GILSUM HAZARD MITIGATION

PLAN UPDATE 2026

Gilsum, New Hampshire

FEMA Final Approval – _____

Prepared by the:

Town of Gilsum Hazard Mitigation Committee

&

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1 INTRODUCTION

1.1 PURPOSE

The Gilsum Hazard Mitigation Plan Update 2026 is a planning tool to be used by the Town of Gilum, as well as other local, state and federal governments, in their efforts to reduce the effects from natural and man-made hazards. By maintaining an updated Hazard Mitigation Plan, the town is eligible to receive grant funding for mitigation projects.

1.2 AUTHORITY

This Multi-Hazard Mitigation Plan was prepared pursuant to Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Act), herein enacted by Section 104 of the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390). This Act provides new and revitalized approaches to mitigation planning. Section 322 of DMA 2000 emphasizes the need for State, local and tribal entities to closely coordinate mitigation planning and implementation efforts. The development and periodic update of this plan satisfies the planning requirements of the Disaster Mitigation Act (DMA) of 2000 which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).

1.3 PARTICIPATING JURISDICTION

New Hampshire's approach to hazard mitigation planning features what are called single-jurisdiction plans developed town-by-town and city-by-city. The following participants in the plan update all represent the Town of Gilsum.

Name	Title, Agency
Dee Denehy	Gilsum Emergency Management Director, Gilsum Fire Chief
Tom Julius	Gilsum Planning Board Chair
Harlen Maguire	Gilsum Road Agent
Bart Cushing	Resident, former Gilsum BOS
Chip Chapman	Gilsum Conservation Commission, Ashuelot River Local Advisory Committee
Chris Hamilton	Badger Company, Volunteer Fire & Rescue (Gilsum)
Brian Peniuk	Gilsum Asst. Fire Chief
Clement Lounder	Gilsum BOS Chair, Gilsum Building Inspector

1.4 FUNDING SOURCE

This Plan was funded by the NH Homeland Security and Emergency Management, with grants from FEMA's Pre-disaster Mitigation Program.

1.5 SCOPE OF THE PLAN

The scope of this Plan includes the identification of past and potential natural and manmade hazards affecting the Town of Gilsum, the determination of vulnerability of existing and future structures to the identified potential hazards, and the identification and discussion of new strategies aimed at mitigating the likely effects of potential hazards before they occur.

1.6 METHODOLOGY

Using the Local Hazard Mitigation Planning Handbook (June 12, 2025) and the Local Mitigation Planning Policy Guide (April 11, 2025), the Gilsum Hazard Mitigation Planning Team developed the content of the Gilsum Hazard Mitigation Plan by following tasks set forth in the handbook. The Planning Team held monthly meetings, open to the public, starting October 23, 2025, through January 8, 2026, in order to develop the Plan.

Task 1: Determine the Planning Area & Resources: This task was conducted by town staff, volunteers and the Regional Planning Commission. The results of this research were shared with the Planning Team and can be found in Chapter 2, “Community Profile”.

Task 2: Building the Planning Team: The Emergency Management Director contacted town officials, department heads, the local business community, and residents who might wish to volunteer their time and serve on a Planning Team.

Task 3: Create an Outreach Program: This task was used throughout the plan and is a vital part of the plan’s success. Many of the proposed actions involve a community outreach component for individuals to use as a means to reduce the risk of loss of life and property from future natural and man-made hazards.

Task 4: Review Community Capabilities: The Planning Team brainstormed on the type of hazards and locations that have sustained or could be susceptible to each hazard within the town. The results were the updated Past and Potential Hazards Map, which can be found at the end of the Plan.

The Planning Team then evaluated previously identified and catalogued critical facilities within the town and updated them for both accuracy and better alignment with FEMA and HSEM guidance. The result is found in Chapter 5, "Community Lifelines & Assets," and are included on the Past and Potential Hazard Map the end of the Plan.

Task 5: Conduct a Risk Assessment: The Planning Team conducted several assessments to help determine the gaps in coverage. These include the Vulnerability and Risk Assessment (Section 3.1), contribution to update the Past and Potential Hazards map, and discussion of the impacts of hazard events on Gilsum since the last plan update. In addition to the assessments, the existing mitigation strategies were reviewed to determine where gaps in coverage exist and areas that need improvement.

Task 6: Develop a Mitigation Strategy: The Planning Team identified plans and policies that are already in place to reduce the effects of man-made and natural hazards. Then the Planning Team evaluated the effectiveness of the existing measures to identify where they can be improved. The results are found in Chapter 6, "Existing Mitigation Strategies and Proposed Improvements." The Planning Team then developed the Mitigation Action Plan, which is a clear strategy that outlines who is responsible for implementing each project, as well as when and how the actions will be implemented and the funding source.

Task 7: Keep the Plan Current: It is important to the Town of Gilsum that this plan be monitored and updated annually or after a presidentially declared disaster. Chapter 9 addresses this issue.

Task 8: Review & Adopt the Plan: The Planning Team members reviewed and approved each section of the plan as it was completed. After acceptance by the Planning Team, the Plan was submitted to the New Hampshire Homeland Security and Emergency Management (HSEM) for review and Approval Pending Adoption. At a public meeting, the Board of Selectmen formally adopted the plan on _____. The plan was then granted formal approval by HSEM _____ and the Formal Approval letter from the Federal Emergency Management Agency (FEMA) was received on _____.

Task 9: Create a Safe & Resilient Community: The Planning Team discussed the mitigation actions in the Action Plan and the ways in which the implementation of the actions will be beneficial to the community. Annual reviews of the Action Plan by the Planning Team are needed to maintain the timeframes identified for completion of activities. Incorporation of the plan into other land use plans help to ensure that the goals of the plan are met. Implementation of the actions prior to a hazardous event can be funded through a variety of resources found at the end of this plan in Appendix C and D.

1.7 Public Planning Meetings

Working Planning Team meetings were held at the Gilsum Fire Station on the following dates:

October 23, November 13, December 11, 2025, and January 8, 2026.

An email was sent to each Planning Team member, prior to each meeting that contained information from the previous meeting, an agenda (Appendix B), and information to be covered. Agendas were posted at the Town Offices to encourage public participation. All Planning Meetings were also posted on the Southwest Region Planning Commission website and shared in e-newsletters.

1.8 Public Participation

An email was sent to regional stakeholders, listed in Appendix B, early in the update process to inform them of the update as well as opportunities to participate in the process, a second email was sent to regional stakeholders during the draft plan comment period. An article was printed

in the Southwest Region Planning Commission Newsletter during the update process to inform the members of the community as well as surrounding communities and other interested stakeholders regarding participating in this plan update. Copies of the newsletter were sent to the 34 towns within the region, the Cheshire County Office, businesses, and other interested parties. It was also available on the Southwest Region Planning Commission website. In addition to the SWRPC newsletter and website, an SWRPC *Happenings* electronic newsletter was sent to approximately 430 addresses, including neighboring communities, county offices, businesses, and academia. The newsletter contained notices of public meetings and events. Appendix B includes screenshots of the SWRPC calendar, *Happenings* e-newsletter, and the article shared in *Highlights* to document public notice and promotion. Meeting dates, a community hazards survey, and opportunities to participate in the planning process and comment on the draft plan were shared on the Town of Gilsum Fire Department Facebook page, the Badger company bulletin board and newsletter, and hard copies at the Town Office and Library during the months of November and December 2025. The survey received 22 unique responses.

The Planning Team arranged two public meetings in addition to the regular Team meetings. The first public meeting provided for discussion of the plan update as "other business" during the November 3, 2025 Selectboard meeting. The Selectboard explained the purpose of the update and invited the community to participate in the community survey. The community was also encouraged to provide input to the mapping exercise that shows past and potential hazards in Gilsum. The community was invited to participate in Planning Team meetings. The second public meeting was held during the draft review period of the draft plan on February 2, 2026, also during a regular Selectboard meeting.

A copy of the draft plan was made available for public review and input at the Town Office from February 2, 2026 through February 20, 2026. In addition, the draft plan was also available for public viewing on the Town website and the SWRPC website to reach a broad range of interested parties. An email was sent to regional stakeholders, listed in Appendix B, inviting them to review and comment on the draft plan. There were no comments from the public received during the drafting stage of the plan as well as following the public viewing period.

1.9 RESOURCES USED IN PLAN PREPARATION

In addition to the Handbook that was used as a framework for this plan, additional resources used included the Gilsum Hazard Mitigation Plan (2017), Town Master Plan, Town Report (2024), the FEMA Community Information System website (to obtain data about the town's National Flood Insurance Program status), the New Hampshire State Hazard Mitigation Plan Update 2023, and a number of resources identified in Appendix C.

