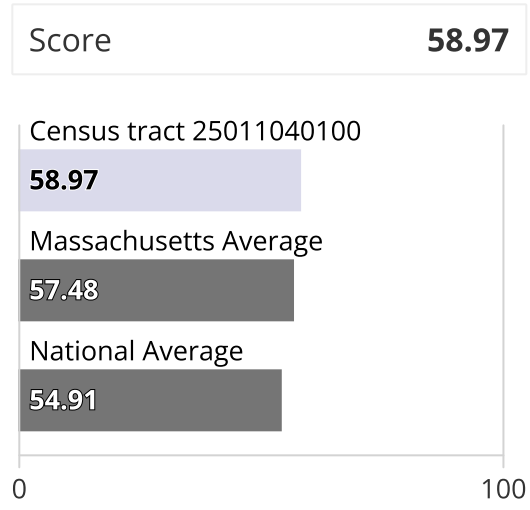
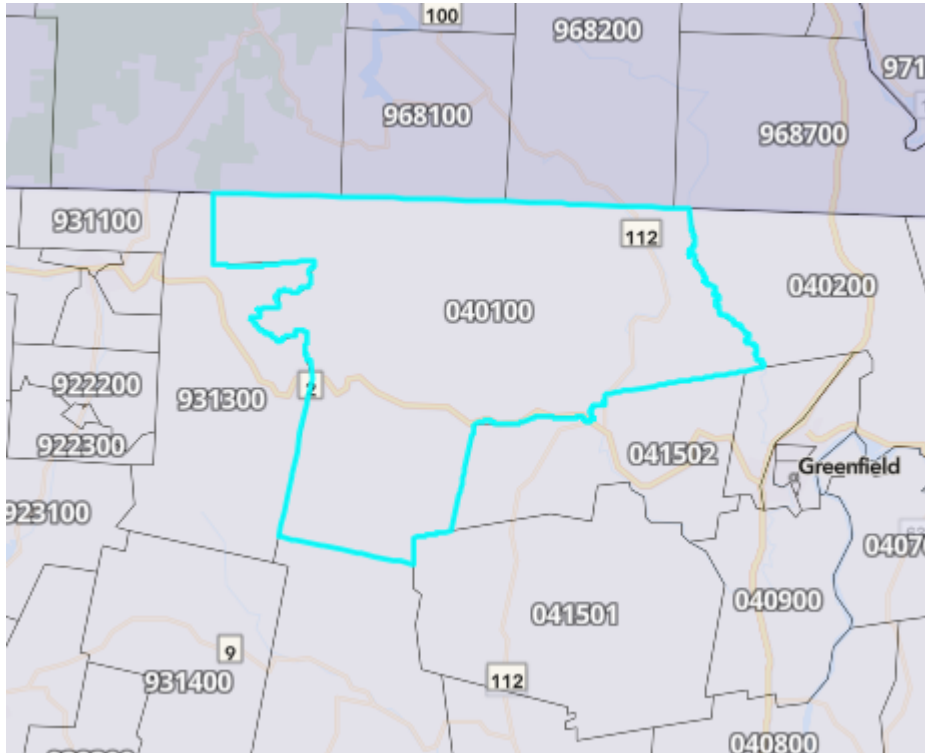
**64.4%** of Census tracts in Massachusetts have a lower Social Vulnerability

**Social Vulnerability Legend**

- Very High
- Relatively High
- Relatively Moderate
- Relatively Low
- Very Low
- Data Unavailable

# Community Resilience

Communities in **Census tract 25011040100** have a **Very High** ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.



**6.3%** of U.S. Census tracts have a higher Community Resilience

**7.2%** of Census tracts in Massachusetts have a higher Community Resilience

## Community Resilience Legend

- Very High
- Relatively High
- Relatively Moderate
- Relatively Low
- Very Low
- Data Unavailable

## About the National Risk Index

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather.

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

Explore the National Risk Index Map at [hazards.fema.gov/nri/map](https://hazards.fema.gov/nri/map).

Visit the National Risk Index website at [hazards.fema.gov/nri/learn-more](https://hazards.fema.gov/nri/learn-more) to access supporting documentation and links.

## Calculating the Risk Index

Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience:

$$\text{Risk Index} = \text{Expected Annual Loss} \times \text{Social Vulnerability} \div \text{Community Resilience}$$

Risk Index scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit [hazards.fema.gov/nri/determining-risk](https://hazards.fema.gov/nri/determining-risk).

## Calculating Expected Annual Loss

Expected Annual Loss scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios for 18 hazard types:

$$\text{Expected Annual Loss} = \text{Exposure} \times \text{Annualized Frequency} \times \text{Historic Loss Ratio}$$

Expected Annual Loss scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit [hazards.fema.gov/nri/expected-annual-loss](https://hazards.fema.gov/nri/expected-annual-loss).

## Calculating Social Vulnerability

Social Vulnerability is measured using the Social Vulnerability Index (SoVI) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).

For more information, visit [hazards.fema.gov/nri/social-vulnerability](https://hazards.fema.gov/nri/social-vulnerability).

## Calculating Community Resilience

Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).

For more information, visit [hazards.fema.gov/nri/community-resilience](https://hazards.fema.gov/nri/community-resilience).

## How to Take Action

There are many ways to reduce natural hazard risk through mitigation. Communities with high National Risk Index scores can take action to reduce risk by decreasing Expected Annual Loss due to natural hazards, decreasing Social Vulnerability, and increasing Community Resilience.

For information about how to take action and reduce your risk, visit [hazards.fema.gov/nri/take-action](https://hazards.fema.gov/nri/take-action).

## Disclaimer

The National Risk Index (the Risk Index or the Index) and its associated data are meant for planning purposes only. This tool was created for broad nationwide comparisons and is not a substitute for localized risk assessment analysis. Nationwide datasets used as inputs for the National Risk Index are, in many cases, not as accurate as available local data. Users with access to local data for each National Risk Index risk factor should consider substituting the Risk Index data with local data to recalculate a more accurate risk index. If you decide to download the National Risk Index data and substitute it with local data, you assume responsibility for the accuracy of the data and any resulting data index. Please visit the [Contact Us](#) page if you would like to discuss this process further.

The methodology used by the National Risk Index has been reviewed by subject matter experts in the fields of natural hazard risk research, risk analysis, mitigation planning, and emergency management. The processing methods used to create the National Risk Index have produced results similar to those from other natural hazard risk analyses conducted on a smaller scale. The breadth and combination of geographic information systems (GIS) and data processing techniques leveraged by the National Risk Index enable it to incorporate multiple hazard types and risk factors, manage its nationwide scope, and capture what might have been missed using other methods.

The National Risk Index does not consider the intricate economic and physical interdependencies that exist across geographic regions. Keep in mind that hazard impacts in surrounding counties or Census tracts can cause indirect losses in your community regardless of your community's risk profile.

Nationwide data available for some risk factors are rudimentary at this time. The National Risk Index will be continuously updated as new data become available and improved methodologies are identified.

The National Risk Index Contact Us page is available at [hazards.fema.gov/nri/contact-us](https://hazards.fema.gov/nri/contact-us).







## **ATTACHMENT 14: HAZUS MH SIMULATION REPORTS**



FEMA

## Quick Assessment Report

**RiskMAP**  
Increasing Resilience Together

February 17, 2022

**Study Region :** Hawley\_CT  
**Scenario :** Riverv3  
**Return Period:** 100  
**Analysis Option:** 0

### Regional Statistics

<b>Area (Square Miles)</b>	160
<b>Number of Census Blocks</b>	627
<b>Number of Buildings</b>	
Residential	2,486
Total	2,704
<b>Number of People in the Region (x 1000)</b>	4
<b>Building Exposure (\$ Millions)</b>	
Residential	530
Total	642

### Scenario Results

#### Shelter Requirements

Displaced Population (# Households)	8
Short Term Shelter (# People)	4

#### Economic Loss

Residential Property (Capital Stock) Losses (\$ Millions)	1
Total Property (Capital Stock) Losses (\$ Millions)	1
Business Interruption (Income) Losses (\$ Millions)	1

#### **Disclaimer:**

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood. These results can be improved by using enhanced inventory data and flood hazard information.



## Hazus: Flood Global Risk Report

**Region Name:** Hawley\_CT

**Flood Scenario:** Riverv3

**Print Date:** Thursday, February 17, 2022

**Disclaimer:**

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*Totals only reflect data for those census tracts/blocks included in the user's study region.*

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## General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Massachusetts

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is approximately 160 square miles and contains 627 census blocks. The region contains over 2 thousand households and has a total population of 4,494 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B .

There are an estimated 2,704 buildings in the region with a total building replacement value (excluding contents) of 642 million dollars. Approximately 91.94% of the buildings (and 82.48% of the building value) are associated with residential housing.



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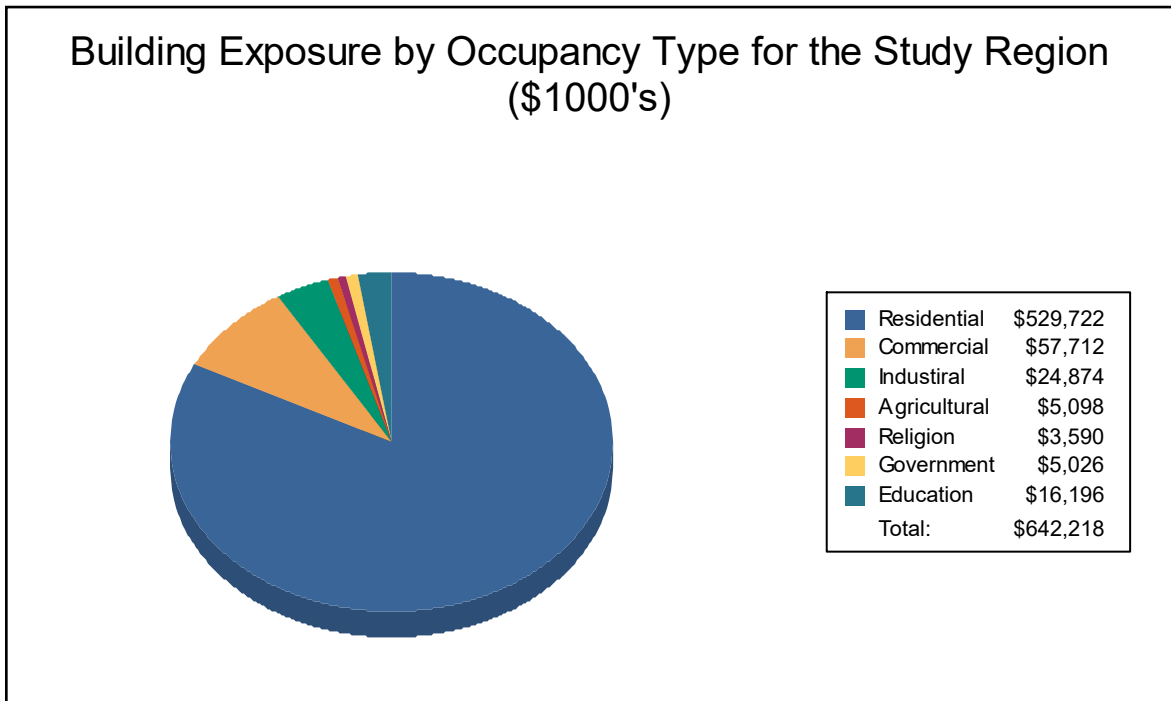
## Building Inventory

### General Building Stock

Hazus estimates that there are 2,704 buildings in the region which have an aggregate total replacement value of 642 million dollars. Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

**Table 1**  
**Building Exposure by Occupancy Type for the Study Region**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	529,722	82.5%
Commercial	57,712	9.0%
Industrial	24,874	3.9%
Agricultural	5,098	0.8%
Religion	3,590	0.6%
Government	5,026	0.8%
Education	16,196	2.5%
<b>Total</b>	<b>642,218</b>	<b>100%</b>



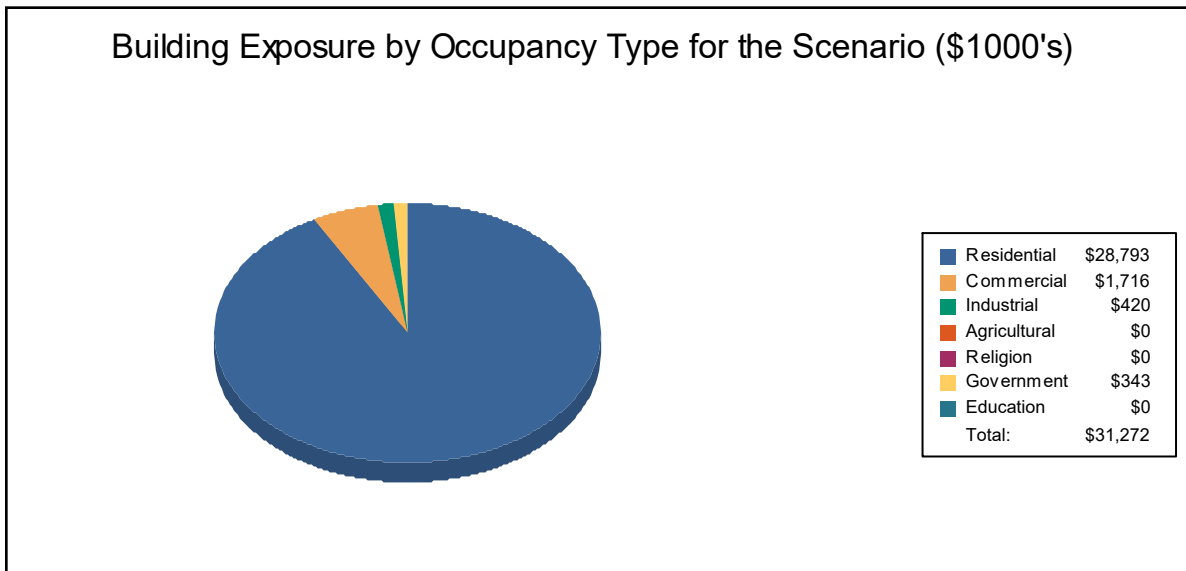
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**Table 2**  
**Building Exposure by Occupancy Type for the Scenario**

<b>Occupancy</b>	<b>Exposure (\$1000)</b>	<b>Percent of Total</b>
Residential	28,793	92.1%
Commercial	1,716	5.5%
Industrial	420	1.3%
Agricultural	0	0.0%
Religion	0	0.0%
Government	343	1.1%
Education	0	0.0%
<b>Total</b>	<b>31,272</b>	<b>100%</b>



**Essential Facility Inventory**

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 5 schools, 8 fire stations, 4 police stations and 9 emergency operation centers.



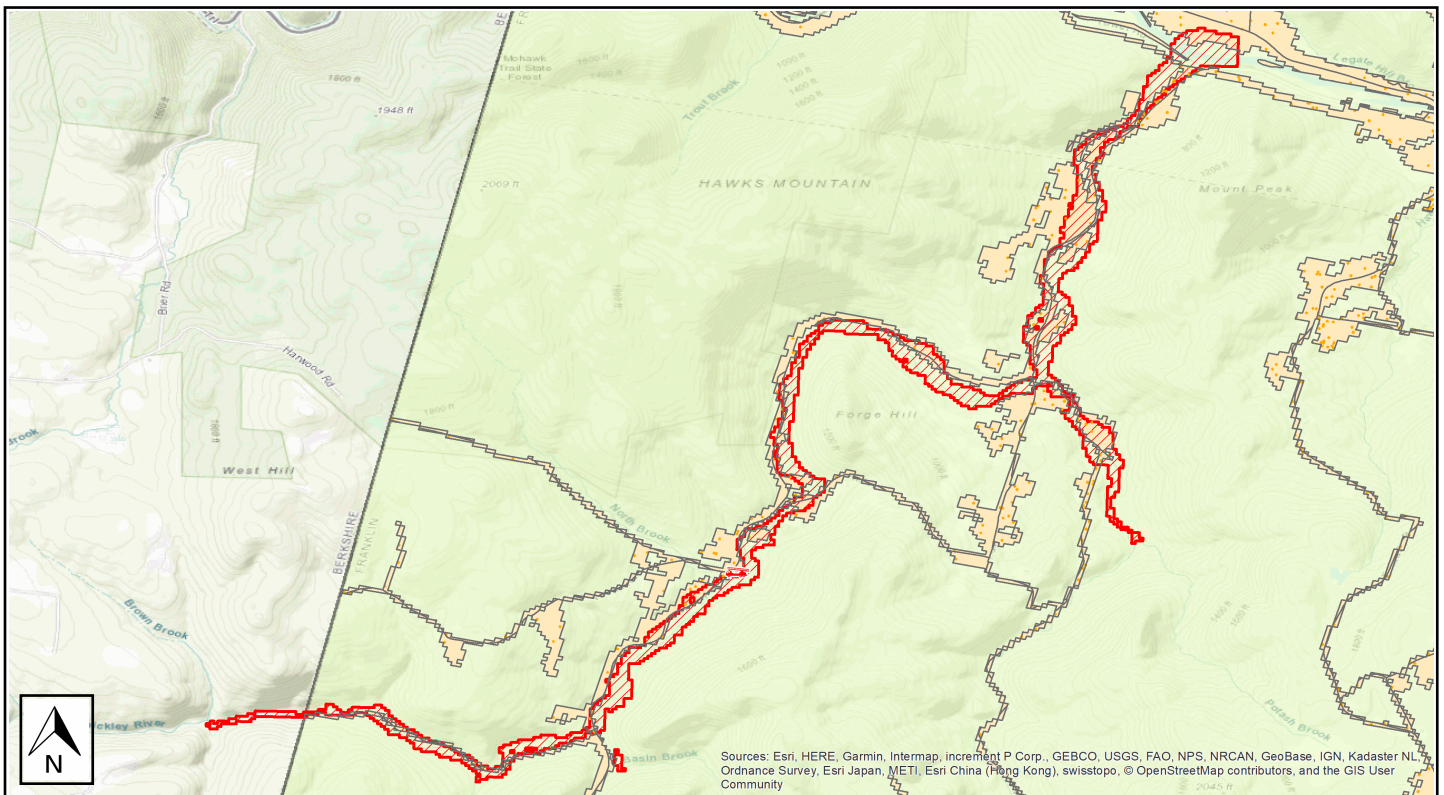
## Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