Resource List for the Hazard Mitigation Planning Team

Gilsum's Emergency Management Director (EMD), or designee, reviewed and coordinated with the following agencies in order to determine if any conflicts existed or if there were any potential areas for cooperation. Training support has been offered by some of those on this resource list.

New Hampshire Homeland Security and Emergency Management:

33 Hazen Drive 1-800-852-3792
Concord, NH 03305
Stakeholder Liaison: Elizabeth Curless
State Hazard Mitigation Planner: Lynne Doyle

New Hampshire Department of Transportation:

Frank Linnenbringer (District 4) Swanzey, NH 03446 603-352-2302

New Hampshire Department of Environmental Services - Dam Bureau

James Webber 603-271-8699

1.10 Plan Updates

During the planning process, the Planning Team reviewed relevant portions of the previous hazard mitigation plan and updated those portions accordingly. Unchanged sections were incorporated into the plan while other sections were amended to reflect changes. Particular attention was given to the previous mitigation strategies that have been completed to give a status update on those that remain on the list. The previous plan was used as a basis to begin the update. Amendments were made in each chapter to reflect changes that have occurred during the five - year period. The updated plan was reorganized and restructured to more closely model the NH State Hazard Mitigation Plan Update 2023. In addition to the reorganization changes included were:

Executive Summary – updated hazards included in the plan, updated community lifelines, existing protections, and new mitigation strategies;

Sec. 1 - Introduction - updated Methodology, Acknowledgements, etc., and Plan Updates;

Sec. 2 - Community Profile - NFIP policies updated, added Continued Compliance with NFIP, updated census data;

Sec. 3 - Assessing Probability, Severity, and Risk - updated risk assessment;

Sec. 4 - Past & Potential Hazard Identification - updated hazards and their location, reviewed and updated the Hazards Map, expanded hazard descriptions, added future conditions and potential occurrences, incorporated estimated potential losses, added descriptions for newly added hazards, expanded definitions and potential occurrences;

Sec. 5 - Community Lifelines and Assets - updated locations, recategorized asset types, captured vulnerability information for community assets and lifelines;

Sec. 6 - Existing Mitigation Strategies and Proposed Improvements - updated chart and other data, updated chart for Status of Previous Mitigation Action Items;

Sec. 7 - Potential Mitigation Strategies - updated STAPLEE chart, incorporated new categories into proposed mitigation actions table and updated table;

Sec. 8 - Prioritized Implementation Schedule - updated Action Plan, added public education action plan;

Sec. 9 - Adoption, Implementation, Monitoring and Updates - Adoption certificate, updated information, added monitoring plans;

Appendices - agendas, resources, public documentation.

This update was prepared with assistance from professional planners at Southwest Region Planning Commission trained in Hazard Mitigation Planning. Data and maps used to prepare this plan are available at their office and should be used in preparing future updates.

Acknowledgements

The Gilsum Board of Selectmen extends special thanks to the Gilsum Hazard Mitigation Planning Team as follows (all positions are held in the Town of Gilsum):

Dee Denehy	*Gilsum Emergency Management Director, Gilsum Fire Chief*
Tom Julius	*Gilsum Planning Board Chair*
Harlen Maguire	*Gilsum Road Agent*
Bart Cushing	*Resident, former Gilsum BOS*
Chip Chapman	*Gilsum Conservation Commission, Ashuelot River Local Advisory Committee*
Chris Hamilton	*Badger Company, Volunteer Fire & Rescue (Gilsum)*
Brian Peniuk	*Gilsum Asst. Fire Chief*
Clement Lounder	*Gilsum BOS Chair, Gilsum Building Inspector*

The Gilsum Board of Selectmen offers thanks to the New Hampshire Homeland Security and Emergency Management for developing the State of New Hampshire Multi-Hazard Mitigation Plan Update 2023 which served as a model for this plan. In addition, special thanks are extended to the staff of the Southwest Region Planning Commission for professional services, process facilitation and preparation of this document.

HSEM/FEMA Final Approval: _____

1.11 HAZARD MITIGATION GOALS

Town of Gilsum, NH

The Gilsum Hazard Mitigation Planning Team reviewed the goals set forth in the NH State Hazard Mitigation Plan Update 2023. The Planning Team generally concurs with those goals and has amended them to better meet the goals of the town.

The overall Goals of the Town of Gislum with respect to Hazard Mitigation are stipulated here:

1. To improve upon the protection of the general population, citizens and guests of the Town of Gilsum, from all natural and man-made hazards.
2. To reduce the potential impact of natural and man-made disasters on the Town of Gilsum's Critical Support Services and Critical Facilities.
3. To reduce the potential impact of natural and man-made disasters on the Town of Gilsum's infrastructure.
4. To improve the Town of Gilsum's emergency preparedness, disaster response and recovery capability.
5. To reduce the potential impact of natural and man-made disasters on private property in the Town of Gilsum.
6. To reduce the potential impact of natural and man-made disasters on the Town of Gilsum's economy.
7. To reduce the potential impact of natural and man-made disasters on the Town of Gilsum's natural environment.
8. To reduce the potential impact of natural and man-made disasters on the Town of Gilsum's specific historic treasures.
9. To identify cost effective hazard mitigation measures.
10. The Town of Gilsum will work in conjunction and cooperation with the State of New Hampshire's Hazard Mitigation Goals.

2 COMMUNITY PROFILE

2.1 TOWN OVERVIEW

The Town of Gilsum is located in north central Cheshire County, in Southwest New Hampshire. Gilsum is bounded on the east by Stoddard and Sullivan, on the south by Keene, on the west by Surry, and on the north by Alstead and Marlow. Gilsum, New Hampshire is situated in the southwestern part of the state in an area known as the Monadnock Region.

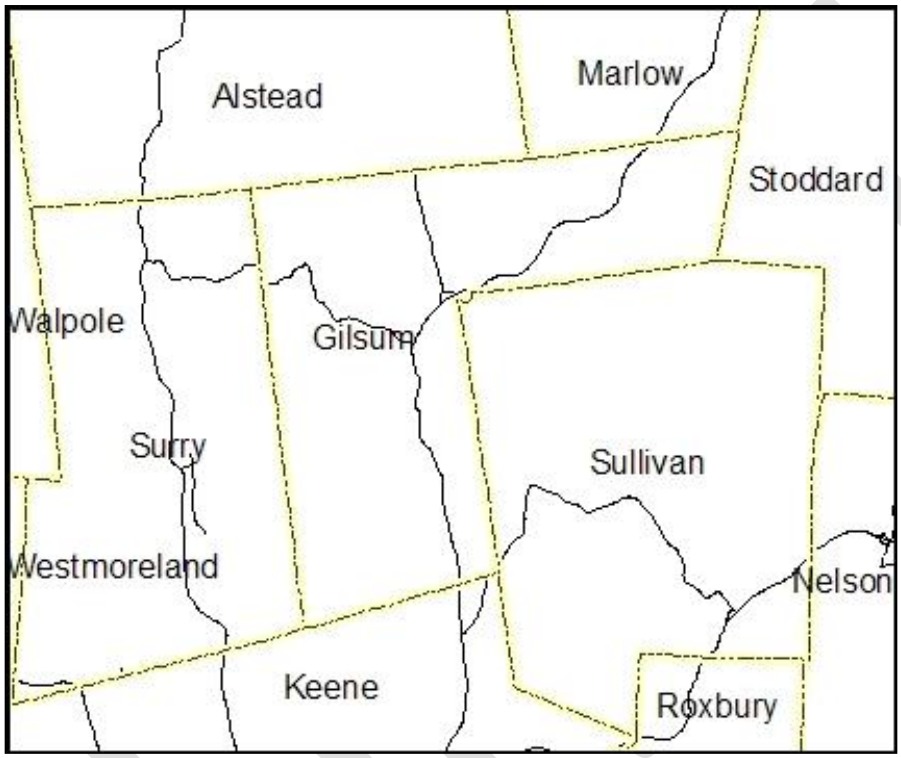


Figure 1 Gilsum Location Map

The Town of Gilsum has a land area of approximately 16.7 square miles, or 10,688 acres.

First granted by the New Hampshire proprietors in 1752, the town was given the name Boyle, after Richard Boyle, Earl of Burlington and a distinguished architect. No claims were settled within the prescribed time because of danger from Indian attacks. A new charter was issued in 1763 to Benjamin Sumner, who surveyed the area and established a settlement along with several relatives from Connecticut. One of those settlers was Captain Samuel Gilbert, who became the first moderator. The name Gilsum was adopted in their honor.

A significant geographic feature of the Town of Gilsum is the Ashuelot River, which runs through Gilsum in an easterly direction, beginning at the Marlow border in the northeast section of town, and leaving Gilsum at the Surry town line. The land varies from wetlands, flatlands, to steep

slopes. Approximately 66% of Gilsum's total area is composed of steep slopes scattered throughout town.

According to U.S. Climate Data, the average high temperature in 2015 was 31°F in January and 83°F in July. The annual precipitation was 43.6 inches of rainfall and 55 inches of snowfall.

2.2 DISASTER RISK

Gilsum is prone to a variety of man-made and natural hazards. Flooding and severe winter weather carry the greatest risk for Gilsum. Gilsum is susceptible to receiving large volumes of snow from Nor'easters and other winter storms. The town has also received a fair share of damage from ice storms in winter months, and as recently as December 2008, the town was impacted severely by the ice storm that greatly affected other parts of the Southwestern New Hampshire Region. The risk of wildfires results from the large tracks of contiguous forested land in Gilsum. Severe wind events have caused damage to Gilsum in the past.

2.3 DEVELOPMENT TRENDS

Several factors, known as land use determinants, act singularly or in combination to influence growth and development in a town. The following land use determinants have played an important role in the development of Gilsum:

- Topography: Gilsum's land area varies from wetlands, flatlands, to steep slopes; in fact approximately 66% of Gilsum's total area is composed of steep slopes, scattered all throughout the Town in no particular pattern, and which make development at best difficult and expensive.
- Transportation Systems: Gilsum has only one major transportation route, Route 10, which is a state highway that originates south in Massachusetts and runs through Winchester, Swanzey and Keene before traversing Gilsum from south to north. The Surry Road serves as the principal east-west corridor in Gilsum, intersecting with Route 10 at the Ashuelot River bridge.
- Rivers: The Ashuelot River runs through Gilsum in an easterly direction, beginning at the Marlow border in the northeast section of Town, and leaving Gilsum at the Surry town line. The river drops some 300 feet as it makes its way through Gilsum, creating an ideal situation for hydro power, which played a major role in Gilsum's development.
- Soils: Soil conditions also play an important part in the development process. Good soils encourage development and can support a wide variety of land use activities. By contrast, poor or marginal soils have limited development potential because of construction constraints caused by such factors as shallow depth to bedrock, ledge, high water table, etc. In light of the State regulations that govern the siting and construction of septic systems, soils are probably more of a development constraint today than they were in the past, when the science was not as advanced.

2.4 THE SETTLEMENT PATTERN - HISTORICAL

Historically, agriculture was a large user of land in Gilsum, but that does not mean that it was the most significant use of land. Gilsum's rocky soils and steep slopes made field crops difficult to maintain, therefore the major products were hay, apples and maple sugar. However, mining was a very important activity in town during the 19th century, given the presence of mica, hornblende, lead and beryl.

The Ashuelot River, in conjunction with many brooks and streams, allowed for the development of water-powered grist mills, sawmills and textile mills. Tanneries and brickyards contributed to the manufacturing activities that supported the town in its early days.

Gilsum has a well-defined village area, bounded on its eastern periphery by the Ashuelot River. The village today supports the municipal facilities provided by the town and a limited amount of commercial activity. Most of the lots are quite small – nonconforming by today's zoning requirements, but typical for a village settlement pattern (although there is no "Village Green", which often personifies this type of nucleated settlement pattern). The Town Hall is still existent in the center of the village - a very important symbolic center of community life, however, Gilsum's Town Hall is only used for large public meetings due to building code requirements.

2.5 THE PRESENT DEVELOPMENT PATTERN

Residential Development: Residential development in Gilsum consists overwhelmingly of single family homes. Four multi-family units were identified, all of them located in the Village. Occupancy is predominately year-round; seasonal or recreation homes play only a small role in the total housing stock most of which are situated in the Gilsum Woods development at Spoon Pond. The development pattern is fairly evenly dispersed around town. There are several residences located on roads that are not maintained by either the town or the state. The status of these roads, i.e. whether they are abandoned town roads or private roads, has not yet been determined.

Commercial/Industrial Development: Commercial and industrial uses in Gilsum are very limited. There are, in fact, only six businesses that operate as principle uses and not as home occupations. They are located either directly in or in close proximity to the Village, and are as follows:

- The Gilsum Village Store
- Badger Co., Inc.
- Gilsum Garage
- Bill's Garage
- Clem Lounder and Sons Floor Sanding
- Akido of the Monadnock Region

There are also presently three sand and gravel pits in Gilsum.

In addition to the above-described uses, there are numerous businesses that operate from a homesite. These are dispersed throughout the town and include a wide range of uses. Although it is difficult to identify every home-based business in town, here is a list of some of the types that have been identified at the time of this update: engine service/repair, racing engines, automotive repair, wholesale book sales, artisan's studio, antique studio, family farm, and hairdresser.

Public/Semi-Public/Institutional: Public and semi-public uses in Gilsum include all town-owned land: the Town Hall, Post Office, Church, Fire Station, Gilsum Elementary School, Town Offices/Library, Transfer Station, five cemeteries, and a wellness home. Most of these uses are located in the Village; the Transfer Station, however, is situated in the northwest corner of town, and the cemeteries are dispersed around the town.

Recreational: Recreational uses in Gilsum consist largely of the Pot Holes and Bears Den State Forest on Bingham Hill, Route 10. Other than this nature area, there is a playground at the school, a parade ground and tennis court next to the school, and a ballfield off of Dump Road.

Agricultural: Agriculture plays a very small role in Gilsum's land use pattern today. There are only a few small family farming operations, none of which are full-time occupations for the landowners.

2.6 Population Trends

The table below shows population in Gilsum for each decennial from 1970 to 2020 according to the US Census. There was a population increase in each of the decades, however the rate of increase has declined.

Gilsum Population 1970 - 2020							
	1970	1980	1990	2000	2010	2020	2024
Population	570	652	745	777	813	752	758
% Change	---	14%	14%	4%	5%	-8%	0.1%

Table 1 Gilsum Population (NH OPD, US Census)

2.7 Population Projections

Population projections are an important component in planning for the future. Projections are beneficial to help communities begin to plan and budget for Capital Improvement Projects. Since population projections are based on a set of assumptions, changes can be significant if the assumptions used in the calculations are not met. For example, a tropical storm that destroys a large employer or causes infrastructure damages to that facility, can cause a significant economic hardship to the business that may ultimately result in its closure and loss of jobs. This can then result in an outward migration of residents from the community. Therefore, population projections should only be used as a basis to begin planning for the future.

The New Hampshire Office of Planning and Development (NH OPD) prepares population projections every five years for each community in New Hampshire. The projections for Gilsum are presented below in five-year intervals up to the year 2050. Using these projections, Gilsum is expected to experience a population decline of 3.5% between 2020 and 2050, which is the same as the projection for Cheshire County (-3.5%) and below the New Hampshire population projection of 9%.

Gilsum Population Projections							
2020	2025	2030	2035	2040	2045	2050	% Change
752	764	771	768	757	742	726	-3.5%

Table 2 Gilsum Population Projections (NH OPD)

2.8 HOUSING TREND

The chart below shows the number of housing units in Gilsum from 1970 to 2020 according to the US Census. The chart is showing an inconsistent trend with a sharp increase of houses built between 1970 to 1980, and a sharp decline in the rate of new construction between 1990 and 2000. The most current figure shows a seven percent decrease in total housing units between 2010 and 2020.

Housing Trend 1970 - 2020						
Year	1970	1980	1990	2000	2010	2020
# Units	190	237	320	323	378	350
% Change	---	25%	35%	0.9%	17%	-7%

Table 3 Housing Trend 1970-2020 (US Census Bureau)

2.9 CONSTRAINTS TO DEVELOPMENT

The existing minimum lot size limit is 2 acres as required in Gilsum's Zoning Ordinance for all zoning districts except the Village District which has a minimum size requirement of one (1) acre (the Village area is primarily developed and has its own development constraints discussed below).

The proximity of Gilsum's location just north of the City of Keene may have impact on Gilsum's growth, as it is an attractive location for commuters looking to live in a small community outside of the more developed City of Keene.

The Gilsum Zoning Ordinance contains descriptions and provisions for four separate districts: the Village, the Rural Residential, the Industrial/Commercial Districts, and the Highway District. The Village District encompasses the Village itself and Route 10, beginning at the Vessel Rock Road/White Brook Road junction extending north to Old Sullivan Road; Memorial St., Church Street, Tannery Street., High Street, westerly side of Main Street, easterly side of Main Street, to the western bank of the Ashuelot River where Mill Brook crosses Banks Road. The zone extends all land within 300 feet from the centerline of said road in each direction.