<b>Study Region Name:</b>	Hawley_CT
<b>Scenario Name:</b>	Riverv3
<b>Return Period Analyzed:</b>	100
<b>Analysis Options Analyzed:</b>	No What-Ifs

### Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure





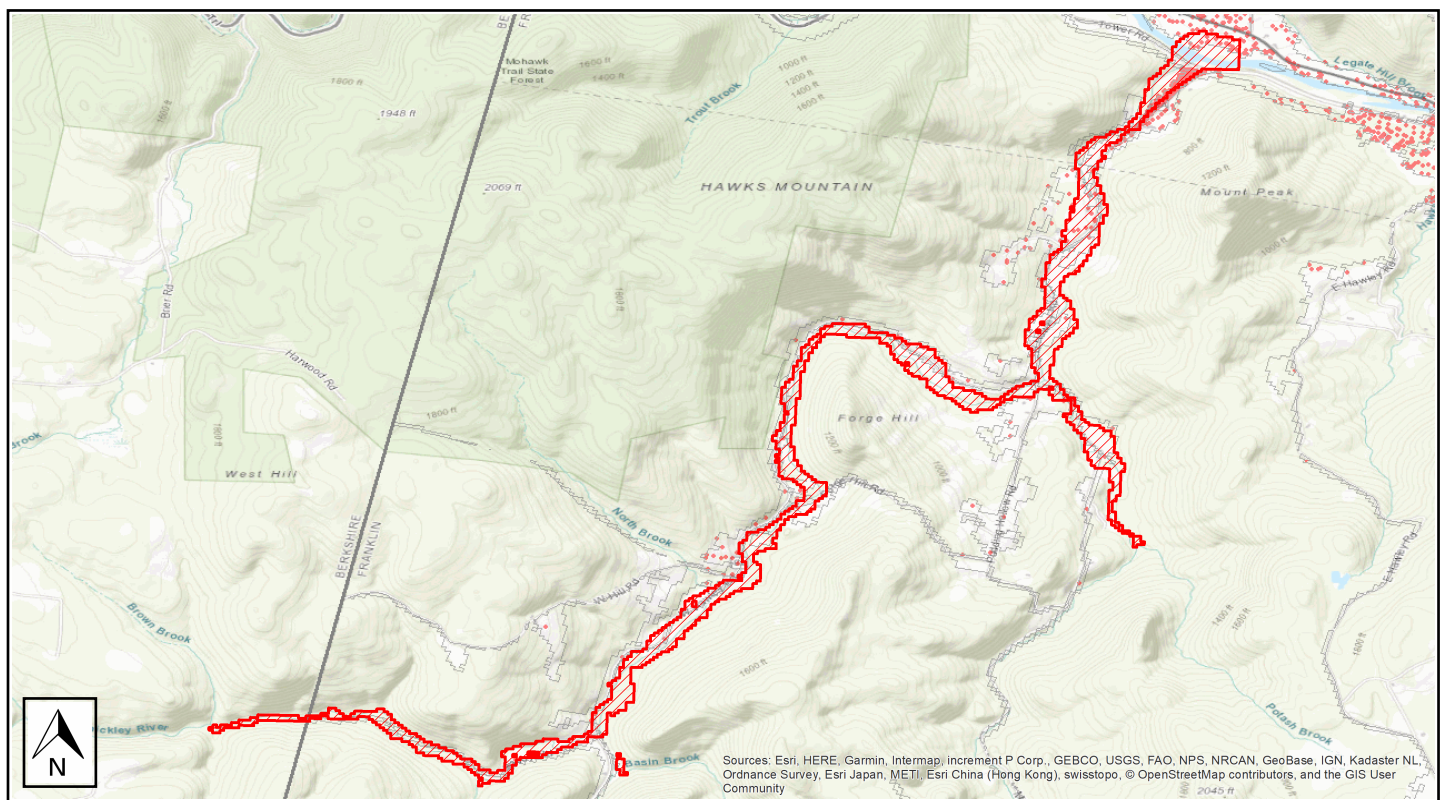


## Building Damage

### General Building Stock Damage

Hazus estimates that about 1 building will be at least moderately damaged. This is over 100% of the total number of buildings in the scenario. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

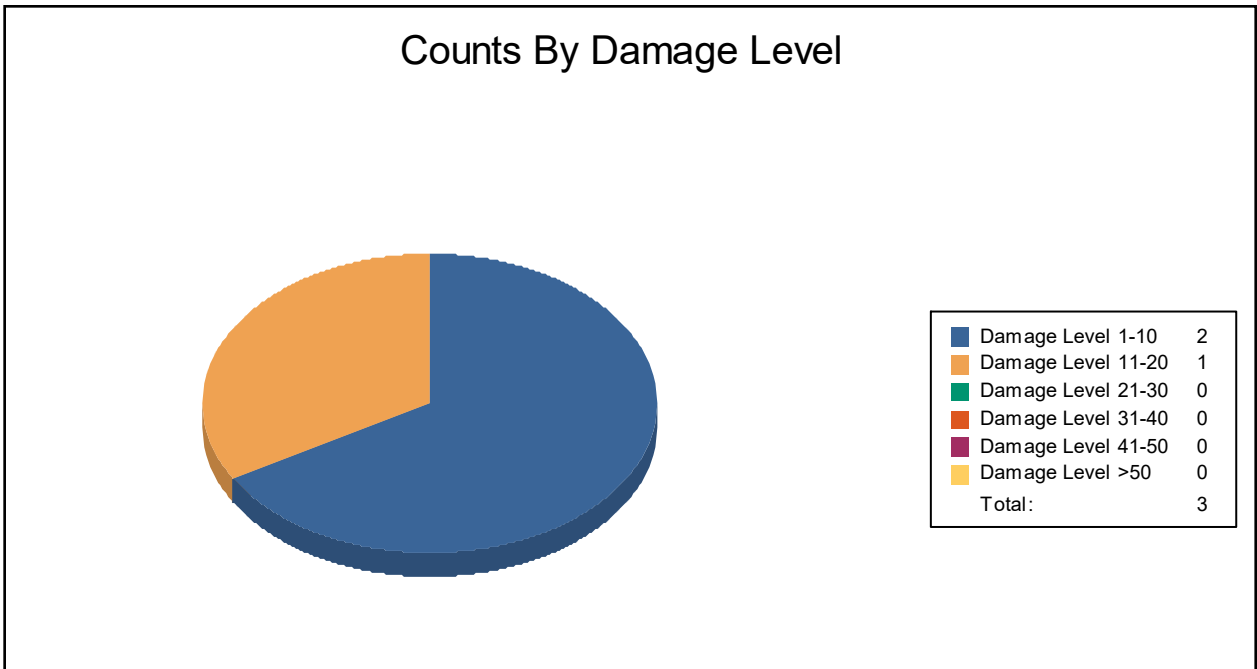
**Total Economic Loss (1 dot = \$300K) Overview Map**





**Table 3: Expected Building Damage by Occupancy**

Occupancy	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	2	67	1	33	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>		<b>1</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>	



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**Table 4: Expected Building Damage by Building Type**

Building Type	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0	0	0	0	0	0	0	0	0	0	0
ManufHousing	0	0	0	0	0	0	0	0	0	0	0	0
Masonry	0	0	0	0	0	0	0	0	0	0	0	0
Steel	0	0	0	0	0	0	0	0	0	0	0	0
Wood	2	67	1	33	0	0	0	0	0	0	0	0



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## Essential Facility Damage

Before the flood analyzed in this scenario, the region had 0 hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

**Table 5: Expected Damage to Essential Facilities**

Classification	# Facilities			
	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	9	0	0	0
Fire Stations	8	0	0	0
Hospitals	0	0	0	0
Police Stations	4	0	0	0
Schools	5	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.



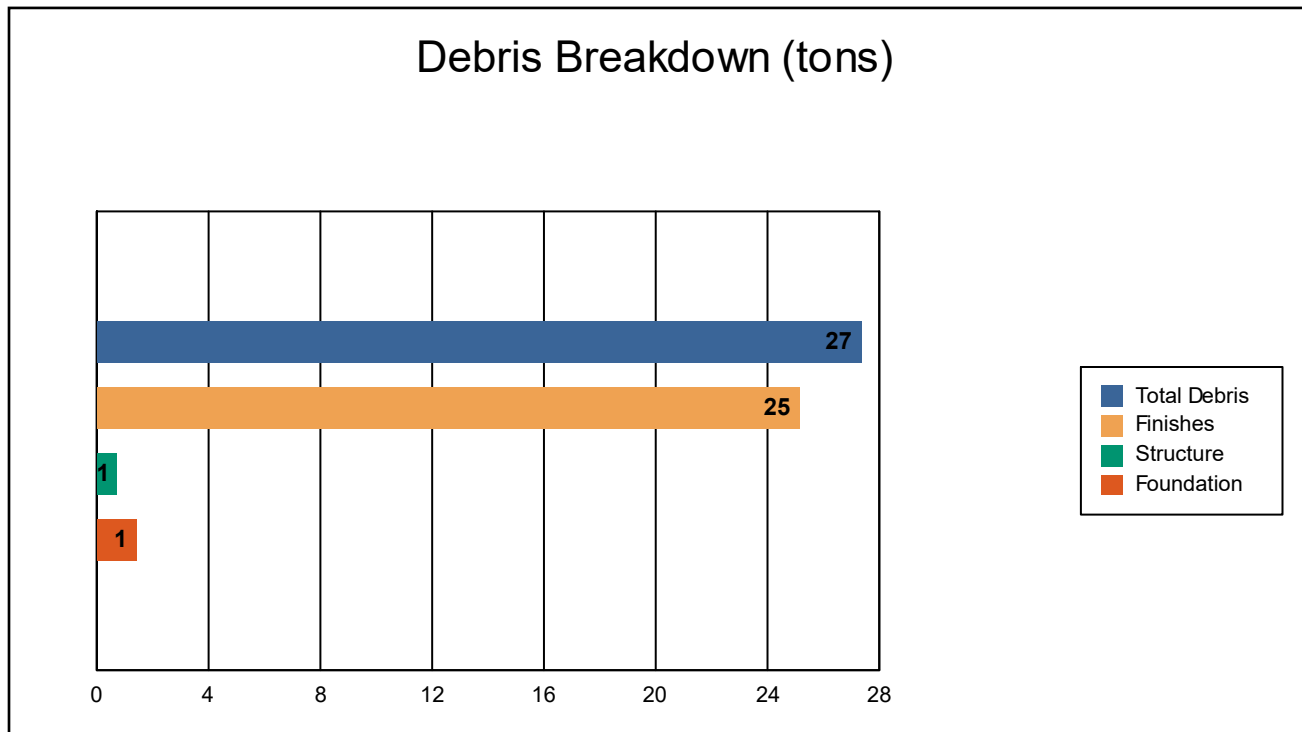
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## Induced Flood Damage

### Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.



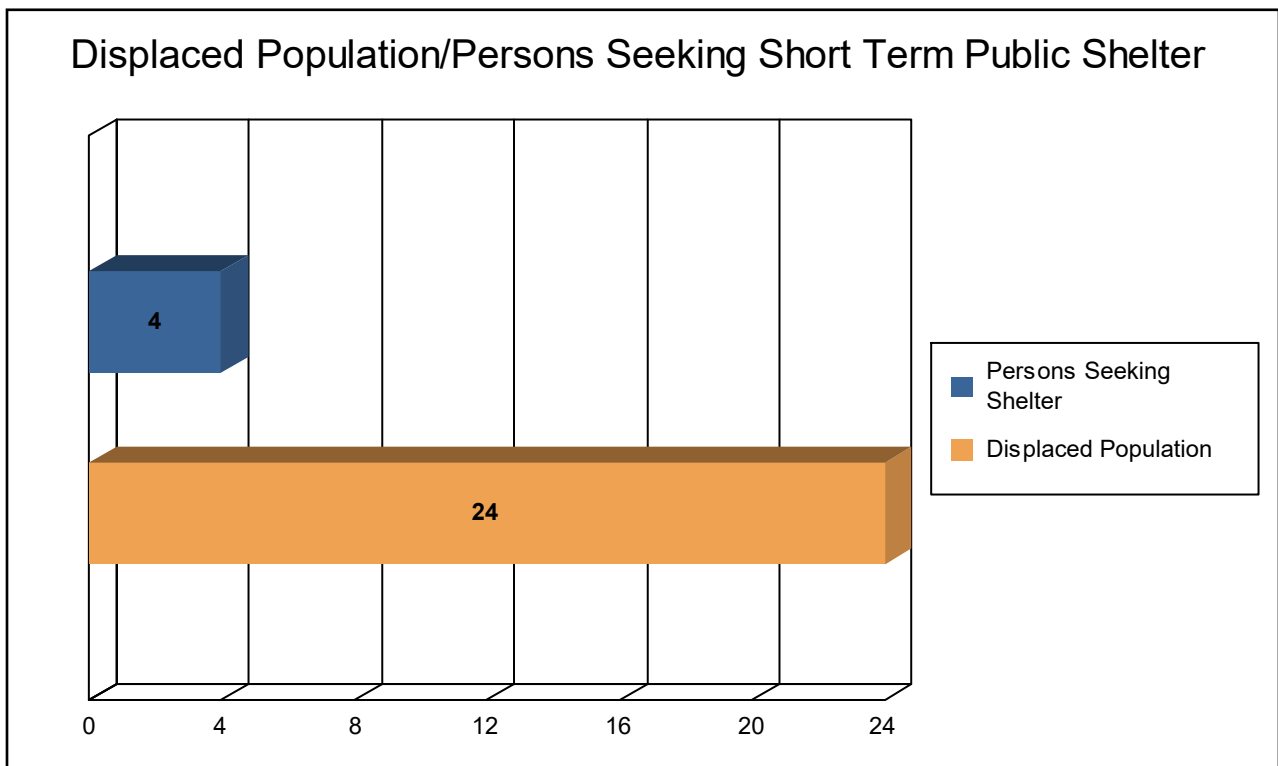
The model estimates that a total of 27 tons of debris will be generated. Of the total amount, Finishes comprises 92% of the total, Structure comprises 3% of the total, and Foundation comprises 5%. If the debris tonnage is converted into an estimated number of truckloads, it will require 2 truckloads (@25 tons/truck) to remove the debris generated by the flood.



## Social Impact

### Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 8 households (or 24 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 4 people (out of a total population of 4,494) will seek temporary shelter in public shelters.



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## Economic Loss

The total economic loss estimated for the flood is 2.01 million dollars, which represents 6.43 % of the total replacement value of the scenario buildings.

### **Building-Related Losses**

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1.07 million dollars. 47% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 54.20% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.



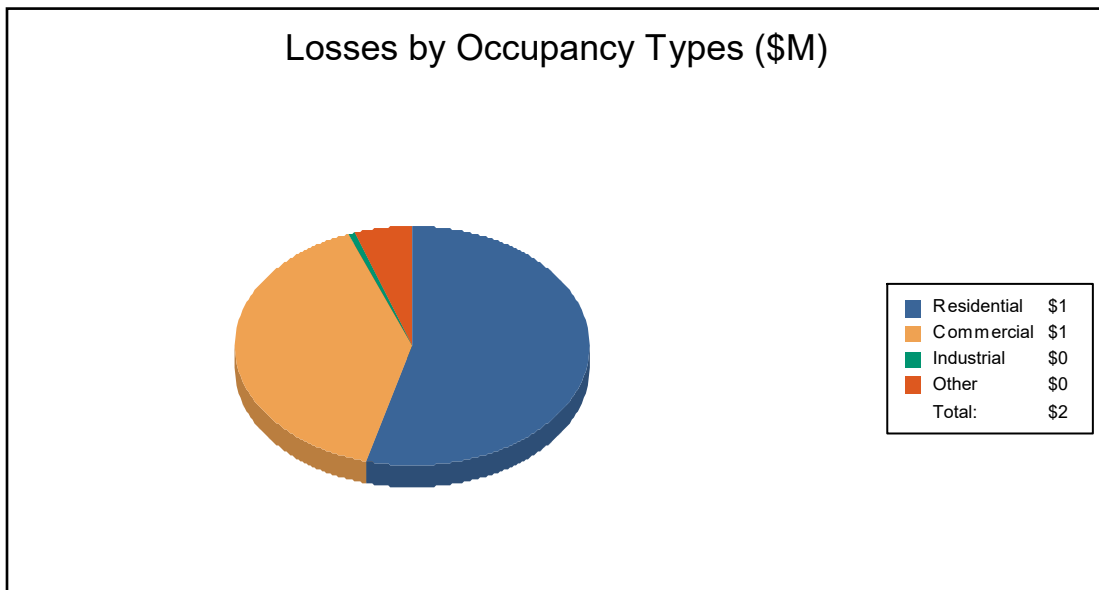
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**Table 6: Building-Related Economic Loss Estimates**  
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	0.45	0.07	0.00	0.00	0.53
	Content	0.21	0.30	0.01	0.02	0.54
	Inventory	0.00	0.01	0.00	0.00	0.01
	<b>Subtotal</b>	<b>0.67</b>	<b>0.37</b>	<b>0.01</b>	<b>0.02</b>	<b>1.07</b>
<u>Business Interruption</u>						
	Income	0.05	0.10	0.00	0.00	0.14
	Relocation	0.18	0.06	0.00	0.00	0.23
	Rental Income	0.08	0.04	0.00	0.00	0.13
	Wage	0.12	0.24	0.00	0.09	0.44
	<b>Subtotal</b>	<b>0.42</b>	<b>0.43</b>	<b>0.00</b>	<b>0.09</b>	<b>0.94</b>
<b>ALL</b>	<b>Total</b>	<b>1.09</b>	<b>0.80</b>	<b>0.01</b>	<b>0.11</b>	<b>2.01</b>







## **Appendix A: County Listing for the Region**

Massachusetts

- Franklin



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**Appendix B: Regional Population and Building Value Data**

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
<b>Massachusetts</b>				
Franklin	4,494	529,722	112,496	642,218
<b>Total</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>
<b>Total Study Region</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>



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## Quick Assessment Report

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February 17, 2022

**Study Region :** Hawley\_CT  
**Scenario :** Riverv3  
**Return Period:** 500  
**Analysis Option:** 0

### Regional Statistics

<b>Area (Square Miles)</b>	160
<b>Number of Census Blocks</b>	627
<b>Number of Buildings</b>	
Residential	2,486
Total	2,704
<b>Number of People in the Region (x 1000)</b>	4
<b>Building Exposure (\$ Millions)</b>	
Residential	530
Total	642

### Scenario Results

#### Shelter Requirements

Displaced Population (# Households)	9
Short Term Shelter (# People)	5

#### Economic Loss

Residential Property (Capital Stock) Losses (\$ Millions)	1
Total Property (Capital Stock) Losses (\$ Millions)	2
Business Interruption (Income) Losses (\$ Millions)	1

#### **Disclaimer:**

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## Hazus: Flood Global Risk Report

**Region Name:** Hawley\_CT

**Flood Scenario:** Riverv3

**Print Date:** Thursday, February 17, 2022

**Disclaimer:**

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The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Massachusetts

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is approximately 160 square miles and contains 627 census blocks. The region contains over 2 thousand households and has a total population of 4,494 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B .

There are an estimated 2,704 buildings in the region with a total building replacement value (excluding contents) of 642 million dollars. Approximately 91.94% of the buildings (and 82.48% of the building value) are associated with residential housing.



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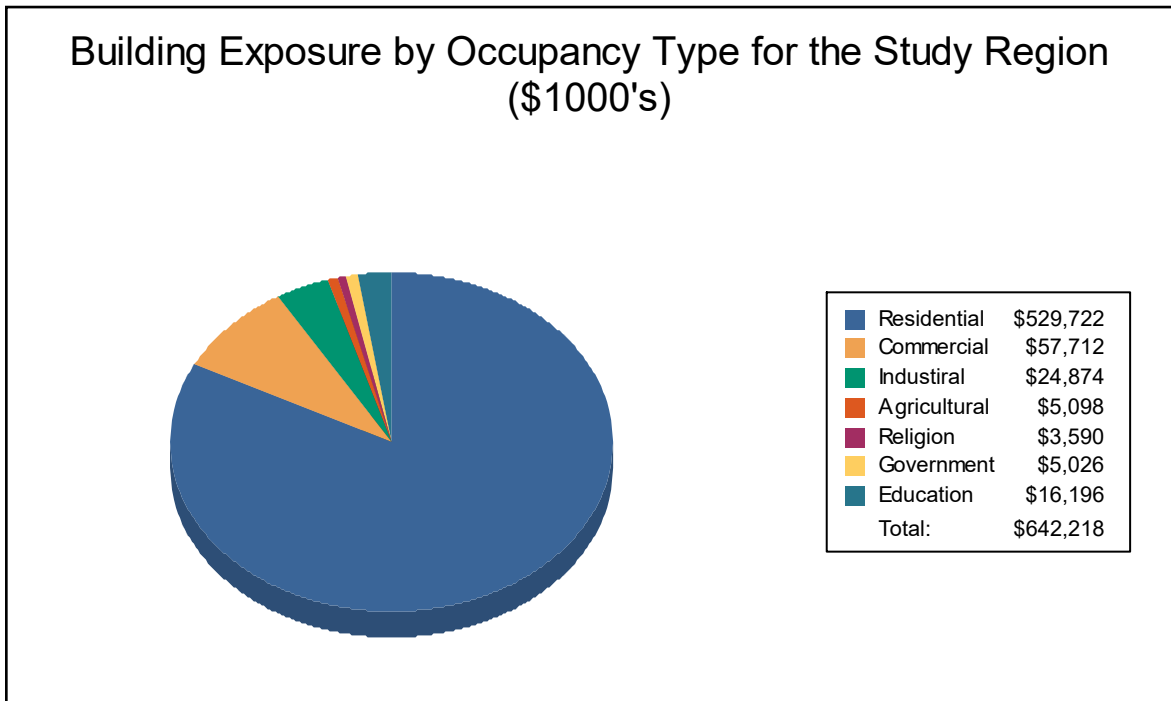
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### General Building Stock

Hazus estimates that there are 2,704 buildings in the region which have an aggregate total replacement value of 642 million dollars. Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

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Occupancy	Exposure (\$1000)	Percent of Total
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Religion	3,590	0.6%
Government	5,026	0.8%
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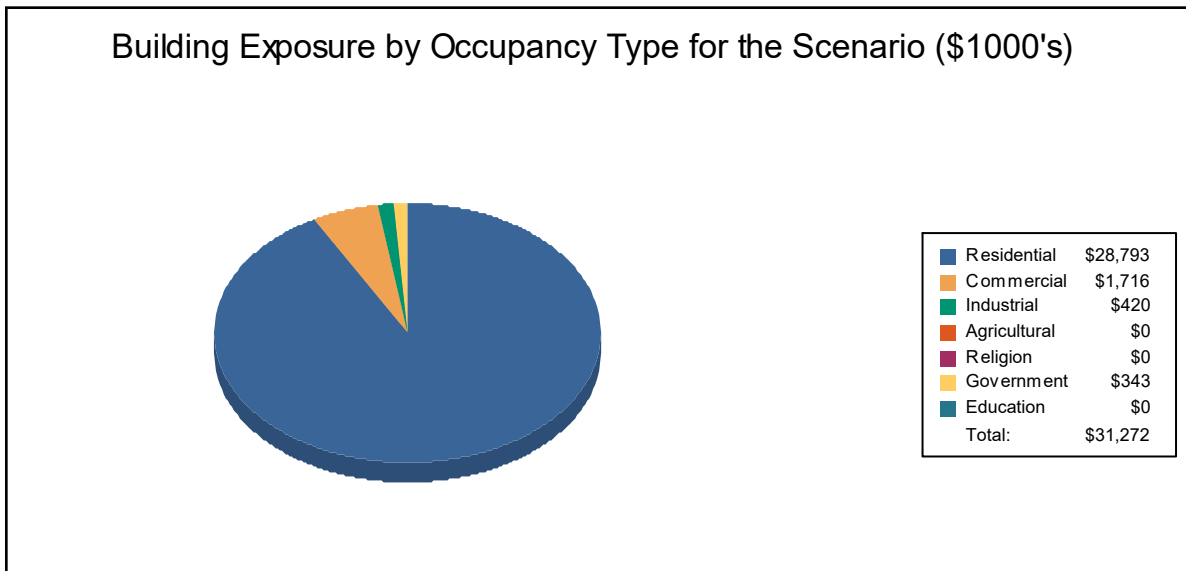
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**Table 2**  
**Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	28,793	92.1%
Commercial	1,716	5.5%
Industrial	420	1.3%
Agricultural	0	0.0%
Religion	0	0.0%
Government	343	1.1%
Education	0	0.0%
<b>Total</b>	<b>31,272</b>	<b>100%</b>



**Essential Facility Inventory**

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 5 schools, 8 fire stations, 4 police stations and 9 emergency operation centers.





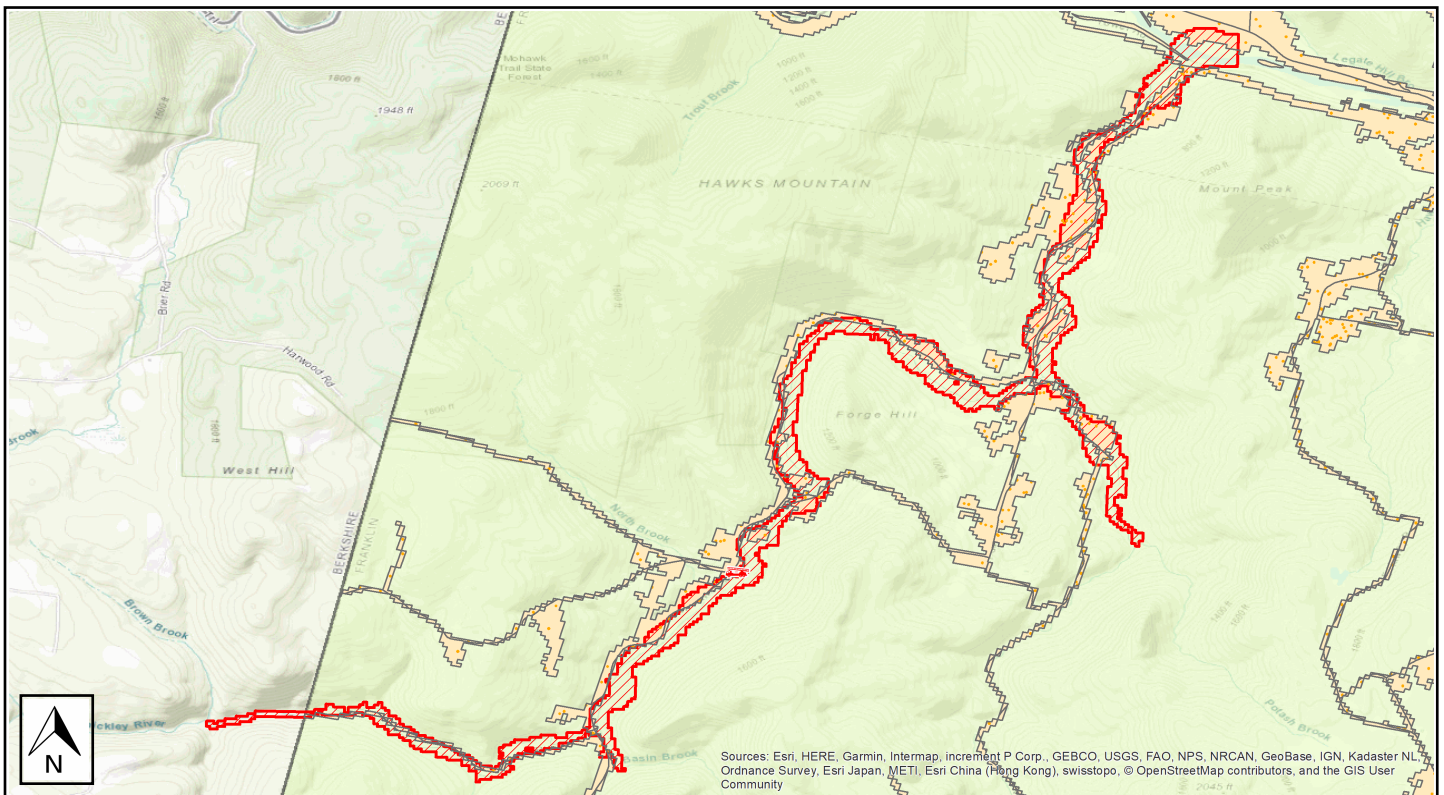
## Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

<b>Study Region Name:</b>	Hawley_CT
<b>Scenario Name:</b>	Riverv3
<b>Return Period Analyzed:</b>	500
<b>Analysis Options Analyzed:</b>	No What-Ifs

### Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure

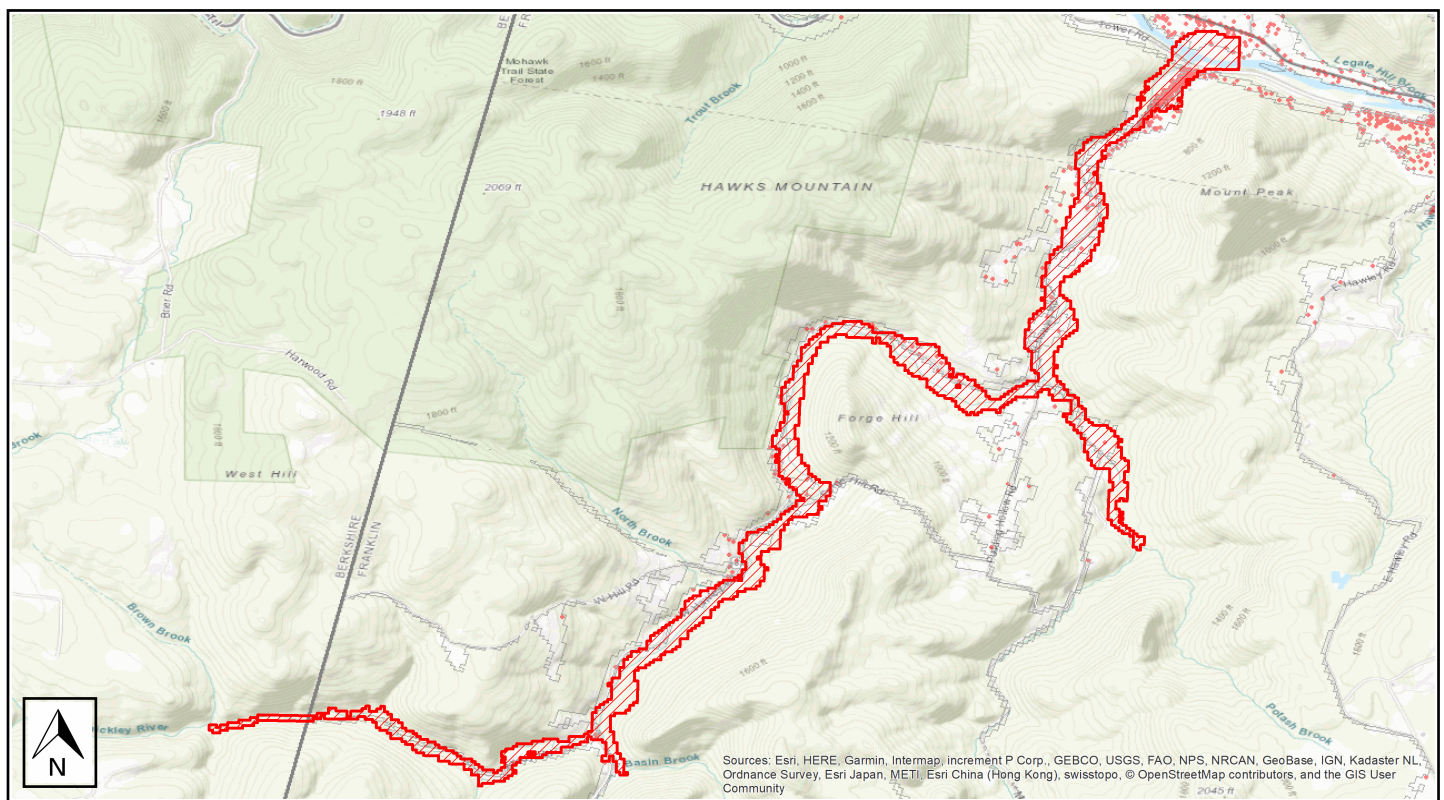


## Building Damage

### General Building Stock Damage

Hazus estimates that about 2 buildings will be at least moderately damaged. This is over 100% of the total number of buildings in the scenario. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

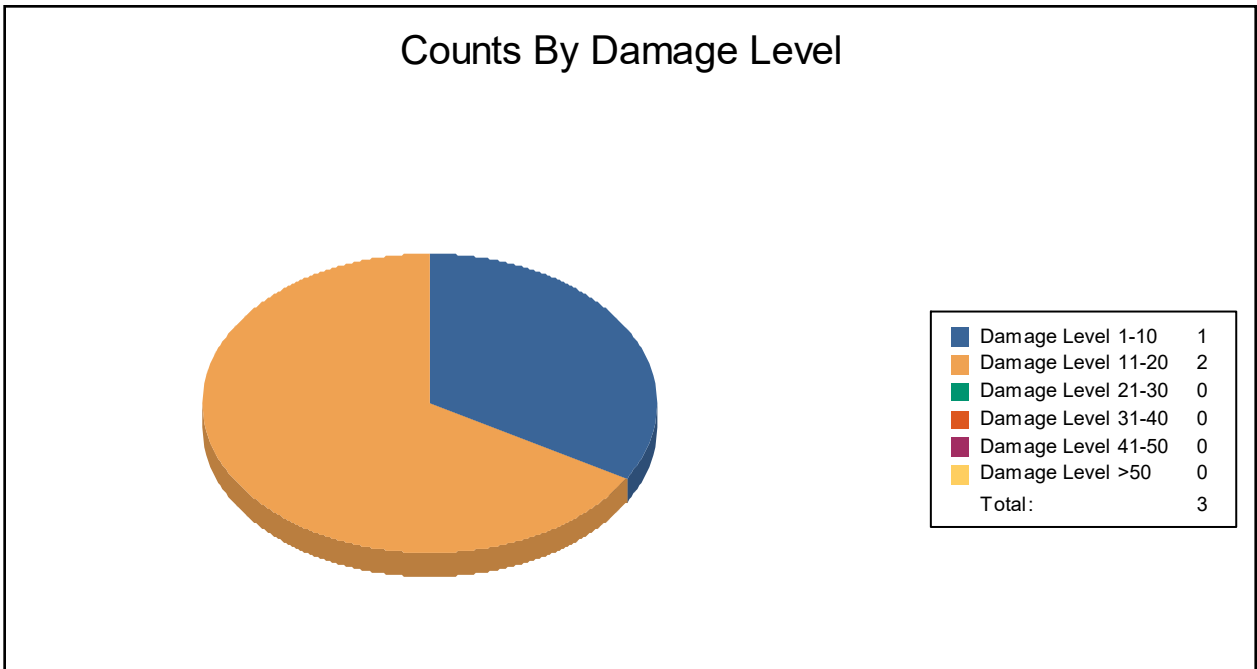
**Total Economic Loss (1 dot = \$300K) Overview Map**





**Table 3: Expected Building Damage by Occupancy**

Occupancy	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	1	33	2	67	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>		<b>2</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>	





**Table 4: Expected Building Damage by Building Type**

Building Type	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0	0	0	0	0	0	0	0	0	0	0
ManufHousing	0	0	0	0	0	0	0	0	0	0	0	0
Masonry	0	0	0	0	0	0	0	0	0	0	0	0
Steel	0	0	0	0	0	0	0	0	0	0	0	0
Wood	1	33	2	67	0	0	0	0	0	0	0	0



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## Essential Facility Damage

Before the flood analyzed in this scenario, the region had 0 hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

**Table 5: Expected Damage to Essential Facilities**

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	9	0	0	0
Fire Stations	8	1	0	0
Hospitals	0	0	0	0
Police Stations	4	0	0	0
Schools	5	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.