The Industrial/Commercial District consists of only two individual parcels of land: the lot on which the former Blackstock-Houghton Company is located; and the lot on Alstead Hill Road on which P.C. Filters is located.

The Highway District encompasses all land on both sides of Route 10 that has both frontage and access from Route 10, measured inward from the highway right-of-way to a distance of 1,000 feet, excluding the Village District.

The Rural Residential District covers the rest of the town.

Within the Village area, where development is the densest, a wetland area is located at the intersection of Route 10, Main Street and Church Street. This is a sensitive area due to several factors including the presence of Hayward Brook flowing directly through the Village, the proximity of the Ashuelot River, and the pond at the intersection. This is also a densely-populated area with septic systems located on individual properties that are often less than an acre in size. Based on a review of existing soil types, the entire Village area and beyond is composed of soil types that are categorized as "excessively drained with high groundwater pollution hazard." In addition, part of the Village also lies within the floodplain, which puts the existing septic systems at greater risk.

2.10 National Flood Insurance Program (NFIP)

Gilsum has been a participating member of the National Flood Insurance Program since April 15, 1981. Flood Insurance Rate Maps, all bearing the effective date of May 23, 2006 are used for flood insurance purposes and are on file with the Gilsum Planning Board. As of May 13, 2025, there are five policies in force totaling $1,078,156 according to the FEMA Community Information System. There have been two repetitive losses (two single family homes) and six paid losses according to the FEMA Community Information System.

Continued Compliance with NFIP Requirements

The Town of Gilsum acknowledges the importance of maintaining requirements set forth in the National Flood Insurance Program. As such, the town took steps related to continued compliance with the program that will help to reduce or eliminate the potential for loss of life and property due to flooding.

The following actions have been taken since the last Hazard Mitigation Plan which have helped to reduce the impact of hazards:

- Continued outreach and education material on NFIP provided at Town Office.
- Continued monitoring of beaver dams prior to heavy rain events.
- Continued enforcement of Building and Zoning Ordinances.

While this update continues with structural projects, public outreach and education are also seen as a key to providing information to residents by raising an awareness of measures that they can

take. Many of these items will be on-going actions to maintain awareness and continued monitoring.

The town will continue to promote awareness of the importance of NFIP as an ongoing mitigation item and encourage more NFIP policies.

The Gilsum Floodplain Administrator / Building Inspector is responsible for making determinations of substantial improvement and substantial damage as defined in the Town of Gilsum Floodplain Development Ordinance.[1] These determinations are made for all development in a special flood hazard area that proposes to improve an existing structure including alterations, movement, enlargement, replacement, repair, additions, rehabilitations, renovations, repairs of damage from any origin (such as, but not limited to flood, fire, wind, or snow) and any other improvement of or work on such structure including within its existing footprint.

The Floodplain Administrator, in coordination with any other applicable community official(s), shall be responsible for the following:

1. Determine if a substantial damage (SD) determination needs to be made and communicate SD and permit requirements to property owners.
2. Verify the cost of repairs to the structure.
3. Verify the market value of the structure.
4. Make the SD determination and issue it to the property owner.
5. Permit development / ensure compliance with community ordinance.

Inspect development and maintain as-built compliance documentation post construction.

[1] https://gilsum-nh.gov/wp-content/uploads/2023/06/Floodplain_Ordinance.pdf

3 ASSESSING PROBABILITY, SEVERITY AND RISK

3.1 VULNERABILITY AND RISK ASSESSMENT

In evaluating vulnerability and risk, the Planning Team also considered changes in development patterns since the previous Hazard Mitigation Plan update. Gilsum has not experienced substantial new development in mapped floodplains or other identified hazard-prone areas during this period, and overall housing growth has declined. As a result, exposure related to the location of development has remained largely stable, with vulnerability influenced primarily by existing development patterns rather than new growth.

The vulnerability and risk assessment provides information to enable the town to identify and prioritize appropriate mitigation actions to reduce losses from the identified hazards. For each hazard type shown in the table below, the Planning Team assigned a value (1 - 6) to reflect the Human, Property and Business impact of each hazard to determine vulnerability. Then, the Planning Team assigned a probability value (1 - 3) reflecting the likelihood that this hazard will occur in the next 10 years. The severity and risk was calculated from the input values. The final column indicates the risk of each hazard, allowing the Planning Team to see which hazards pose the greatest risk to the community. Low to High risk was assigned as shown below. Full descriptors for the Vulnerability and Risk Assessment can be found in Appendix A.

- Human Impact = Probability of death or injury
- Property Impact = Physical losses and damages
- Business Impact = Interruption of service
- Probability = Likelihood this will occur in 10 years
- Severity = Average of human, property and business impacts
- Risk = Severity X Probability

Hazard	Human Impact	Property Impact	Business Impact	Probability	Severity	Risk	Risk Level
Drought	1	3	3	3	2.3	7	Med.
Landslide	1	3	1	1	1.6	1.6	Low
Extreme Temperatures	3	3	1	3	2.3	6.9	Med.
Flooding / Erosion	6	6	6	3	6	18	High
Hurricane / Tropical Storm	6	6	6	3	6	18	High
Infectious Disease	3	1	3	2	2.3	4.6	Low
Lightning	1	3	3	3	2.3	6.9	Med.
Severe Winter Weather	6	6	6	3	6	18	High
Solar Storm / Space Weather	1	1	1	1	1	1	Low

Tornado / Downburst / Severe Wind	3	6	3	3	4	12	Med.
Wildfire	1	3	1	3	1.6	7.8	Med.
HazMat Spills	1	3	3	3	2.3	7	Med.

Table 4 Risk Assessment

Risk level: 1-6 Low 7-12 Medium 13-20 High

4 PAST AND POTENTIAL HAZARD: IDENTIFICATION & ASSESSMENT

The following is a list of natural and man-made disasters, and the areas affected by them, that have occurred in the Town of Gilsum or within New Hampshire. These hazards were identified from the New Hampshire State Hazard Mitigation Plan 2023 Update, the State of New Hampshire Homeland Security and Emergency Management Website, and during meetings of the Gilsum Hazard Mitigation Planning Team. The Planning Team, with community input updated the Past and Potential Hazards Maps developed during a previous plan update. The updated map at the end of this Plan (Appendix G) reflects the contents of this list.

The Planning Team determined several hazards identified in the State of New Hampshire Hazard Mitigation Plan do not pose a measurable risk to the community at this time. Avalanches and coastal flooding were excluded because Gilsum's inland location and topography do not support conditions for these hazards. Earthquakes greater than magnitude 4.0 were also excluded; while minor seismic activity may be felt regionally, no local history or geologic indicators suggest that damaging earthquakes are a realistic concern for Gilsum. Dam failure continues to be excluded because there are no high-hazard-potential dams located within Gilsum and the Town has no jurisdiction over dams in neighboring communities. One exception is the Ashuelot Pond Dam in Washington, which could have downstream implications for Gilsum. The Emergency Management Director will continue to coordinate with the Town of Washington to remain informed about the dam's Emergency Action Plan (last revised in 2016) and any potential impacts to Gilsum. Gilsum is not included in the inundation zone associated with Ashuelot Pond dam.

As part of the overall hazard review, the Planning Team added landslide as a locally assessed hazard, reflecting local terrain and potential impacts. The Team also incorporated infectious disease and solar storms and space weather, which were introduced as new hazards in the most recent update to the State Plan. In addition, the Team revised the treatment of extreme temperatures to align with the State's current approach and updated the treatment of erosion by evaluating it within flooding or landslide hazards, which the Team determined provides a clearer and more accurate way to capture erosion-related concerns in Gilsum.

List of Hazards

Natural Hazards	
Drought	Solar Storms / Space Weather (new 2025)

Erosion / Landslide (new 2025)	Tornado / Downburst / Severe Wind
Extreme Temperatures (recategorized 2025)	Wildfire
Flooding	**Man-Made or Technological Hazards**
Hurricane / Tropical Storm	Hazardous Materials
Infectious Disease (new 2025)	
Lightning	
Severe Winter Weather	

Table 5 Hazards Included in Plan

4.1 DROUGHT: MEDIUM RISK

Drought will increase the risk of wildfire, especially in areas of high recreational use and as more timberland is set aside as non-harvested timberland, the potential for the risk of wildfire will increase.

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are rare in New Hampshire. They generally are not as damaging and disruptive as floods and are more difficult to define. The effect of droughts is indicated through measurements of soil moisture, groundwater levels, and stream-flow. However, not all of these indicators will be minimal during a drought. For example, frequent minor rainstorms can replenish the soil moisture without raising ground-water levels or increasing stream-flow. Low stream-flow correlates with low ground-water levels because ground-water discharge to streams and rivers maintains stream flow during extended dry periods. Low stream-flow and low ground-water levels commonly cause diminished water supply.