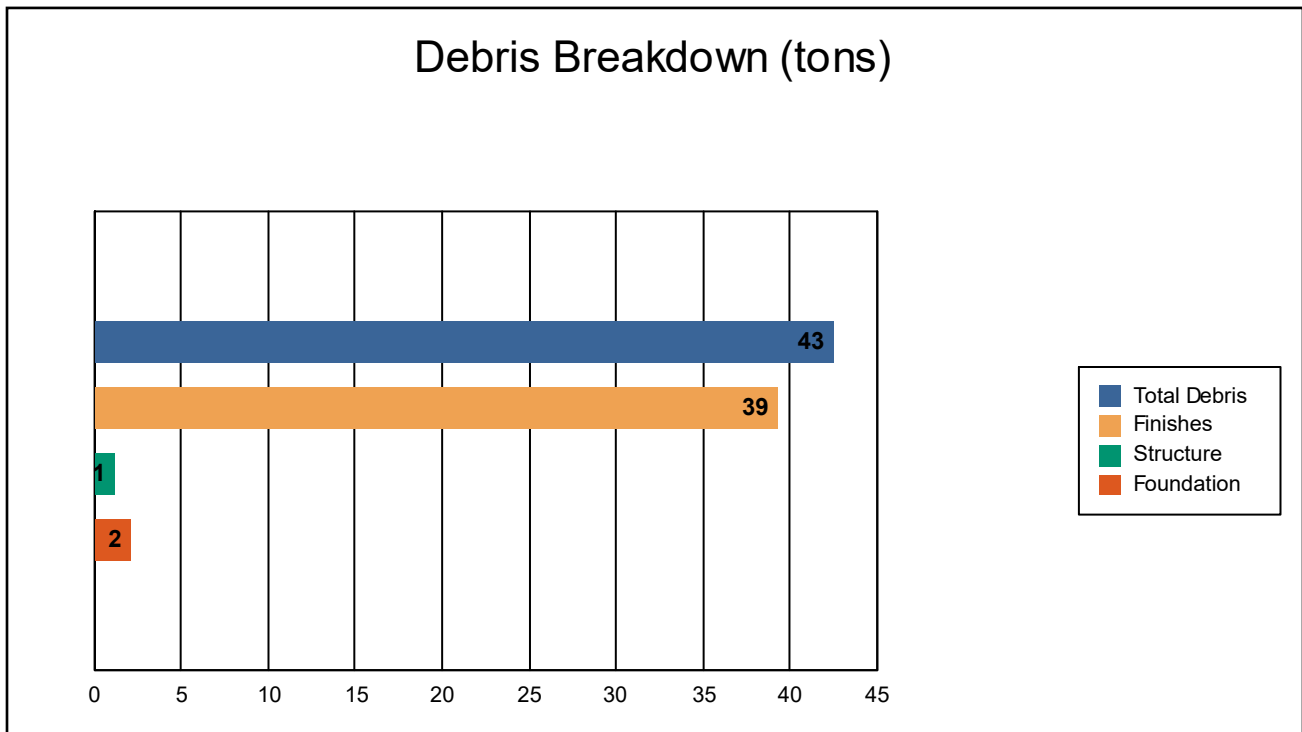
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## Induced Flood Damage

### Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.



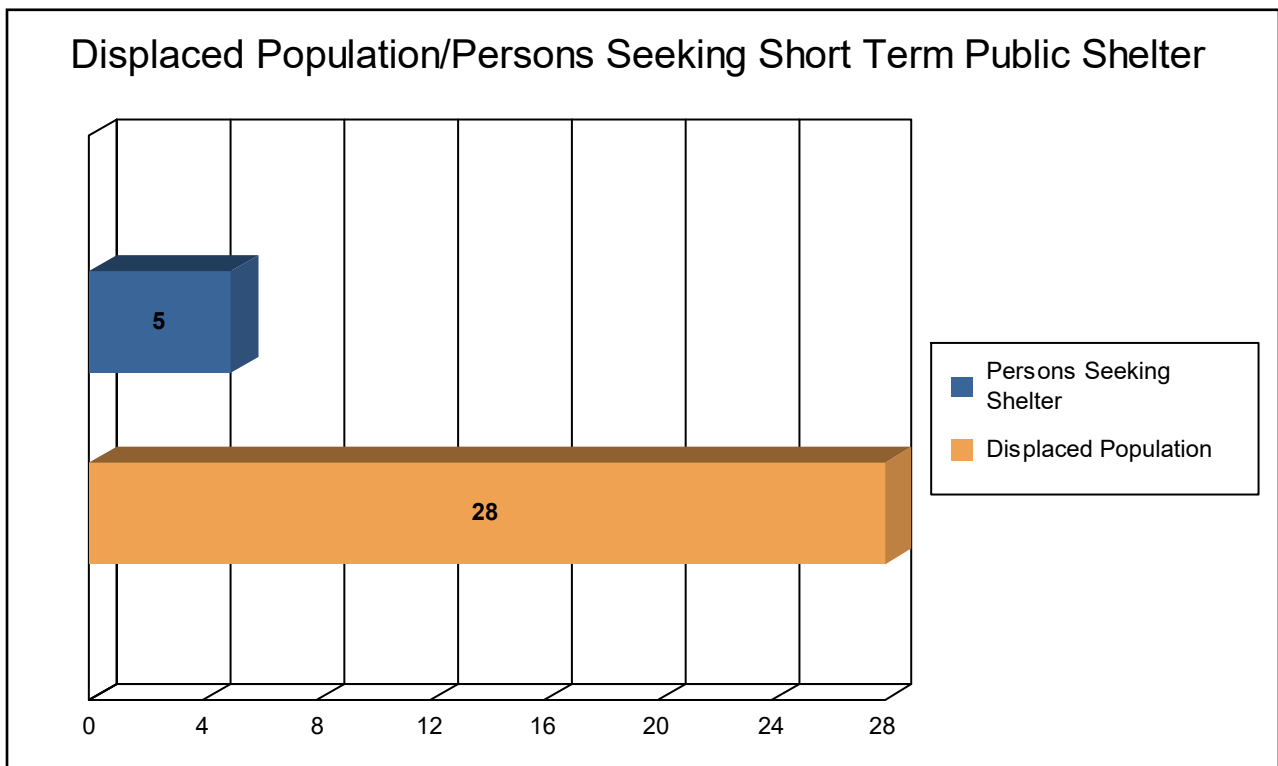
The model estimates that a total of 43 tons of debris will be generated. Of the total amount, Finishes comprises 92% of the total, Structure comprises 3% of the total, and Foundation comprises 5%. If the debris tonnage is converted into an estimated number of truckloads, it will require 2 truckloads (@25 tons/truck) to remove the debris generated by the flood.



## Social Impact

### Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 9 households (or 28 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 5 people (out of a total population of 4,494) will seek temporary shelter in public shelters.



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## Economic Loss

The total economic loss estimated for the flood is 3.02 million dollars, which represents 9.66 % of the total replacement value of the scenario buildings.

### **Building-Related Losses**

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1.56 million dollars. 48% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 51.56% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.



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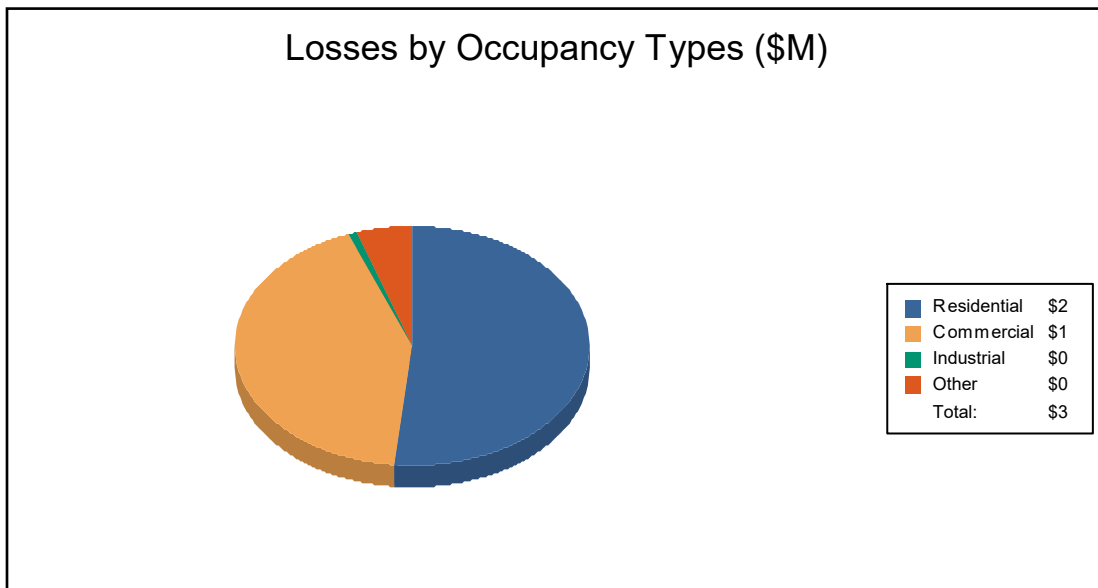
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**Table 6: Building-Related Economic Loss Estimates**  
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	0.67	0.09	0.00	0.00	0.77
	Content	0.31	0.42	0.02	0.03	0.78
	Inventory	0.00	0.01	0.00	0.00	0.01
	<b>Subtotal</b>	<b>0.98</b>	<b>0.52</b>	<b>0.02</b>	<b>0.03</b>	<b>1.56</b>
<u>Business Interruption</u>						
	Income	0.07	0.17	0.00	0.00	0.24
	Relocation	0.21	0.10	0.00	0.00	0.32
	Rental Income	0.13	0.08	0.00	0.00	0.20
	Wage	0.17	0.42	0.00	0.12	0.70
	<b>Subtotal</b>	<b>0.57</b>	<b>0.77</b>	<b>0.00</b>	<b>0.12</b>	<b>1.46</b>
<b>ALL</b>	<b>Total</b>	<b>1.56</b>	<b>1.29</b>	<b>0.02</b>	<b>0.15</b>	<b>3.02</b>





## **Appendix A: County Listing for the Region**

Massachusetts

- Franklin



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**Appendix B: Regional Population and Building Value Data**

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
<b>Massachusetts</b>				
Franklin	4,494	529,722	112,496	642,218
<b>Total</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>
<b>Total Study Region</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>



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# Hazus: Hurricane Global Risk Report

**Region Name:** Hawley\_CT

**Hurricane Scenario:** Probabilistic 100-year Return Period

**Print Date:** Tuesday, February 15, 2022

**Disclaimer:**

*This version of Hazus utilizes 2010 Census Data.  
Totals only reflect data for those census tracts/blocks included in the user's study region.*

*The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.*



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## General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Massachusetts

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 160.37 square miles and contains 1 census tracts. There are over 1 thousand households in the region and a total population of 4,494 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 2 thousand buildings in the region with a total building replacement value (excluding contents) of 642 million dollars (2014 dollars). Approximately 92% of the buildings (and 82% of the building value) are associated with residential housing.

## Building Inventory

### General Building Stock

Hazus estimates that there are 2,704 buildings in the region which have an aggregate total replacement value of 642 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

### Building Exposure by Occupancy Type

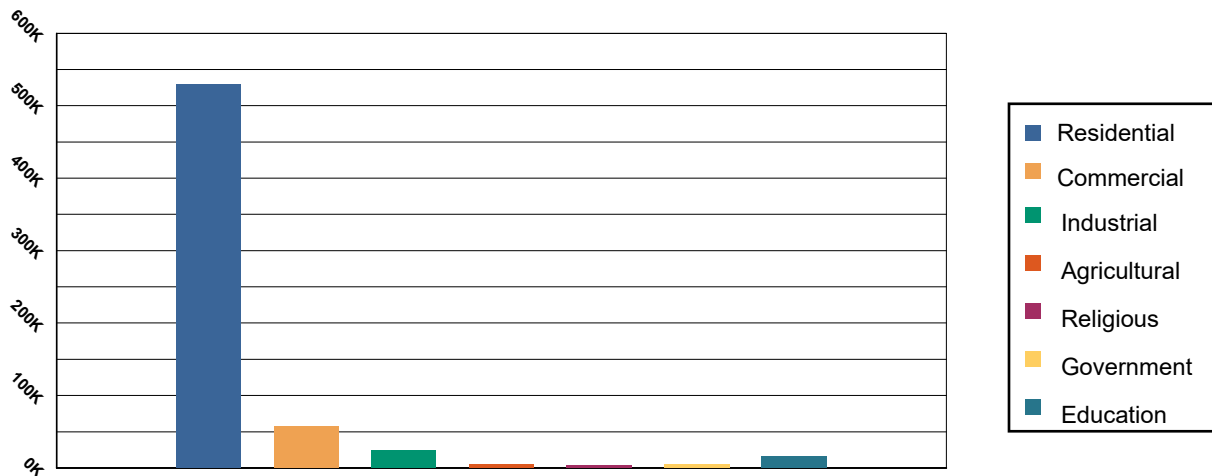


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	529,722	82.48%
Commercial	57,712	8.99%
Industrial	24,874	3.87%
Agricultural	5,098	0.79%
Religious	3,590	0.56%
Government	5,026	0.78%
Education	16,196	2.52%
<b>Total</b>	<b>642,218</b>	<b>100.00%</b>

### Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 5 schools, 8 fire stations, 4 police stations and 9 emergency operation facilities.



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## Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

**Scenario Name:** Probabilistic

**Type:** Probabilistic



## Building Damage

### General Building Stock Damage

Hazus estimates that about 153 buildings will be at least moderately damaged. This is over 6% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

### Expected Building Damage by Occupancy

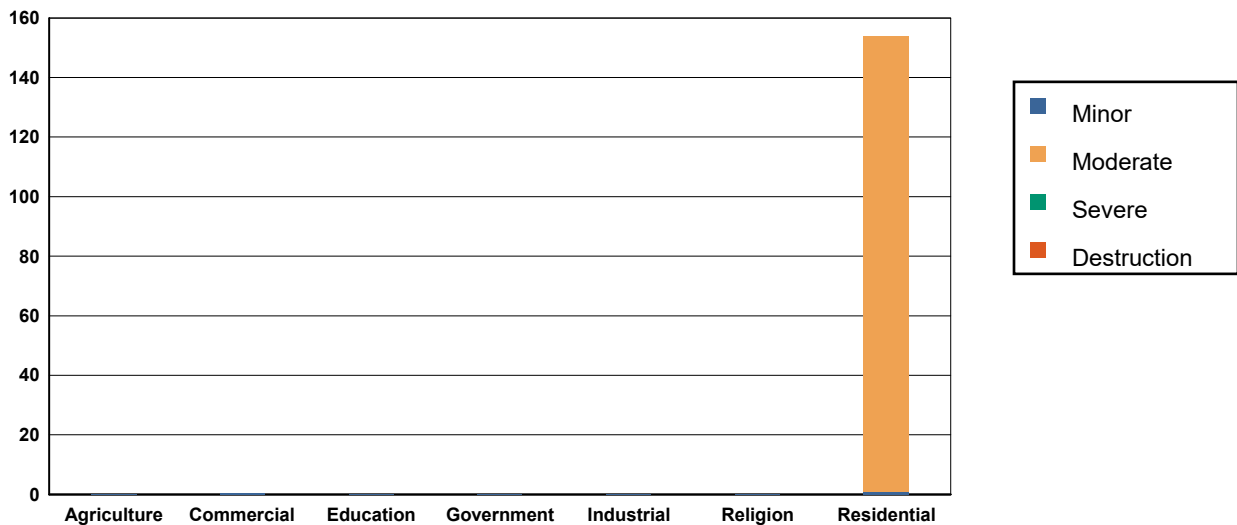


Table 2: Expected Building Damage by Occupancy : 100 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	17.96	99.77	0.04	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	121.64	99.70	0.36	0.30	0.00	0.00	0.00	0.00	0.00	0.00
Education	11.96	99.67	0.04	0.33	0.00	0.00	0.00	0.00	0.00	0.00
Government	8.97	99.66	0.03	0.34	0.00	0.00	0.00	0.00	0.00	0.00
Industrial	49.83	99.66	0.17	0.34	0.00	0.00	0.00	0.00	0.00	0.00
Religion	6.98	99.78	0.02	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Residential	2,332.17	93.81	0.75	0.03	153.08	6.16	0.00	0.00	0.00	0.00
<b>Total</b>	<b>2,549.51</b>		<b>1.41</b>		<b>153.08</b>		<b>0.00</b>		<b>0.00</b>	



**Table 3: Expected Building Damage by Building Type : 100 - year Event**

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	5	99.56	0	0.44	0	0.00	0	0.00	0	0.00
Masonry	62	98.16	0	0.36	1	1.47	0	0.00	0	0.00
MH	312	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	98	99.64	0	0.36	0	0.00	0	0.00	0	0.00
Wood	1,833	92.85	0	0.02	141	7.13	0	0.00	0	0.00

### Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 0 hospital beds (0%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, none of the beds will be in service. By 30 days, none will be operational.

#### Thematic Map of Essential Facilities with greater than 50% moderate



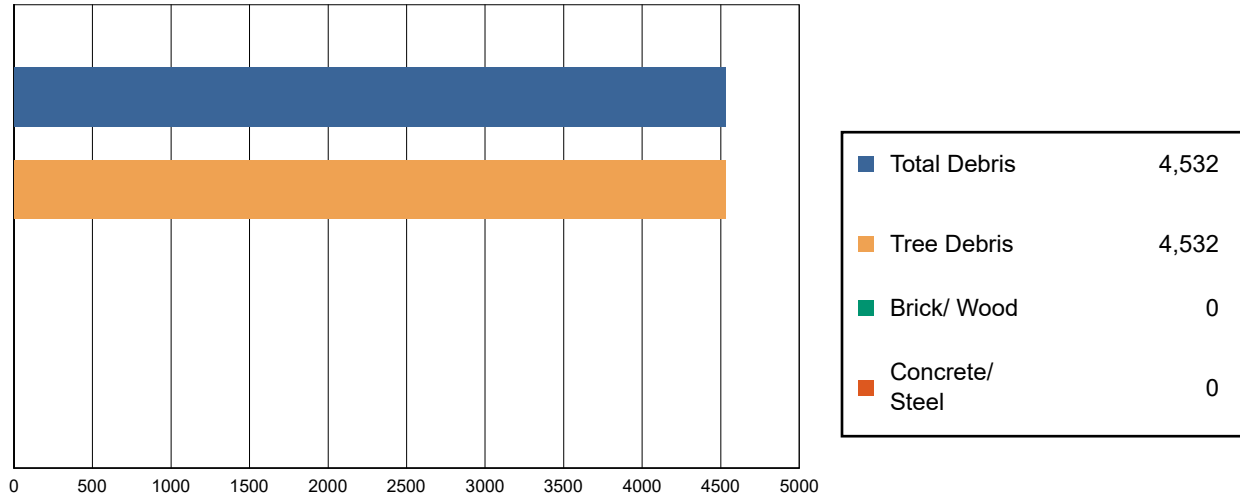
**Table 4: Expected Damage to Essential Facilities**

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	9	0	0	9
Fire Stations	8	0	0	8
Police Stations	4	0	0	4
Schools	5	0	0	5

## Induced Hurricane Damage

### Debris Generation

Estimated Debris (Tons)

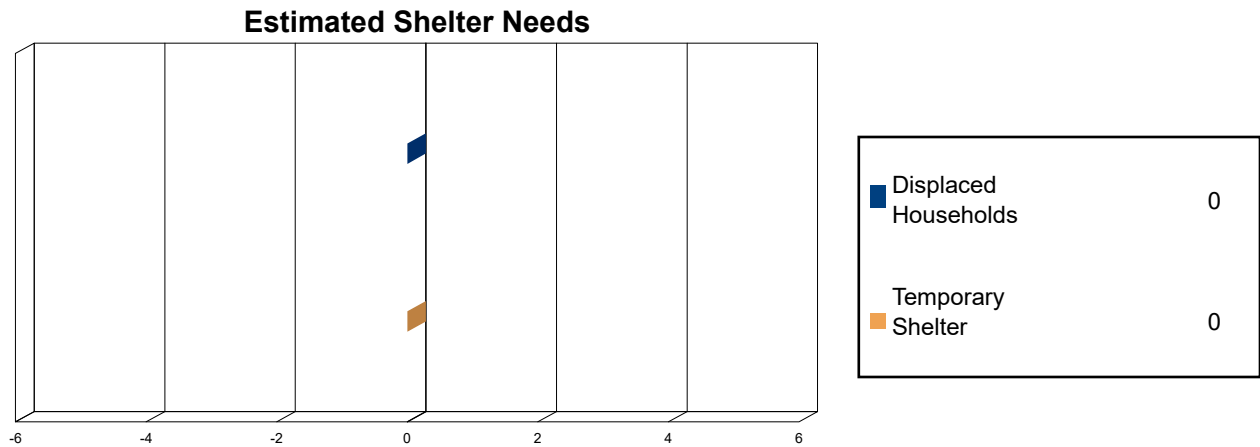


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 4,532 tons of debris will be generated. Of the total amount, 4,299 tons (95%) is Other Tree Debris. Of the remaining 233 tons, Brick/Wood comprises 0% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 233 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

## Social Impact

### Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 4,494) will seek temporary shelter in public shelters.



## Economic Loss

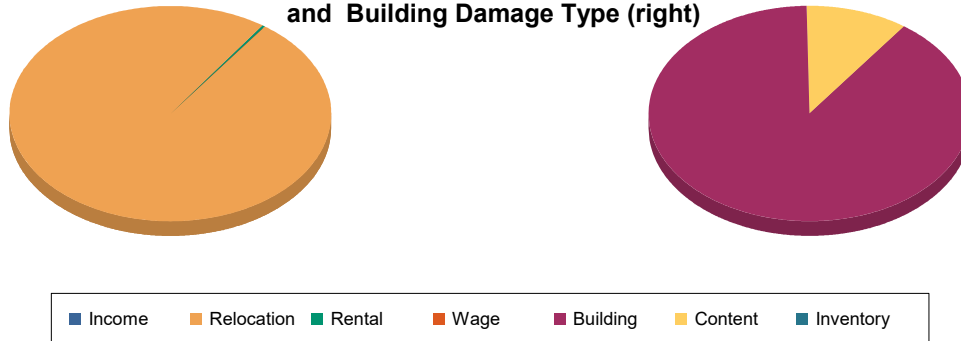
The total economic loss estimated for the hurricane is 9.3 million dollars, which represents 1.45 % of the total replacement value of the region's buildings.

### **Building-Related Losses**

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 9 million dollars. 2% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 100% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy



Table 5: Building-Related Economic Loss Estimates  
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<b>Property Damage</b>						
	Building	8,180.55	5.77	2.49	2.48	8,191.29
	Content	926.22	0.00	0.00	0.00	926.22
	Inventory	0.00	0.00	0.00	0.00	0.00
	<b>Subtotal</b>	<b>9,106.77</b>	<b>5.77</b>	<b>2.49</b>	<b>2.48</b>	<b>9,117.51</b>
<b>Business Interruption Loss</b>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	217.30	0.00	0.00	0.00	217.30
	Rental	0.50	0.00	0.00	0.00	0.50
	Wage	0.00	0.00	0.00	0.00	0.00
	<b>Subtotal</b>	<b>217.80</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>217.80</b>



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Total

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Total	9,324.56	5.77	2.49	2.48	9,335.30
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FEMA

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**Appendix A: County Listing for the Region**

Massachusetts  
- Franklin



**Appendix B: Regional Population and Building Value Data**

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
<b>Massachusetts</b>				
Franklin	4,494	529,722	112,496	642,218
<b>Total</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>
<b>Study Region Total</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>



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# Hazus: Hurricane Global Risk Report

**Region Name:** Hawley\_CT

**Hurricane Scenario:** Probabilistic 500-year Return Period

**Print Date:** Tuesday, February 15, 2022

**Disclaimer:**

*This version of Hazus utilizes 2010 Census Data.  
Totals only reflect data for those census tracts/blocks included in the user's study region.*

*The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.*



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## General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Massachusetts

Note:

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 160.37 square miles and contains 1 census tracts. There are over 1 thousand households in the region and a total population of 4,494 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B .

There are an estimated 2 thousand buildings in the region with a total building replacement value (excluding contents) of 642 million dollars (2014 dollars). Approximately 92% of the buildings (and 82% of the building value) are associated with residential housing.

## Building Inventory

### General Building Stock

Hazus estimates that there are 2,704 buildings in the region which have an aggregate total replacement value of 642 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

### Building Exposure by Occupancy Type

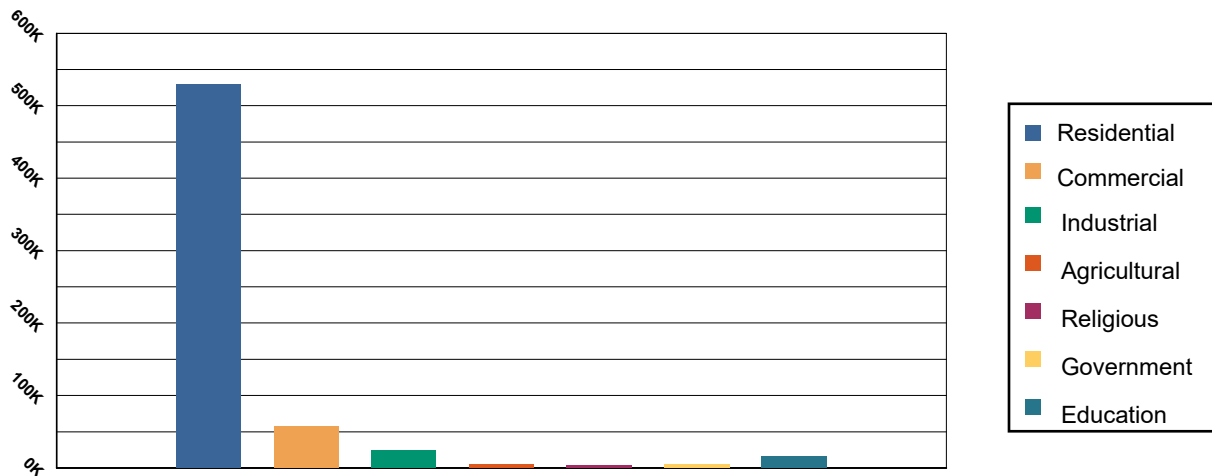


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	529,722	82.48%
Commercial	57,712	8.99%
Industrial	24,874	3.87%
Agricultural	5,098	0.79%
Religious	3,590	0.56%
Government	5,026	0.78%
Education	16,196	2.52%
<b>Total</b>	<b>642,218</b>	<b>100.00%</b>

### Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 5 schools, 8 fire stations, 4 police stations and 9 emergency operation facilities.



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## Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

**Scenario Name:** Probabilistic

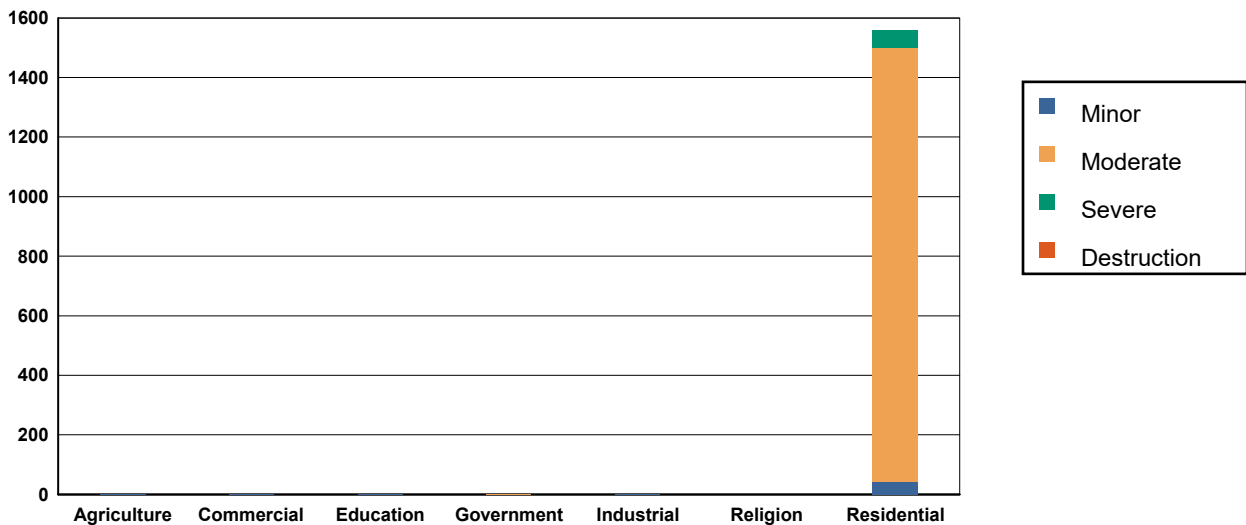
**Type:** Probabilistic

## Building Damage

### General Building Stock Damage

Hazus estimates that about 1,517 buildings will be at least moderately damaged. This is over 56% of the total number of buildings in the region. There are an estimated 0 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

### Expected Building Damage by Occupancy



**Table 2: Expected Building Damage by Occupancy : 500 - year Event**

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	17.69	98.27	0.28	1.54	0.03	0.15	0.01	0.04	0.00	0.00
Commercial	120.20	98.52	1.69	1.38	0.11	0.09	0.00	0.00	0.00	0.00
Education	11.82	98.53	0.17	1.45	0.00	0.03	0.00	0.00	0.00	0.00
Government	8.87	98.60	0.12	1.37	0.00	0.02	0.00	0.00	0.00	0.00
Industrial	49.23	98.45	0.73	1.47	0.03	0.07	0.01	0.01	0.00	0.00
Religion	6.92	98.88	0.08	1.10	0.00	0.02	0.00	0.00	0.00	0.00
Residential	927.84	37.32	41.39	1.66	1,455.87	58.56	60.90	2.45	0.00	0.00
<b>Total</b>	<b>1,142.57</b>		<b>44.46</b>		<b>1,456.05</b>		<b>60.92</b>		<b>0.00</b>	





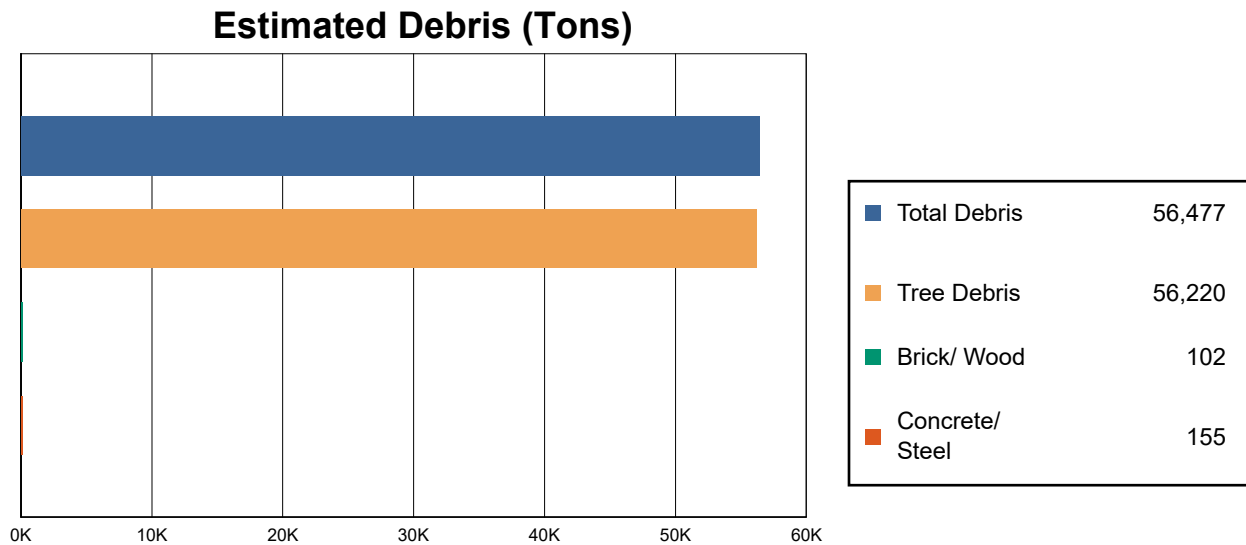
**Table 3: Expected Building Damage by Building Type : 500 - year Event**

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	5	98.05	0	1.91	0	0.04	0	0.00	0	0.00
Masonry	53	83.36	1	1.88	9	14.16	0	0.60	0	0.00
MH	312	99.93	0	0.06	0	0.02	0	0.00	0	0.00
Steel	97	98.51	1	1.44	0	0.05	0	0.00	0	0.00
Wood	541	27.40	37	1.86	1,340	67.90	56	2.84	0	0.00



## Induced Hurricane Damage

### Debris Generation

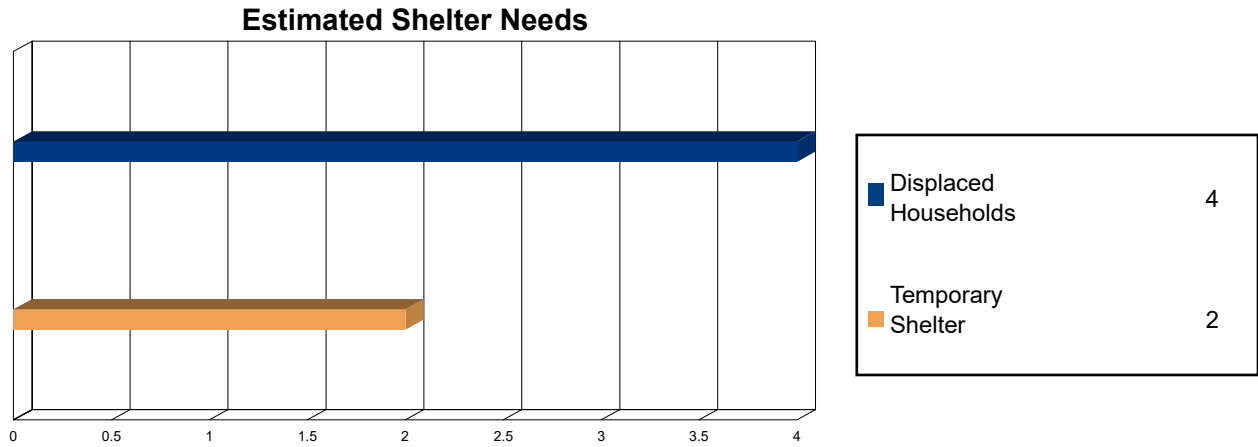


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 56,477 tons of debris will be generated. Of the total amount, 53,329 tons (94%) is Other Tree Debris. Of the remaining 3,148 tons, Brick/Wood comprises 3% of the total, Reinforced Concrete/Steel comprises of 5% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 10 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 2,891 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

## Social Impact

### Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 4 households to be displaced due to the hurricane. Of these, 2 people (out of a total population of 4,494) will seek temporary shelter in public shelters.