4.1.1 Extent

One measure of the extent (or relative intensity) of drought is the Palmer Drought Severity Index. Below is the Intensity Scale that is used with the Palmer Drought Severity Index to describe the observed impact with each category.

Category	Intensity	Impact
D0	Abnormally Dry	Crop growth is stunted; fire danger is elevated; lawns brown and gardens wilt; surface water levels are lower.
D1	Moderate Drought	Wildfires and brush fires increase; increased use of irrigation for crops; hay and grain yields are lower; honey production declines; trees and fish are stressed making them susceptible to disease; water conservation is recommended.
D2	Severe Drought	Water quality and quantity declines; irrigation ponds are dry and hay crops are impacted causing economic hardship to farms; crop yields and size of fruit are reduced; outdoor burning is limited; air quality is poor; impact on the health of trees and wildlife is observed.

Category	Intensity	Impact
D3	Extreme Drought	Crop loss, farms are stressed and are experiencing a financial impact; extremely reduced flow or ceased flow of water; river temperatures are warm; wildlife disease is increased; many wells are dry; new and deeper wells are needed.
D4	Exceptional Drought	NH has little or no experience in D4, so no impacts have been recorded at this level.

Figure 2 Palmer Drought Severity Index (Source: NOAA)

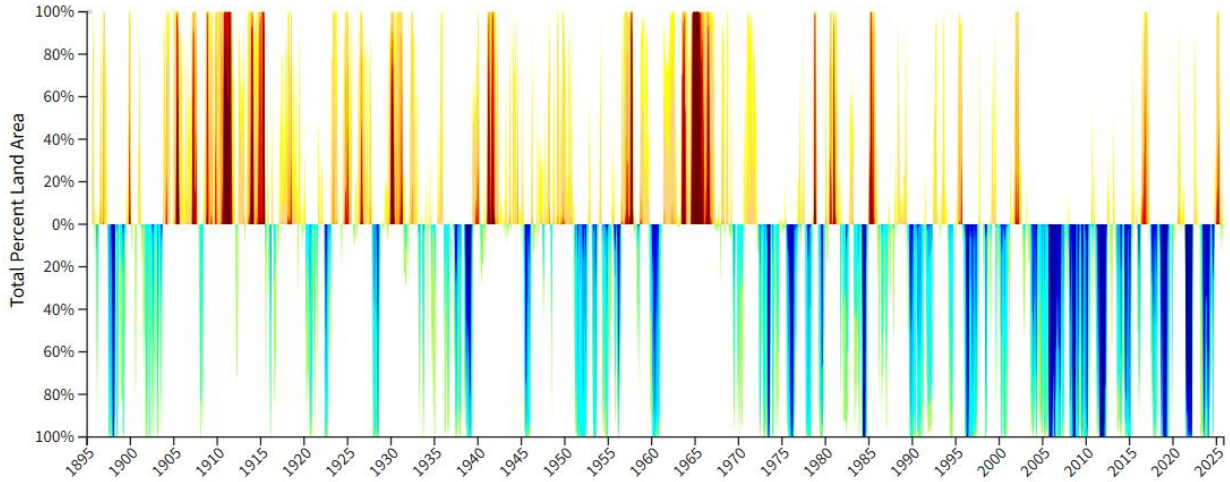
Standardized Precipitation Index (SPI) can also be used as an indicator for the severity of drought over different timescales. It is used to describe both wet and dry conditions based on precipitation.[2] The scale is based on a range of values (i.e. standard deviations away from normal) from extremely dry (-2 standard deviations) to extremely wet (+2 standard deviations).

SPI	Probability	Interpretation
> 2.0	2%	Extremely Wet
1.5 to 2.0	4%	Moderately Wet
1.0 to 1.5	9%	Wet
-1.0 to +1.0	68%	Normal
-1.5 to -1.0	9%	Dry
-2.0 to -1.5	4%	Moderately Dry
<-2.0	2%	Extremely Dry

Figure 3 Standardized Precipitation Index (SPI)[3]

4.1.2 Past Events

Over the long term, Cheshire County and Gilsum have experienced more periods of excess precipitation rather than drought, particularly from 1970 onwards.



[2] Characterizing extremes over Americas (nasa.gov)

[3] New Hampshire Climate Assessment 2021 (unh.edu)

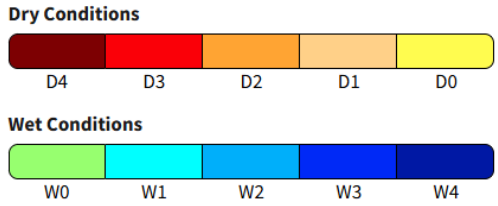


Figure 4 Historical Drought Conditions for Cheshire County (1895-Present)[4]

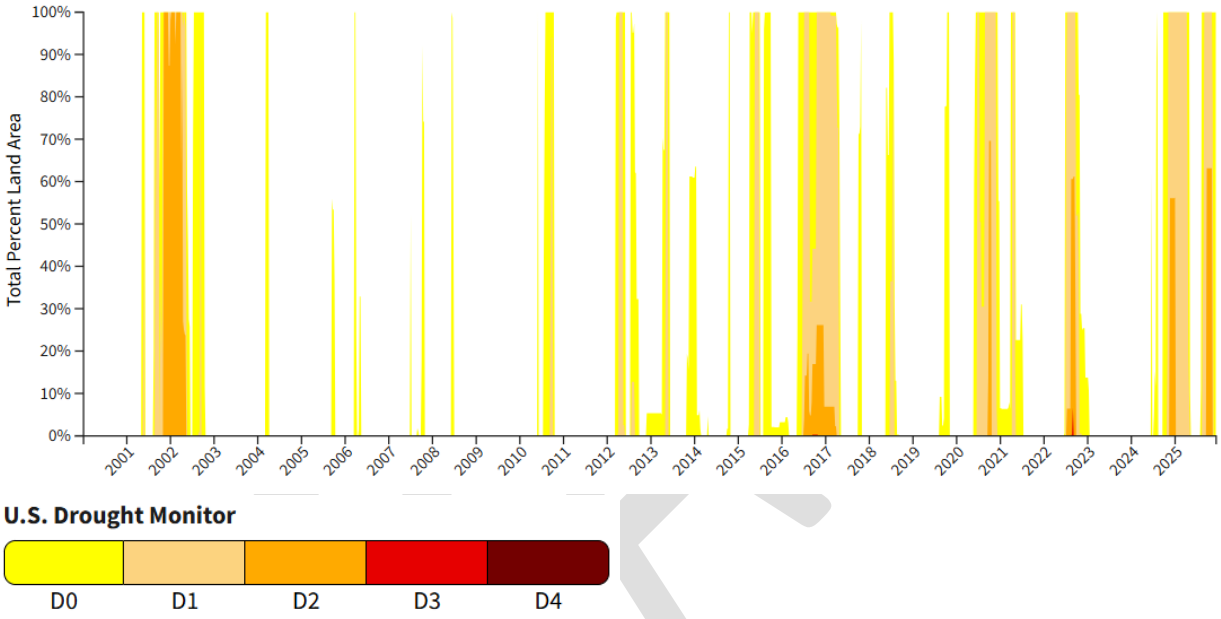


Figure 5 Recent Drought Conditions Cheshire County (NIDIS)

Between 2000 and 2024 there was one very brief period of extreme (D3) drought that impacted a small portion of Cheshire County in 2022. In 2022, 2020 and 2017 moderate (D1) drought conditions were present throughout the County. In 2002, severe (D2) drought impacted Cheshire County.