## Economic Loss

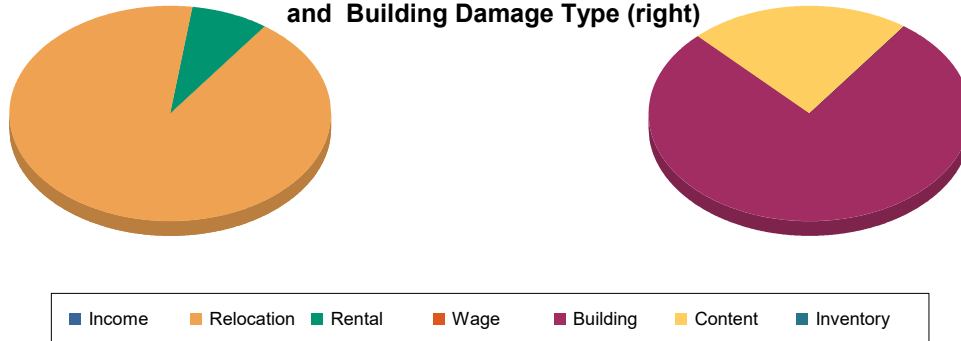
The total economic loss estimated for the hurricane is 57.8 million dollars, which represents 8.99 % of the total replacement value of the region's buildings.

### **Building-Related Losses**

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 58 million dollars. 5% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 100% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy

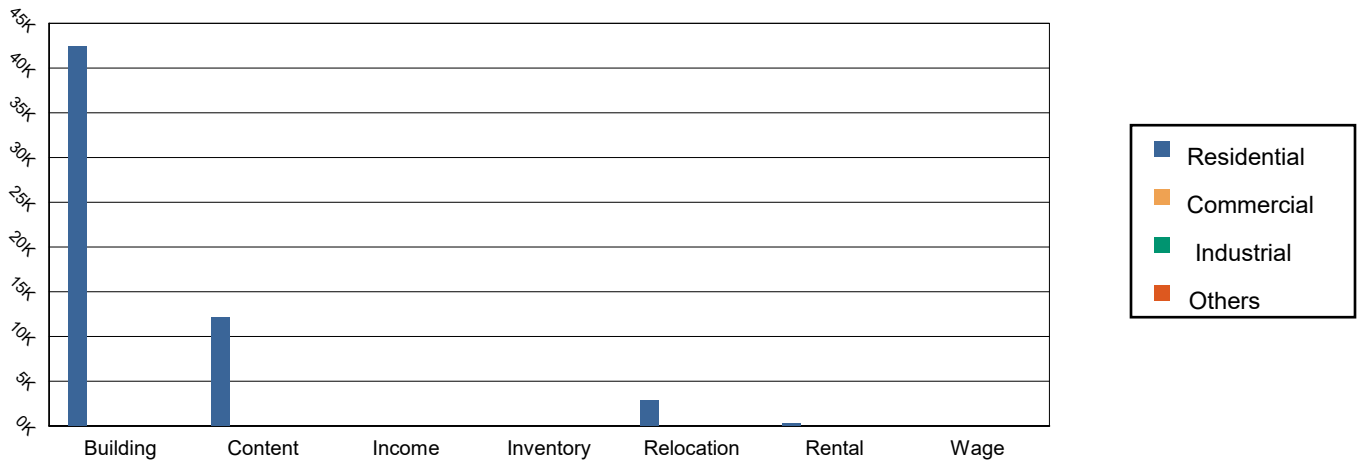


Table 5: Building-Related Economic Loss Estimates  
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<b>Property Damage</b>						
	Building	42,455.21	19.73	8.83	9.78	42,493.55
	Content	12,154.95	0.00	1.56	0.57	12,157.08
	Inventory	0.00	0.00	0.29	0.06	0.35
	<b>Subtotal</b>	<b>54,610.16</b>	<b>19.73</b>	<b>10.68</b>	<b>10.41</b>	<b>54,650.97</b>
<b>Business Interruption Loss</b>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	2,861.77	0.43	0.04	0.10	2,862.33
	Rental	244.80	0.00	0.00	0.00	244.80
	Wage	0.00	0.00	0.00	0.00	0.00
	<b>Subtotal</b>	<b>3,106.57</b>	<b>0.43</b>	<b>0.04</b>	<b>0.10</b>	<b>3,107.14</b>



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Total

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Total	57,716.73	20.15	10.72	10.51	57,758.11
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**Appendix A: County Listing for the Region**

Massachusetts  
- Franklin





**Appendix B: Regional Population and Building Value Data**

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
<b>Massachusetts</b>				
Franklin	4,494	529,722	112,496	642,218
<b>Total</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>
<b>Study Region Total</b>	<b>4,494</b>	<b>529,722</b>	<b>112,496</b>	<b>642,218</b>



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## Hazus: Earthquake Global Risk Report

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**Region Name:** Hawley\_CT

**Earthquake Scenario:** 1000yr - mag 5

**Print Date:** February 13, 2022

**Disclaimer:**

*This version of Hazus utilizes 2010 Census Data.*

*Totals only reflect data for those census tracts/blocks included in the user's study region.*

*The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.*

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## General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Massachusetts

**Note:**

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 160.33 square miles and contains 1 census tracts. There are over 1 thousand households in the region which has a total population of 4,494 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 2 thousand buildings in the region with a total building replacement value (excluding contents) of 642 (millions of dollars). Approximately 92.00 % of the buildings (and 82.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 374 and 1,775 (millions of dollars) , respectively.



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## Building and Lifeline Inventory

### Building Inventory

Hazus estimates that there are 2 thousand buildings in the region which have an aggregate total replacement value of 642 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 73% of the building inventory. The remaining percentage is distributed between the other general building types.

### Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 0 hospitals in the region with a total bed capacity of beds. There are 5 schools, 8 fire stations, 4 police stations and 9 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes no hazardous material sites, no military installations and no nuclear power plants.

### Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 2,149.00 (millions of dollars). This inventory includes over 31.69 miles of highways, 75 bridges, 1,176.88 miles of pipes.

**Table 1: Transportation System Lifeline Inventory**

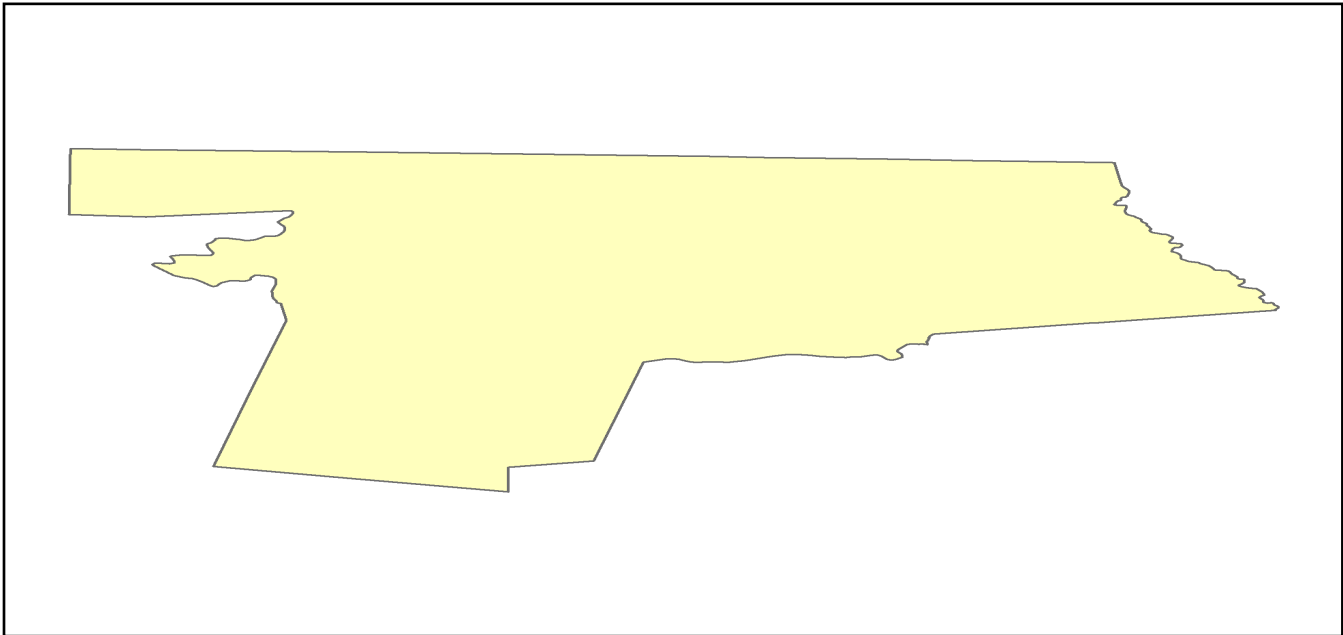
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
<b>Highway</b>	Bridges	75	79.3368
	Segments	4	170.8627
	Tunnels	0	0.0000
	<b>Subtotal</b>		<b>250.1995</b>
<b>Railways</b>	Bridges	8	42.8857
	Facilities	0	0.0000
	Segments	7	81.6969
	Tunnels	0	0.0000
	<b>Subtotal</b>		<b>124.5826</b>
<b>Light Rail</b>	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Bus</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Ferry</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Port</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Airport</b>	Facilities	0	0.0000
	Runways	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
		<b>Total</b>	<b>374.80</b>

**Table 2: Utility System Lifeline Inventory**

System	Component	# Locations / Segments	Replacement value (millions of dollars)
<b>Potable Water</b>	Distribution Lines	NA	18.9482
	Facilities	0	0.0000
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>18.9482</b>
<b>Waste Water</b>	Distribution Lines	NA	11.3689
	Facilities	4	613.2657
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>624.6346</b>
<b>Natural Gas</b>	Distribution Lines	NA	7.5793
	Facilities	0	0.0000
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>7.5793</b>
<b>Oil Systems</b>	Facilities	0	0.0000
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Electrical Power</b>	Facilities	2	1124.6778
	<b>Subtotal</b>		<b>1124.6778</b>
<b>Communication</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
		<b>Total</b>	<b>1,775.80</b>

## Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



<b>Scenario Name</b>	1000yr - mag 5
<b>Type of Earthquake</b>	Probabilistic
<b>Fault Name</b>	NA
<b>Historical Epicenter ID #</b>	NA
<b>Probabilistic Return Period</b>	1,000.00
<b>Longitude of Epicenter</b>	NA
<b>Latitude of Epicenter</b>	NA
<b>Earthquake Magnitude</b>	5.00
<b>Depth (km)</b>	NA
<b>Rupture Length (Km)</b>	NA
<b>Rupture Orientation (degrees)</b>	NA
<b>Attenuation Function</b>	NA

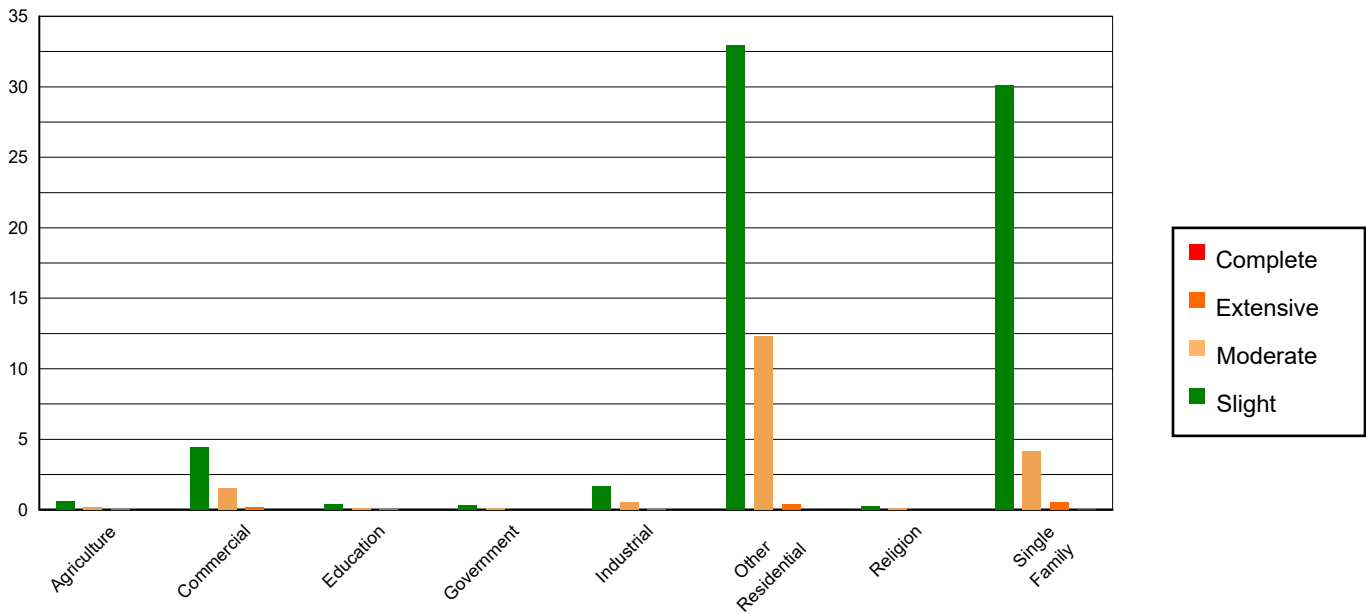


## Direct Earthquake Damage

### Building Damage

Hazus estimates that about 20 buildings will be at least moderately damaged. This is over 1.00 % of the buildings in the region. There are an estimated 0 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

### Damage Categories by General Occupancy Type



**Table 3: Expected Building Damage by Occupancy**

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
<b>Agriculture</b>	17.15	0.66	0.64	0.91	0.18	0.94	0.02	1.89	0.00	1.59
<b>Commercial</b>	115.85	4.43	4.45	6.28	1.49	7.84	0.20	15.88	0.01	18.52
<b>Education</b>	11.44	0.44	0.41	0.57	0.13	0.70	0.02	1.35	0.00	1.94
<b>Government</b>	8.59	0.33	0.30	0.42	0.10	0.52	0.01	0.98	0.00	0.98
<b>Industrial</b>	47.66	1.82	1.68	2.38	0.58	3.04	0.07	5.80	0.00	5.35
<b>Other Residential</b>	483.30	18.50	32.99	46.58	12.31	64.69	0.39	31.52	0.01	15.93
<b>Religion</b>	6.65	0.25	0.25	0.35	0.09	0.48	0.01	1.09	0.00	1.74
<b>Single Family</b>	1922.19	73.57	30.11	42.51	4.15	21.78	0.52	41.50	0.03	53.96
<b>Total</b>	<b>2,613</b>		<b>71</b>		<b>19</b>		<b>1</b>		<b>0</b>	