[4] Cheshire County Conditions | Drought.gov

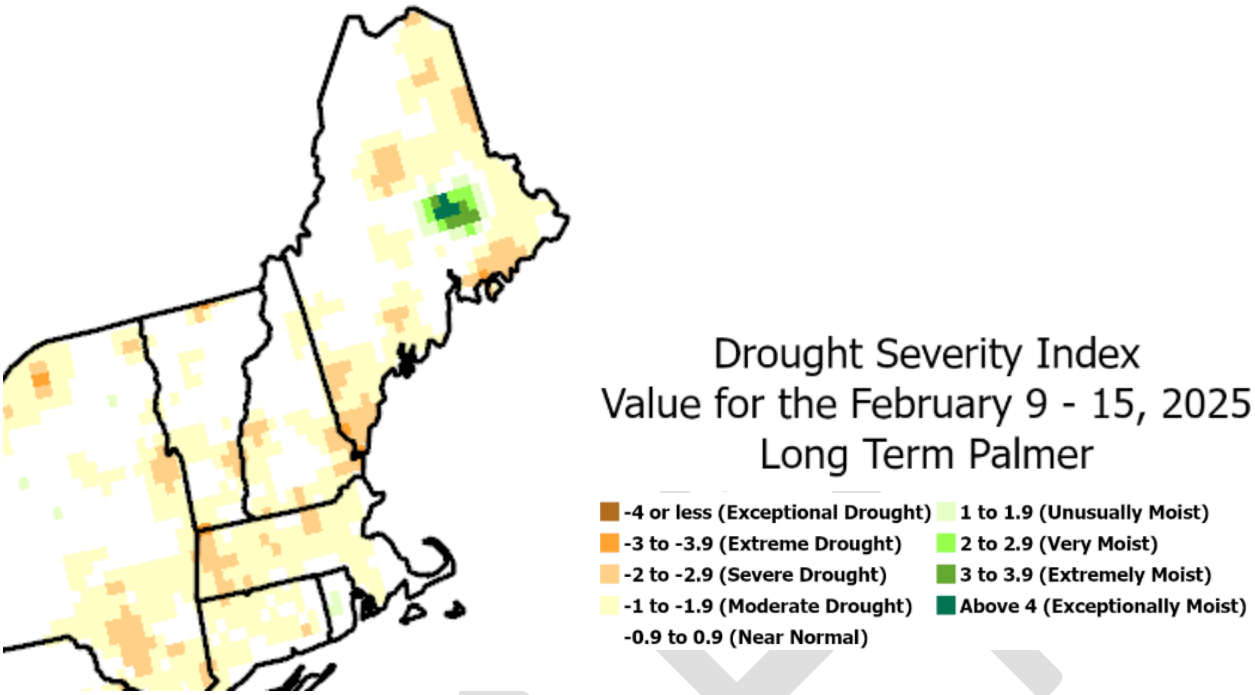


Figure 6 Long Term Palmer Drought Severity Index

- Summer 2022 - drought conditions had an impact to the agricultural fields causing small and immature crops.
- Summer of 2020 - drought conditions existed throughout New Hampshire. Impact to agriculture fields causing small crops and an increased cost for irrigation.
- Summer of 2018 - drought conditions existed throughout New Hampshire. There was no local impact to Town services. Impact to agriculture fields causing small crop loss and an increased cost for irrigation.

Since New Hampshire's first declaration in 1953, there were no State or federal major disaster declarations in Cheshire County relative to drought. Gilsum has had limited experience with severe drought conditions, however, the increased frequency of extreme and severe drought events has impacts on local agriculture, the local water supply, as well as firefighting resources. A greater emphasis is placed on responding to these hazards rather than mitigating for them. Outreach and education on methods of dealing with drought are important. Extreme heat and drought are town-wide events, therefore, no specific locations are identified. The severity of droughts can be found by referring to the Palmer Drought Severity Index used by the Climate Prediction Center and can be viewed at: http://www.cpc.ncep.noaa.gov/products/monitoring_and_data/drought.shtml

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Drought	1929-1936	Statewide	Regional. Recurrence Interval 10 to > 25 years.
Drought	1939-1944	Statewide	Severe in southeast and moderate elsewhere. Recurrence Interval 10 to > 25 years.
Drought	1947-1950	Statewide	Moderate. Recurrence Interval 10 to > 25 years.
Drought	1960-1969	Statewide	Regional longest recorded continuous spell of less than normal precipitation. Encompassed most of the Northeastern US. Recurrence Interval > 25 years.
Drought	2001-2002	Statewide	Fourth worst drought on record, exceeded only by the drought of 1956 - 1966 and 1941 - 1942.
Drought	Spring 2012	Statewide	Considered to be drier than the drought of 1941.
Drought	2015-2016	Statewide	Severe drought caused many wells to dry up throughout the state.
Drought (D2)	9/1/2020 9/30/2020	Cheshire County	D2 severe drought expanded to cover every county in New Hampshire. In addition, an area of D3 extreme drought developed in Strafford and parts of Rockingham, Carroll and Merrimack Counties. D3 covered 22% of the state. Numerous dry wells were reported by state agencies. Corn, potatoes, barley fruit crops and forage crops are the most affected. Farmers are concerned about having enough forage for their livestock to get through the winter. Dairy industry was especially impacted due to low grass yields. No damages, injuries or deaths were reported
Drought (D2)	10/1/2020 - 10/31/2020	Cheshire County	During the first week of October 95% of the state was in D2 Severe drought and 22% of the state was in D3 Extreme drought. By the end of the month the areal extent of D2 Severe drought had decreased to 33% of the state and D3 Extreme drought decreased to 17% of the state. $100,00 in property damage; $500,000 in crop damage were reported

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Drought (D1-D2)	8/1/2022 - 8/31/2022	Cheshire County	On the August 2nd drought monitor, Cheshire County was 6% in severe drought and 94% moderate drought. By the end of the month, 54% of the county was in severe drought and 39% in moderate drought. No damages, injuries or deaths were reported
Drought (D1-D3)	9/1/2022 - 9/30/2022	Cheshire County	On August 30th drought monitor, Cheshire County was 7% in extreme drought, 54% severe drought, 39% moderate drought. By the end of the month, 60% of the county was in moderate drought and 48% abnormally dry. A USDA Disaster Designation for drought was applied to Cheshire County. No damages, injuries or deaths were reported.

Table 6 Past Drought Hazard Events

4.1.3 Future Conditions

New Hampshire Climate Assessment 2021[5] helps explain what drought conditions Gilsum may expect in the future due to changes in weather patterns. When comparing the period 1901-1960 to 1991-2020, the report noted an overall decrease in the number of dry (<0 SPI) and moderately dry (<-1 SPI) periods. However, it also concluded that the expected increases in summer temperatures expected over the period 2010-2099 will contribute to more short-term, or "flash drought" conditions in the future.

4.1.4 Potential Occurrences & Impacts

This is a recurring event that impacts the entire Town. The entire town is reliant upon private wells. The Planning Team identified the following conditions and vulnerabilities associated with drought events:

Dry wells during past droughts have occurred without a consistent method for tracking or identifying affected areas.

During previous drought periods, some private wells in Gilsum have gone dry or experienced reduced yield, but reports are handled individually and are not logged in a centralized way. Without a consistent process to track, map, or summarize drought-related well impacts, the Town has limited ability to identify clusters, coordinate support, or evaluate long-term drought vulnerability across different parts of the community**.**

[5] https://scholars.unh.edu/cgi/viewcontent.cgi?article=1071&context=sustainability

Prolonged drought can leave agricultural operations without adequate water for crop production. During extended drought conditions, local farms or gardens may lack sufficient water for crop production. These impacts can create health/sanitation problems and economic challenges for residents until groundwater levels recover or temporary water supplies are arranged.
Low water levels during drought may reduce the reliability of fire water resources, including dry hydrants and surface water sites. During periods of extended drought, water levels in natural and constructed fire water resources may drop to levels that limit their effectiveness for fire suppression. Reduced water availability during drought could require the Town to rely on alternate water sources or mutual aid if local resources become temporarily insufficient.
Drought conditions increase wildfire risk in certain forested areas with accumulated fuels, access limitations, and vegetation die-off caused by invasive species. Dry conditions elevate ignition risk in forested parts of Gilsum where surface fuels have built up over time and where invasive insects (*emerald ash borer, hemlock wooly adelgid, nematode impacting beech trees)*, plants, or pathogens have contributed to tree and understory die-off. Areas such as the White Brook Road, pit off NH 10 near Badger, Bears Den area, along highways (from cigarettes out car windows, some Class VI roads – Smith Hill Rd.) and the slopes of Centennial Hill contain accumulated natural debris and dead vegetation that can ignite more easily during drought. Without identifying and monitoring these high-fuel and die-off areas, drought periods may lead to increased wildfire hazards and more challenging suppression efforts.

As specified in the State of New Hampshire Hazard Mitigation Plan (p. 155-156), impacts of drought are wide ranging and include:[6]

Economic Impacts

- Destruction of crops affecting farmers and consumers driving up food costs for consumers
- Cost of irrigation and drilling new wells
- Farmers spending more money on water and feed for animals
- Businesses that rely on farming, such as tractor and feed suppliers, may lose income
- Timber industry workers may be affected if wildfires exacerbated by drought destroy timber
- Businesses that sell boating and fishing equipment may lose business due to dried up water sources
- Power companies that utilize hydroelectric may have to spend money on other fuel sources and customers may also have to pay more for power

[6] NH State Hazard Mitigation Plan (2023)

- Barges and ships may have difficulty navigating bodies of water due to the ships draft (water depth required for boat to be able to operate) being greater than the depth of the body of water
- Water companies and private well owners having to spend money on new or additional water supplies

Environmental Impacts

- Loss or destruction of fish and wildlife habitat
- Lack of food and drinking water for wild animals
- Increased stress and possible extinction of endangered species
- Lower water levels in reservoirs, lakes, and ponds
- Loss of wetlands
- More frequent wildfires
- Wind and water erosion of soils
- Poor soil quality

Social Impacts

- Anxiety or depression about economic losses caused by drought
- Health problems related to poor water quality or lack of water
- Health problems related to dust and pollen
- Loss of life
- Threat to public safety from an increased number of wildfires
- Reduced incomes
- People may have to relocate or close farms
- Fewer recreational activities

4.2 EXTREME TEMPERATURES: MEDIUM RISK

Extreme temperatures are a period of prolonged and/or excessive hot or cold that presents a danger to human health and life.

Extreme Heat events occur as a result of above normal temperatures, which often coincide with high relative humidity, that increase the likelihood of heat disorders with prolonged exposure or strenuous activity. This risk comes from the heat and humidity preventing the human body from adequately cooling itself using natural methods; this can result in heat disorders and, if untreated, unconsciousness and eventually death. Heat-related disorders include heat cramps, heat exhaustion, and heat stroke.[7] Populations at risk, such as the young and elderly, are more likely to experience a heat-related disorder during a heat event. Humidity exacerbates how the human body experiences heat when hazy, damp air is trapped near the ground. Certain relative humidity percentages can render the body's natural ability to cool itself by sweating ineffective. These meteorological conditions can lead to heat stroke, which is an immediate medical

[7] http://www.nws.noaa.gov/om/heat/heat_index.shtml

emergency.[8] Extreme heat can also add to the potential for wildfires and depletion of the water supply for firefighting.

Extreme Cold events occur during meteorological cold waves, also known as cold snaps that are caused by the southern transport of arctic airmasses into the Northeast. These events occur during the winter months and increase the likelihood of cold disorders in humans and animals that have prolonged exposure to low ambient temperatures. This effect is exacerbated when there are winds present that effectively lower the temperature that is perceived by the human body, known as the wind chill. The risk comes from when the body is losing heat faster than it can produce it. Wind acts to carry heat away from the body, therefore amplifying the perceived temperature by the human body and reducing the body's core temperature. Cold disorders can include frostbite and hypothermia. Frostbite occurs when uncovered skin/extremities are exposed to extreme cold and the body tissue is either injured or killed. Hypothermia is when the body is unable to heat itself at the rate it is being cooled and the body's core temperature begins to drop below normal values. A normal core body temperature is considered to be 98.6°F; mild hypothermia occurs when core body temperature drops between 90-95°F and severe hypothermia occurs at core body temperatures of below 90°F. If left untreated, hypothermia can result in unconsciousness and eventually death. Extreme cold can also damage or kill crops and animals (wild, farm, or domesticated), potentially presenting a risk to the economy.[9]

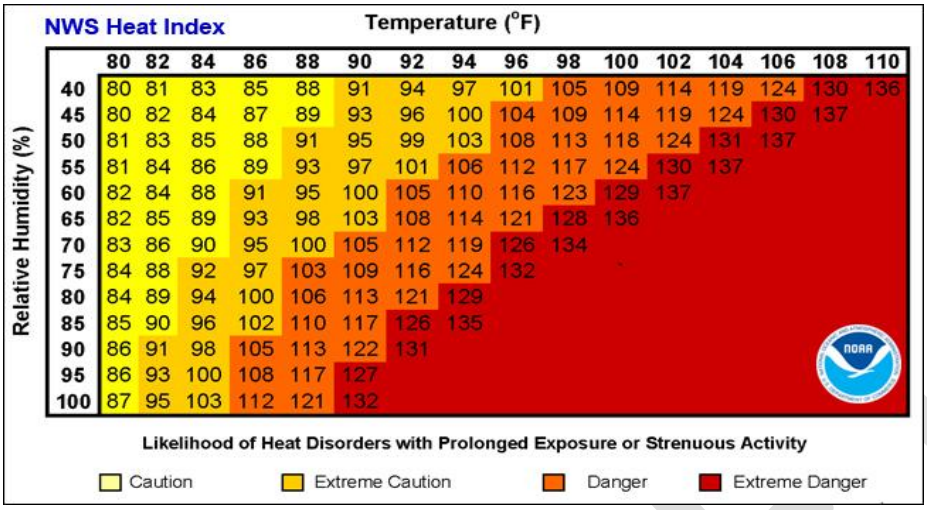
4.2.1 Extent

One measure of the extent (or relative intensity) of extreme heat is the National Weather Service Heat Index, which is an indicator of the likeliness of heat disorders with prolonged exposure or strenuous activity, especially for those with a history of stroke and heart issues. The National Weather Service utilizes the following terms when describing the extent of **extreme heat**:[10]

- Heat Advisory—Two or more consecutive hours of Heat Index values of 95-99 degrees Fahrenheit for two or more days OR any duration of Heat Index values of 100-104 degrees Fahrenheit. A Heat Advisory is issued within 36 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Warning—Two or more hours with Heat Index values of 105 degrees Fahrenheit or greater. An Excessive Heat Warning is issued within 36 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Watches—Heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.

[8] http://www.nws.noaa.gov/om/heat/heat-illness.shtml
[9] Impacts of Temperature Extremes
[10] Heat Watch vs. Warning (weather.gov)

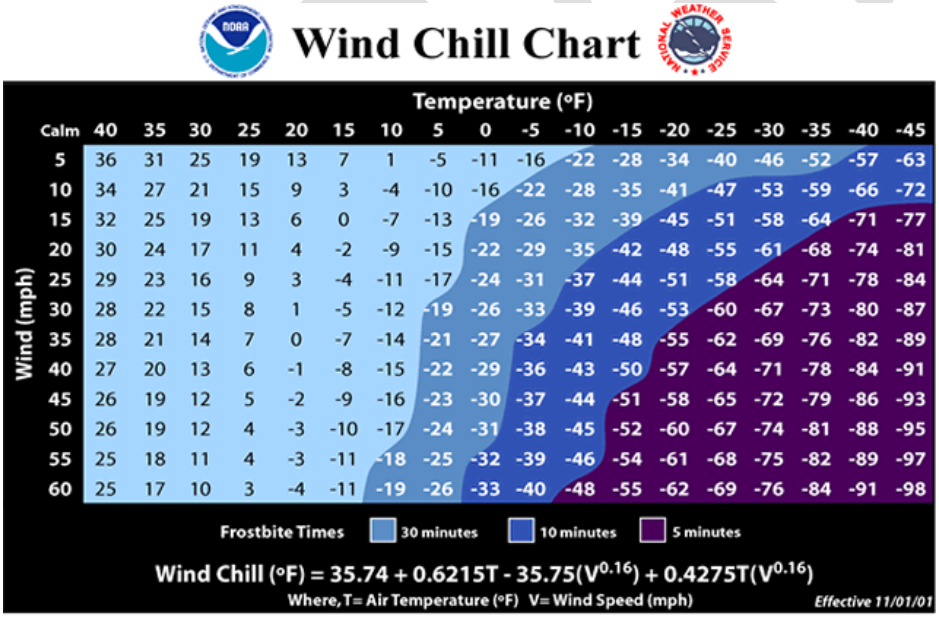
- Excessive Heat Outlooks—Issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event.



Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Figure 7 NWS Heat Index (Source: National Weather Service)

A measure of the extent of extreme cold is the National Weather Service Wind Chill Chart below, which shows the impact that wind and cold temperatures can have by indicating the number of minutes until frostbite strikes.



Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Figure 8 Wind Chill Chart (Source: National Weather Service)

The National Weather Service (NWS) utilizes the following terms when describing the extent of **extreme cold**:[11]

[11] Wind Chill Warning vs Watch (weather.gov)

- Wind Chill Watch: NWS issues a wind chill watch when dangerously cold wind chill values are possible. Residents need to take action to protect themselves, animals, and their property.
- Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values are expected or occurring. A Wind Chill Advisory is issued for New Hampshire is wind chill values are expected to be -20°F to -29°F and winds are greater than 5 mph.
- Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring. A Wind Chill Advisory is issued for New Hampshire is wind chill values are expected to be -30°F and winds are greater than 5 mph.
- Freeze Watch: NWS issues a freeze watch when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours. A freeze watch is issued in the autumn until the end of the growing season and in the spring at the start of the growing season.
- Frost Advisory: Be Aware: A frost advisory means areas of frost are expected or occurring, posing a threat to sensitive vegetation.
- Freeze Warning: When temperatures are forecasted to go below 32°F for a long period of time, NWS issues a freeze warning. This temperature threshold kills some types of commercial crops and residential plants.
- Hard Freeze Warning: NWS issues a hard freeze warning when temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants.