**Table 4: Expected Building Damage by Building Type (All Design Levels)**

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
<b>Wood</b>	1955.63	74.85	27.17	38.36	2.20	11.55	0.19	15.56	0.00	0.00
<b>Steel</b>	102.60	3.93	2.98	4.21	0.92	4.82	0.09	7.27	0.00	0.00
<b>Concrete</b>	18.65	0.71	0.57	0.80	0.16	0.83	0.01	0.66	0.00	0.00
<b>Precast</b>	7.14	0.27	0.35	0.49	0.21	1.12	0.04	2.93	0.00	0.82
<b>RM</b>	24.58	0.94	0.74	1.04	0.37	1.93	0.05	3.95	0.00	0.00
<b>URM</b>	128.86	4.93	9.02	12.74	3.81	20.01	0.61	48.59	0.06	99.18
<b>MH</b>	375.37	14.37	30.00	42.36	11.37	59.75	0.26	21.04	0.00	0.00
<b>Total</b>	<b>2,613</b>		<b>71</b>		<b>19</b>		<b>1</b>		<b>0</b>	

\*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

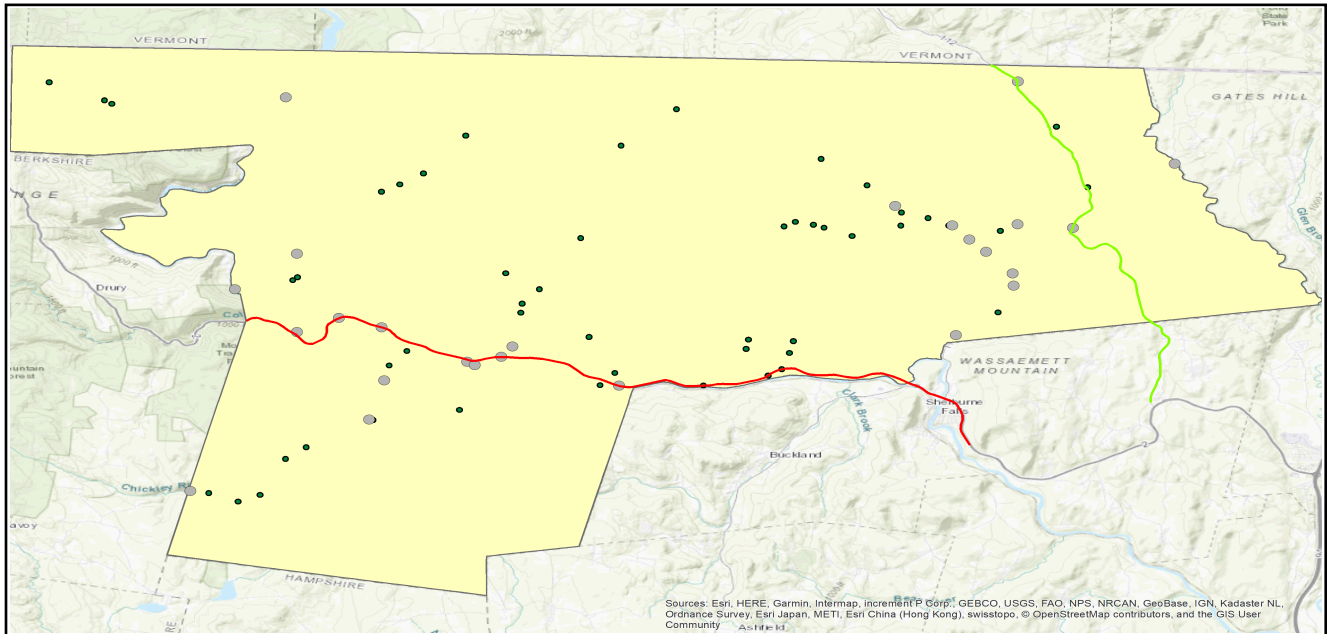
### **Essential Facility Damage**

Before the earthquake, the region had hospital beds available for use. On the day of the earthquake, the model estimates that only hospital beds (%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, % of the beds will be back in service. By 30 days, % will be operational.

**Table 5: Expected Damage to Essential Facilities**

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	0	0	0	0
Schools	5	0	0	5
EOCs	9	0	0	9
PoliceStations	4	0	0	4
FireStations	8	0	0	8

**Transportation Lifeline Damage**



**Table 6: Expected Damage to the Transportation Systems**

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	4	0	0	3	3
	Bridges	75	0	0	75	75
	Tunnels	0	0	0	0	0
Railways	Segments	7	0	0	5	5
	Bridges	8	0	0	8	8
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

**Table 7 : Expected Utility System Facility Damage**

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	4	0	0	4	4
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	2	0	0	2	2
Communication	0	0	0	0	0

**Table 8 : Expected Utility System Pipeline Damage (Site Specific)**

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	589	1	0
Waste Water	353	0	0
Natural Gas	235	0	0
Oil	0	0	0

**Table 9: Expected Potable Water and Electric Power System Performance**

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	1,898	0	0	0	0	0
Electric Power		0	0	0	0	0

## Induced Earthquake Damage

### Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

### Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0 tons of debris will be generated. Of the total amount, Brick/Wood comprises 75.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

#### Earthquake Debris (millions of tons)

<u>Brick/ Wood</u>	<u>Reinforced Concrete/Steel</u>	<u>Total Debris</u>	<u>Truck Load</u>
0.00	0.00	0.00	0 (@25 tons/truck)

## Social Impact

### Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the earthquake. Of these, 0 people (out of a total population of 4,494) will seek temporary shelter in public shelters.

<u>Displaced Households/ Persons Seeking Short Term Public Shelter</u>	
<u>Displaced households as a result of the earthquake</u>	<u>Persons seeking temporary public shelter</u>
0	0

### Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake



**Table 10: Casualty Estimates**

		Level 1	Level 2	Level 3	Level 4
<b>2 AM</b>	Commercial	0.00	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.00	0.00	0.00	0.00
	Other-Residential	0.10	0.01	0.00	0.00
	Single Family	0.07	0.01	0.00	0.00
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>2 PM</b>	Commercial	0.17	0.02	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.04	0.01	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.03	0.00	0.00	0.00
	Other-Residential	0.02	0.00	0.00	0.00
	Single Family	0.01	0.00	0.00	0.00
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>5 PM</b>	Commercial	0.12	0.01	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.02	0.00	0.00	0.00
	Other-Residential	0.04	0.00	0.00	0.00
	Single Family	0.03	0.00	0.00	0.00
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



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## Economic Loss

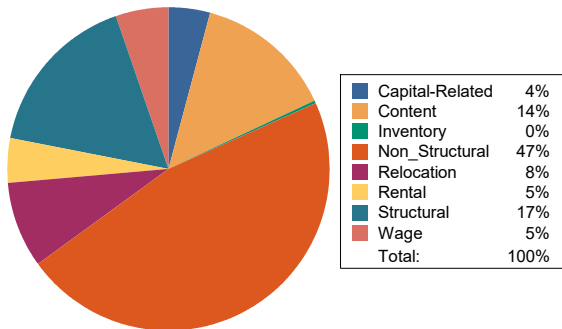
The total economic loss estimated for the earthquake is 5.71 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

### Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 1.04 (millions of dollars); 22 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 64 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)

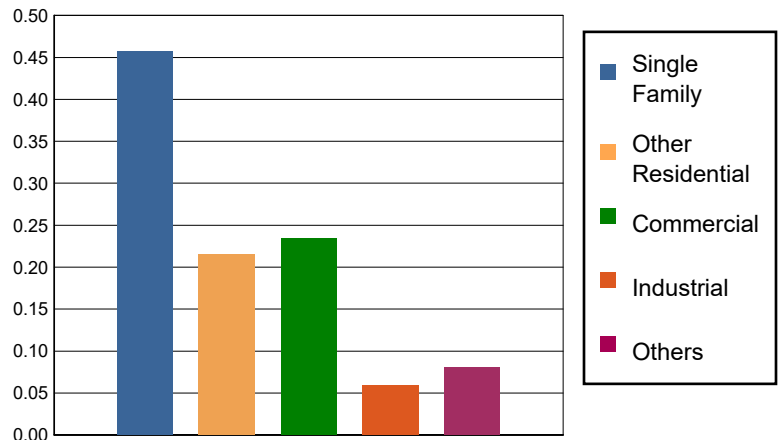


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
<b>Income Losses</b>							
	Wage	0.0000	0.0093	0.0377	0.0013	0.0066	0.0549
	Capital-Related	0.0000	0.0039	0.0381	0.0008	0.0007	0.0435
	Rental	0.0090	0.0193	0.0183	0.0006	0.0009	0.0481
	Relocation	0.0289	0.0237	0.0216	0.0033	0.0105	0.0880
	<b>Subtotal</b>	<b>0.0379</b>	<b>0.0562</b>	<b>0.1157</b>	<b>0.0060</b>	<b>0.0187</b>	<b>0.2345</b>
<b>Capital Stock Losses</b>							
	Structural	0.0716	0.0437	0.0299	0.0103	0.0178	0.1733
	Non_Structural	0.2730	0.0998	0.0612	0.0242	0.0295	0.4877
	Content	0.0741	0.0152	0.0268	0.0156	0.0141	0.1458
	Inventory	0.0000	0.0000	0.0005	0.0028	0.0002	0.0035
	<b>Subtotal</b>	<b>0.4187</b>	<b>0.1587</b>	<b>0.1184</b>	<b>0.0529</b>	<b>0.0616</b>	<b>0.8103</b>
	<b>Total</b>	<b>0.46</b>	<b>0.21</b>	<b>0.23</b>	<b>0.06</b>	<b>0.08</b>	<b>1.04</b>

### Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

**Table 12: Transportation System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	170.8627	0.0000	0.00
	Bridges	79.3368	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	<b>250.1995</b>	<b>0.0000</b>	
Railways	Segments	81.6969	0.0000	0.00
	Bridges	42.8857	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>124.5826</b>	<b>0.0000</b>	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
<b>Total</b>		<b>374.78</b>	<b>0.00</b>	

**Table 13: Utility System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	18.9482	0.0038	0.02
	<b>Subtotal</b>	<b>18.9482</b>	<b>0.0038</b>	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	613.2657	1.6451	0.27
	Distribution Lines	11.3689	0.0019	0.02
	<b>Subtotal</b>	<b>624.6346</b>	<b>1.6470</b>	
Natural Gas	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	7.5793	0.0007	0.01
	<b>Subtotal</b>	<b>7.5793</b>	<b>0.0007</b>	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	<b>Subtotal</b>	<b>0.0000</b>	<b>0.0000</b>	
Electrical Power	Facilities	1124.6778	3.0142	0.27
	<b>Subtotal</b>	<b>1124.6778</b>	<b>3.0142</b>	
Communication	Facilities	0.0000	0.0000	0.00
	<b>Subtotal</b>	<b>0.0000</b>	<b>0.0000</b>	
	<b>Total</b>	<b>1,775.84</b>	<b>4.67</b>	



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**Appendix A: County Listing for the Region**

Franklin, MA

**Appendix B: Regional Population and Building Value Data**

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
<b>Massachusetts</b>	Franklin	4,494	529	112	642
<b>Total Region</b>		<b>4,494</b>	<b>529</b>	<b>112</b>	<b>642</b>



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## Hazus: Earthquake Global Risk Report

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**Region Name:** Hawley\_CT

**Earthquake Scenario:** 2500yr - mag 5

**Print Date:** February 13, 2022

**Disclaimer:**

*This version of Hazus utilizes 2010 Census Data.*

*Totals only reflect data for those census tracts/blocks included in the user's study region.*

*The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.*



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## General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Massachusetts

**Note:**

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 160.33 square miles and contains 1 census tracts. There are over 1 thousand households in the region which has a total population of 4,494 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 2 thousand buildings in the region with a total building replacement value (excluding contents) of 642 (millions of dollars). Approximately 92.00 % of the buildings (and 82.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 374 and 1,775 (millions of dollars) , respectively.

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## Building and Lifeline Inventory

### **Building Inventory**

Hazus estimates that there are 2 thousand buildings in the region which have an aggregate total replacement value of 642 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 73% of the building inventory. The remaining percentage is distributed between the other general building types.

### **Critical Facility Inventory**

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 0 hospitals in the region with a total bed capacity of beds. There are 5 schools, 8 fire stations, 4 police stations and 9 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes no hazardous material sites, no military installations and no nuclear power plants.

### **Transportation and Utility Lifeline Inventory**

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 2,149.00 (millions of dollars). This inventory includes over 31.69 miles of highways, 75 bridges, 1,176.88 miles of pipes.

**Table 1: Transportation System Lifeline Inventory**

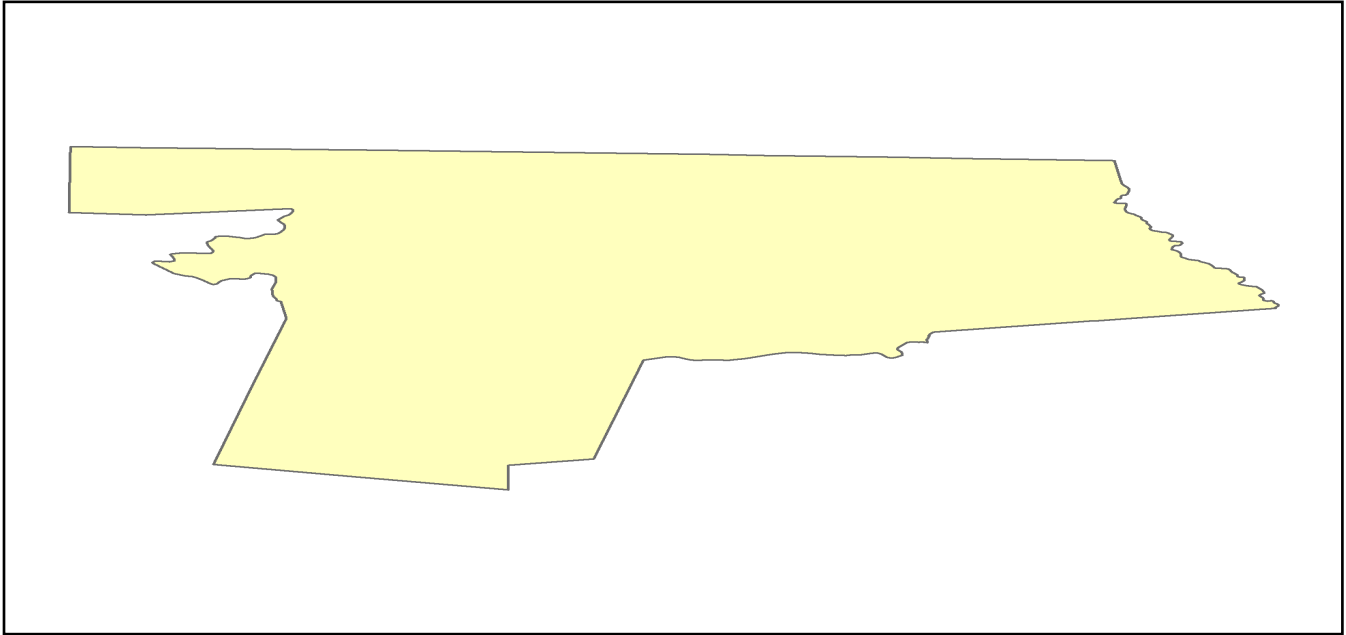
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
<b>Highway</b>	Bridges	75	79.3368
	Segments	4	170.8627
	Tunnels	0	0.0000
	<b>Subtotal</b>		<b>250.1995</b>
<b>Railways</b>	Bridges	8	42.8857
	Facilities	0	0.0000
	Segments	7	81.6969
	Tunnels	0	0.0000
	<b>Subtotal</b>		<b>124.5826</b>
<b>Light Rail</b>	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Bus</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Ferry</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Port</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Airport</b>	Facilities	0	0.0000
	Runways	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
		<b>Total</b>	<b>374.80</b>

**Table 2: Utility System Lifeline Inventory**

System	Component	# Locations / Segments	Replacement value (millions of dollars)
<b>Potable Water</b>	Distribution Lines	NA	18.9482
	Facilities	0	0.0000
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>18.9482</b>
<b>Waste Water</b>	Distribution Lines	NA	11.3689
	Facilities	4	613.2657
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>624.6346</b>
<b>Natural Gas</b>	Distribution Lines	NA	7.5793
	Facilities	0	0.0000
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>7.5793</b>
<b>Oil Systems</b>	Facilities	0	0.0000
	Pipelines	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Electrical Power</b>	Facilities	2	1124.6778
	<b>Subtotal</b>		<b>1124.6778</b>
<b>Communication</b>	Facilities	0	0.0000
	<b>Subtotal</b>		<b>0.0000</b>
<b>Total</b>			<b>1,775.80</b>

## Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



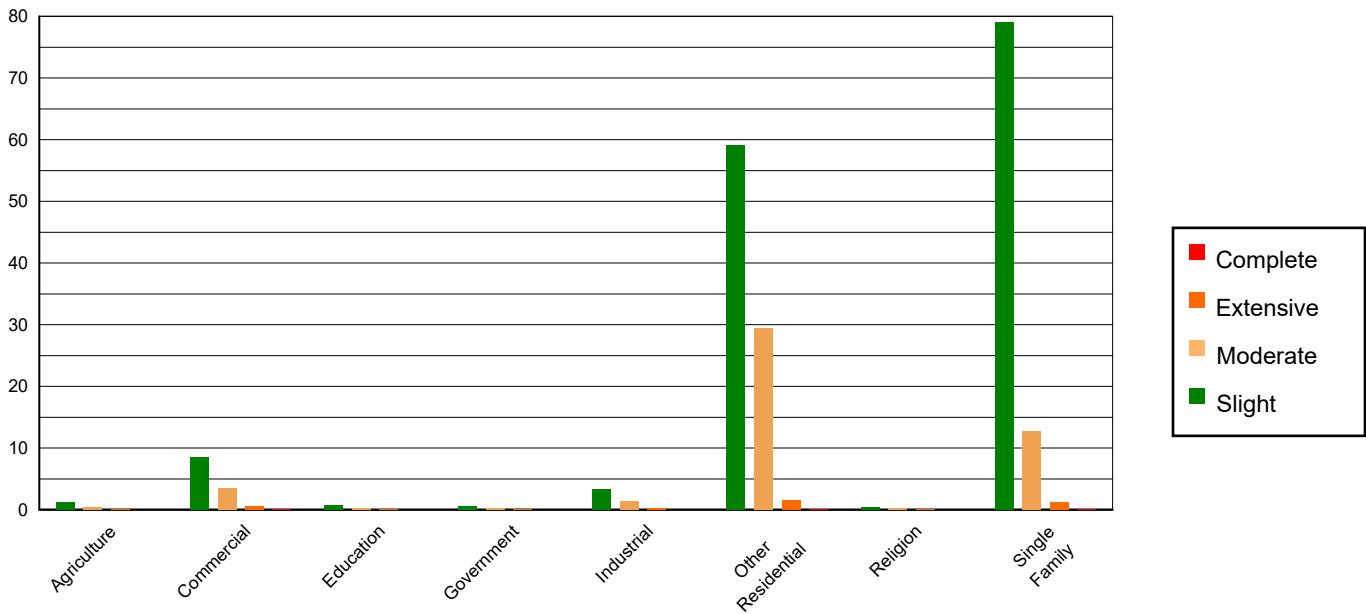
<b>Scenario Name</b>	2500yr - mag 5
<b>Type of Earthquake</b>	Probabilistic
<b>Fault Name</b>	NA
<b>Historical Epicenter ID #</b>	NA
<b>Probabilistic Return Period</b>	2,500.00
<b>Longitude of Epicenter</b>	NA
<b>Latitude of Epicenter</b>	NA
<b>Earthquake Magnitude</b>	5.00
<b>Depth (km)</b>	NA
<b>Rupture Length (Km)</b>	NA
<b>Rupture Orientation (degrees)</b>	NA
<b>Attenuation Function</b>	NA

## Direct Earthquake Damage

### Building Damage

Hazus estimates that about 52 buildings will be at least moderately damaged. This is over 2.00 % of the buildings in the region. There are an estimated 0 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

### Damage Categories by General Occupancy Type



**Table 3: Expected Building Damage by Occupancy**

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
<b>Agriculture</b>	16.22	0.65	1.28	0.84	0.43	0.89	0.07	1.85	0.00	1.63
<b>Commercial</b>	109.35	4.38	8.56	5.59	3.49	7.23	0.55	15.04	0.04	17.74
<b>Education</b>	10.84	0.43	0.79	0.52	0.32	0.66	0.05	1.27	0.00	1.81
<b>Government</b>	8.14	0.33	0.58	0.38	0.24	0.50	0.03	0.94	0.00	1.03
<b>Industrial</b>	45.09	1.80	3.28	2.14	1.41	2.91	0.21	5.65	0.01	5.69
<b>Other Residential</b>	438.83	17.56	59.11	38.60	29.49	61.11	1.51	40.85	0.06	25.31
<b>Religion</b>	6.29	0.25	0.47	0.31	0.20	0.42	0.04	0.98	0.00	1.48
<b>Single Family</b>	1863.93	74.60	79.05	51.62	12.68	26.28	1.23	33.42	0.11	45.32
<b>Total</b>	<b>2,499</b>		<b>153</b>		<b>48</b>		<b>4</b>		<b>0</b>	

**Table 4: Expected Building Damage by Building Type (All Design Levels)**

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
<b>Wood</b>	1900.17	76.05	75.66	49.41	8.97	18.59	0.39	10.63	0.00	0.00
<b>Steel</b>	97.72	3.91	6.08	3.97	2.48	5.15	0.29	7.87	0.01	4.33
<b>Concrete</b>	17.63	0.71	1.23	0.80	0.49	1.02	0.03	0.87	0.00	0.40
<b>Precast</b>	6.60	0.26	0.59	0.39	0.45	0.92	0.10	2.69	0.00	0.43
<b>RM</b>	23.39	0.94	1.35	0.88	0.85	1.76	0.15	3.96	0.00	0.00
<b>URM</b>	117.50	4.70	15.35	10.03	7.73	16.02	1.57	42.59	0.21	83.23
<b>MH</b>	335.68	13.43	52.85	34.51	27.29	56.55	1.16	31.38	0.03	11.61
<b>Total</b>	<b>2,499</b>		<b>153</b>		<b>48</b>		<b>4</b>		<b>0</b>	

\*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing



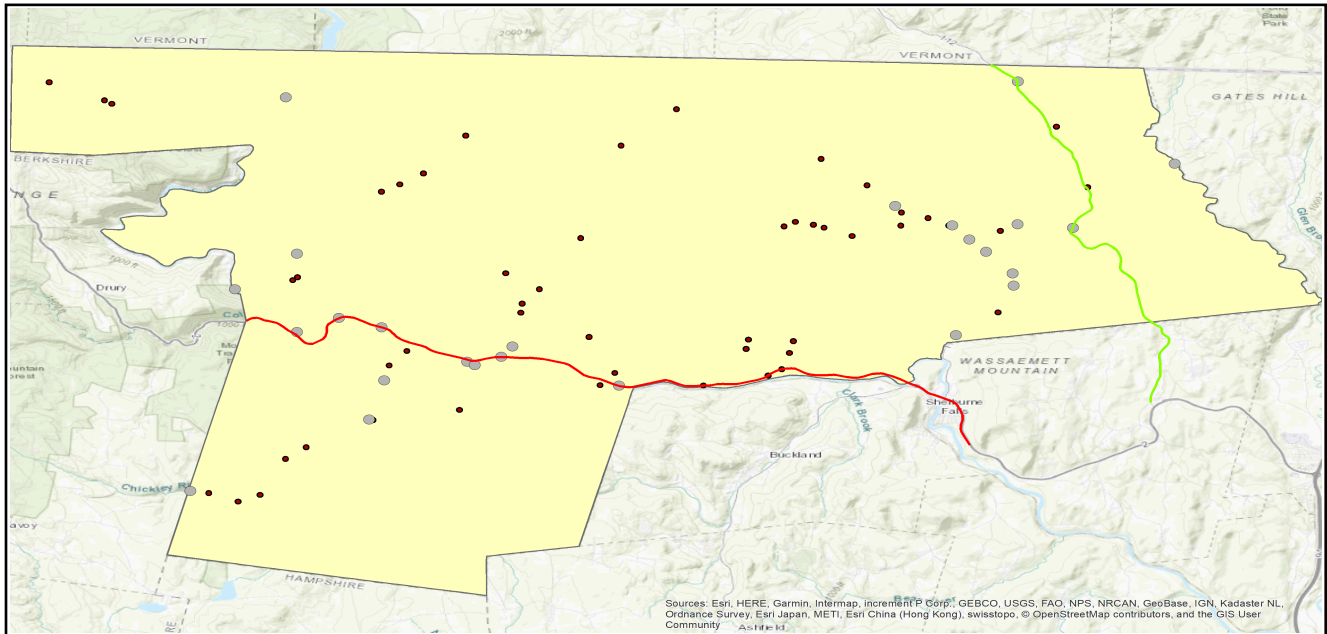
### **Essential Facility Damage**

Before the earthquake, the region had hospital beds available for use. On the day of the earthquake, the model estimates that only hospital beds (%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, % of the beds will be back in service. By 30 days, % will be operational.

**Table 5: Expected Damage to Essential Facilities**

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	0	0	0	0
Schools	5	0	0	5
EOCs	9	0	0	9
PoliceStations	4	0	0	4
FireStations	8	0	0	8

**Transportation Lifeline Damage**



**Table 6: Expected Damage to the Transportation Systems**

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	4	0	0	3	3
	Bridges	75	0	0	75	75
	Tunnels	0	0	0	0	0
Railways	Segments	7	0	0	5	5
	Bridges	8	0	0	8	8
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

**Table 7 : Expected Utility System Facility Damage**

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	4	0	0	4	4
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	2	0	0	2	2
Communication	0	0	0	0	0

**Table 8 : Expected Utility System Pipeline Damage (Site Specific)**

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	589	2	1
Waste Water	353	1	0
Natural Gas	235	0	0
Oil	0	0	0

**Table 9: Expected Potable Water and Electric Power System Performance**

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	1,898	0	0	0	0	0
Electric Power		0	0	0	0	0

## Induced Earthquake Damage

### Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

### Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0 tons of debris will be generated. Of the total amount, Brick/Wood comprises 71.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

#### Earthquake Debris (millions of tons)

##### Brick/ Wood

0.00

##### Reinforced Concrete/Steel

0.00

##### Total Debris

0.00

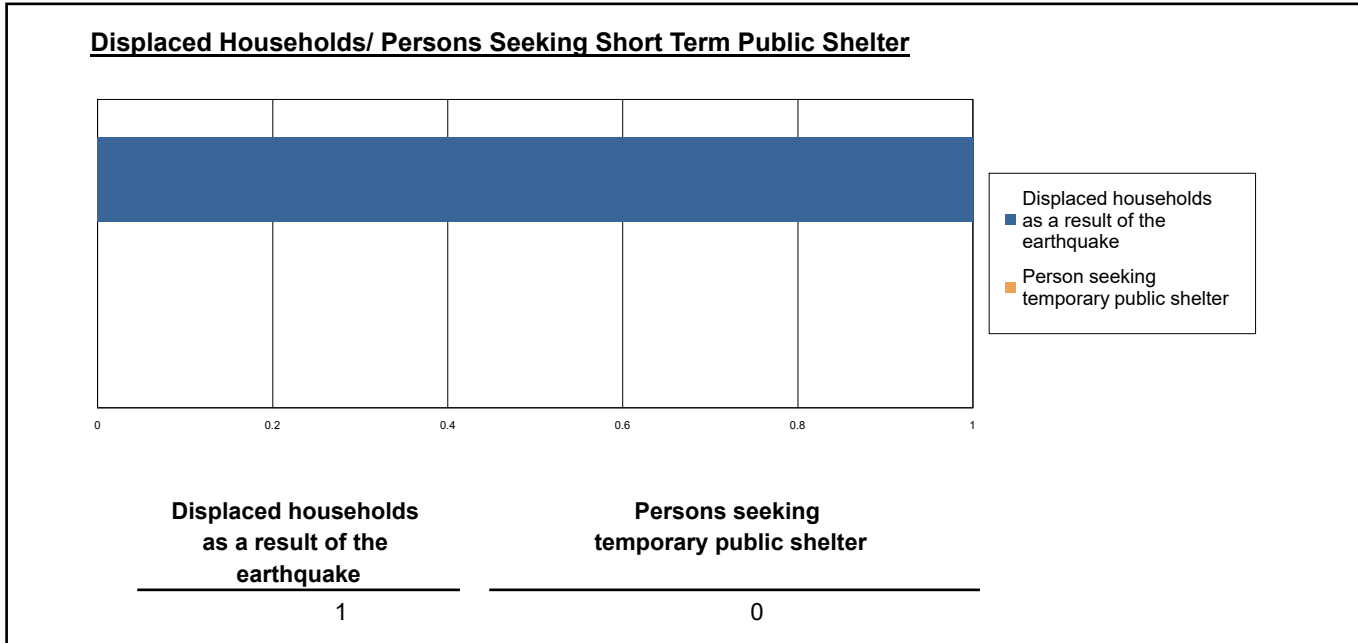
##### Truck Load

0 (@25 tons/truck)

## Social Impact

### Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 1 household to be displaced due to the earthquake. Of these, 0 people (out of a total population of 4,494) will seek temporary shelter in public shelters.



### Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

**Table 10: Casualty Estimates**

		Level 1	Level 2	Level 3	Level 4
<b>2 AM</b>	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.01	0.00	0.00	0.00
	Other-Residential	0.23	0.03	0.00	0.00
	Single Family	0.19	0.02	0.00	0.00
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>2 PM</b>	Commercial	0.42	0.06	0.01	0.01
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.11	0.02	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.08	0.01	0.00	0.00
	Other-Residential	0.04	0.00	0.00	0.00
	Single Family	0.04	0.00	0.00	0.00
	<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>5 PM</b>	Commercial	0.31	0.04	0.00	0.01
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.01	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.05	0.01	0.00	0.00
	Other-Residential	0.09	0.01	0.00	0.00
	Single Family	0.07	0.01	0.00	0.00
	<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>



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## Economic Loss

The total economic loss estimated for the earthquake is 24.41 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

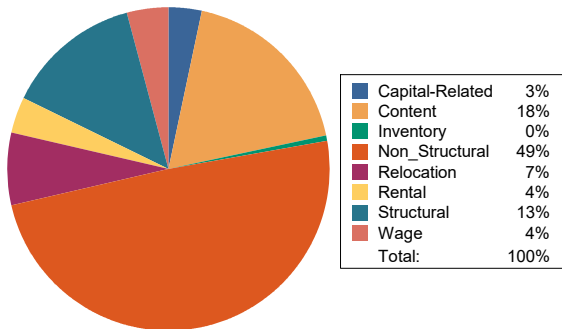


### Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 3.25 (millions of dollars); 18 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 66 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)

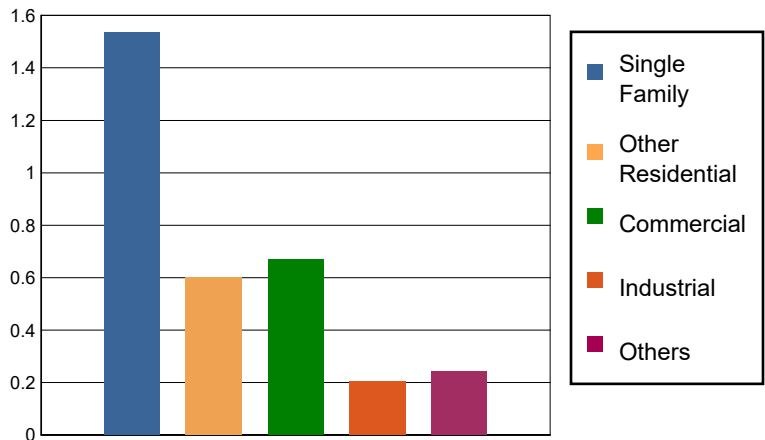


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
<b>Income Losses</b>							
	Wage	0.0000	0.0243	0.0933	0.0034	0.0151	0.1361
	Capital-Related	0.0000	0.0103	0.0945	0.0020	0.0017	0.1085
	Rental	0.0257	0.0472	0.0429	0.0014	0.0023	0.1195
	Relocation	0.0841	0.0589	0.0534	0.0083	0.0264	0.2311
	<b>Subtotal</b>	<b>0.1098</b>	<b>0.1407</b>	<b>0.2841</b>	<b>0.0151</b>	<b>0.0455</b>	<b>0.5952</b>
<b>Capital Stock Losses</b>							
	Structural	0.1951	0.1032	0.0721	0.0252	0.0432	0.4388
	Non_Structural	0.9221	0.2969	0.2022	0.0905	0.0948	1.6065
	Content	0.3083	0.0603	0.1080	0.0621	0.0566	0.5953
	Inventory	0.0000	0.0000	0.0020	0.0114	0.0012	0.0146
	<b>Subtotal</b>	<b>1.4255</b>	<b>0.4604</b>	<b>0.3843</b>	<b>0.1892</b>	<b>0.1958</b>	<b>2.6552</b>
	<b>Total</b>	<b>1.54</b>	<b>0.60</b>	<b>0.67</b>	<b>0.20</b>	<b>0.24</b>	<b>3.25</b>

### Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

**Table 12: Transportation System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	170.8627	0.0000	0.00
	Bridges	79.3368	0.0003	0.00
	Tunnels	0.0000	0.0000	0.00
	Subtotal	<b>250.1995</b>	<b>0.0003</b>	
Railways	Segments	81.6969	0.0000	0.00
	Bridges	42.8857	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>124.5826</b>	<b>0.0000</b>	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	<b>0.0000</b>	<b>0.0000</b>	
<b>Total</b>		<b>374.78</b>	<b>0.00</b>	

**Table 13: Utility System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	18.9482	0.0103	0.05
	<b>Subtotal</b>	<b>18.9482</b>	<b>0.0103</b>	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	613.2657	7.4634	1.22
	Distribution Lines	11.3689	0.0052	0.05
	<b>Subtotal</b>	<b>624.6346</b>	<b>7.4686</b>	
Natural Gas	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	7.5793	0.0018	0.02
	<b>Subtotal</b>	<b>7.5793</b>	<b>0.0018</b>	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	<b>Subtotal</b>	<b>0.0000</b>	<b>0.0000</b>	
Electrical Power	Facilities	1124.6778	13.6780	1.22
	<b>Subtotal</b>	<b>1124.6778</b>	<b>13.6780</b>	
Communication	Facilities	0.0000	0.0000	0.00
	<b>Subtotal</b>	<b>0.0000</b>	<b>0.0000</b>	
	<b>Total</b>	<b>1,775.84</b>	<b>21.16</b>	



FEMA

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**Appendix A: County Listing for the Region**

Franklin, MA

**Appendix B: Regional Population and Building Value Data**

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
<b>Massachusetts</b>	Franklin	4,494	529	112	642
<b>Total Region</b>		<b>4,494</b>	<b>529</b>	<b>112</b>	<b>642</b>