4.2.2 Past Events

There have been no impactful events of extreme heat or cold that the Planning Team recalled since the last plan update.

Date	Event Description	Impacts	Location	Other Information
July, 1911	Extreme Heat	11-day heat wave in New Hampshire.	New England	
Late June to September, 1936	Extreme Heat	Temps to mid-90s in the northeast.	North America	
Late July, 1999	Extreme Heat	13+ days of 90+ degree heat.	Northeast	
Early August, 2001	Extreme Heat	Mid 90s and high humidity.	New Hampshire	
August 2-4, 2006	Extreme Heat	Regional heat wave and severe storms.	New Hampshire	

Date	Event Description	Impacts	Location	Other Information
2/3/2023	Extreme Cold/Wind Chill	By the evening on the 3rd wind chills were reaching -30 degrees. Ambient air temperatures continued to fall into the double digits below zero with winds gusting in excess of 35 mph.	Cheshire County	The coldest wind chill values approached -40 degrees early on the 4th before winds gradually began to diminish. This included -38 at Jaffrey Silver Ranch Airport and -38 at Dillant-Hopkins Airport.

Table 7 Past Extreme Temperature Events: Cold/Wind Chill, Excessive Heat, Extreme Cold/Wind Chill, Heat (1900-Present)

Since New Hampshire's first declaration in 1953, there were no State or federal major disaster declarations in Cheshire County relative to high heat.

4.2.3 Future Conditions

New Hampshire Climate Assessment 2021 helps explain what extreme temperatures Gilsum may expect in the future due to changes in weather patterns. Depending on greenhouse gas emission scenarios, New Hampshire can expect a range of higher annual average maximum and minimum annual average temperatures. A weather station in Keene was the closest in geographic proximity that offered a historical perspective as well as projections in the assessment. It found that under a low and high emissions scenario, maximum summer temperatures will increase by 2.4 and 2.6 degrees respectively (when comparing the expected 2010-2039 temperature to the 1980-2009 temperature). Summer maximum and winter minimum temperatures are also expected to increase by a similar amount over the same time period. Changes in extreme temperatures are expected to follow a similar trend.

Climate Indicator	Historical (1980-2009)	2010-2039 Change from Historical	
		Low Emissions	High Emissions
Maximum temperature on coldest day of year	11.9°	+3.2°	+3.5°
Minimum temperature on coldest day of year	-15.3°	+3.9°	+4.9°
# Days < 0°	13.4	-5.0	-6.0
# Days < 32°	162.5	-11.8	-12.9
# Days > 90°	9.1	+9.4	+10.4
# Days > 95°	1.3	+3.0	+3.7

Climate Indicator	Historical (1980-2009)	2010-2039 Change from Historical	
		Low Emissions	High Emissions
Maximum temperature on hottest day of year	95.2°	+2.8°	+3.3°
Minimum temperature on hottest day of year	70.9°	+2.0°	+2.1°
# Days when minimum temperature is > 28°	227.7	+10.9	+12.3

Table 8 New Hampshire Climate Assessment 2021 Keene Station Future Conditions (1980-2009 Historical vs. 2010-2039)

4.2.4 Potential Occurrences & Impacts

Extreme temperatures are a town-wide event. Extreme temperature events - including both extreme cold and extreme heat - pose risks to human health, safety, and infrastructure. Vulnerable populations, such as the elderly, children, individuals with chronic health conditions, and those without access to adequate shelter or temperature control, are especially at risk. The Planning Team identified the following conditions and vulnerabilities associated with extreme temperature events:

Extreme temperature response in Gilsum relies on strong informal community supports that are not yet formalized for prolonged or round-the-clock emergencies.
Gilsum benefits from a close-knit community and several buildings that are routinely used to support residents during extreme heat or cold, including the fire station, church, community center, and school. Neighbors, volunteers, and local organizations regularly step in to help one another during short-term events, and these informal arrangements have historically provided important protection for vulnerable residents, including older adults.
However, these resources are not governed by formal agreements or emergency plans. There are currently no Red Cross–designated shelters, no written activation or staffing protocols, and no memoranda of understanding ensuring that facilities would be available, equipped, or supported for 24-hour use during multi-day extreme temperature events or power outages. In addition, cooling capacity is limited, and the Community Center—often used informally as a gathering or warming space—does not have air conditioning. Without formalized plans, the town faces uncertainty about the reliability and duration of sheltering options during prolonged extreme heat or cold, particularly for residents who are more vulnerable to temperature-related health risks.

Existing backup power resources have not been evaluated for their ability to support essential functions during extreme temperature emergencies.

Generator coverage is uneven and not tied to extreme temperature hazards. Temperature emergencies are often compounded by power loss. While some critical facilities have generators, there is no assessment linking generator capability to heat/cold response functions (e.g., sheltering, medical equipment charging, communications), making it unclear whether existing backup power capacity aligns with the needs created by extreme temperature events. Church basement and fire station are both set up to heat the buildings, not cooling, both set up to cook but have no air conditioning. There is a need for a standby generator at town offices. Generators at other locations are not sized for ACs. Badger could probably be relied upon, and MOU is needed. MOU already in place with school district – no generator at the school.
Extreme temperatures can damage infrastructure, including pipes and electrical systems. Extreme cold can cause damage to residential and commercial structures through frozen or burst pipes, while extreme heat can overburden electrical systems.
Extreme heat and cold can increase the need for emergency response due to increase demand for health and welfare services. Both extremes can increase the need for emergency response and health services.
Extreme temperatures pose direct health risks to residents, including hypothermia, frostbite, dehydration, heat exhaustion, and heat stroke. These conditions can escalate quickly without access to adequate heating, cooling, hydration, or medical support. Many homes in Gilsum are equipped with woodstoves, reducing risk during extreme cold events; however, air conditioning is not widely available.

4.3 FLOODING: HIGH RISK

Flooding, inclusive of inland flooding, is generally defined as a high flow, overflow, or inundation by water, which causes or threatens damage.[12] Flooding results from the overflow of rivers, their tributaries, and streams throughout the State, primarily from high precipitation events. Flash flooding is defined as a flow with a rapid rise in water level and extreme velocities in a river or stream, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Because of New Hampshire's steep terrain in the headwaters of watersheds, flash floods also lead to riverbank and bed erosion. Extreme precipitation events in recent years, such as Tropical Storm Irene, or slow-moving summer thunderstorms over steep terrain, have led to buildings on the edges of streambanks becoming at risk to river erosion, or culvert failures.

[12] NOAA's National Weather Service - Glossary

The National Flood Insurance Program (NFIP) has a more specific definition of flooding, which can also be considered and used when looking at floodplain and floodplain mapping. The NFIP defines a flood as a general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties (at least 1 of which is the policyholder's property) from:[13]

1. Overflow of inland or tidal waters; or
2. Unusual and rapid accumulation or runoff of surface waters from any source; or
3. Mudslides (i.e., mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.; or
4. Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

4.3.1 Extent

One measure of the extent (or relative intensity) of flooding is the change in magnitude of river flooding. Although there were no locations located in Gilsum, all rivers in the State published in EPA's Climate Change Map Viewer experienced a significant increase in the *magnitude* of river flooding between 1965 and 2015. The same study found that the rivers experienced a significant increase in the *frequency* of river flooding. In New Hampshire, precipitation events and resulting floods have become more common, as evidenced by the number of recent annual rainfall figures in exceedance of the 1991-2020 average.

Another way to describe the extent of flooding requires monitoring of stream flows. A monitoring station exists on the Ashuelot River in Gilsum. The river may be at any number of water levels or stages:[14]

- Bankfull Stage: An established gage height at a given location along a river or stream, above which a rise in water surface will cause the river or stream to overflow the lowest natural stream bank somewhere in the corresponding reach.
- Action Stage: The stage which, when reached by a rising stream, represents the level where the NWS or a partner/user needs to take some type of mitigation action in preparation for possible significant hydrologic activity. The appropriate action is usually defined in a weather forecast office (WFO) hydrologic services manual.
- Flood Stage: An established gage height for a given location above which a rise in water surface level begins to create a hazard to lives, property, or commerce. The issuance of flood (or in some cases flash flood) warnings is linked to flood stage. Not necessarily the same as bankfull stage.

[13] National Flood Insurance Program Terminology Index | FEMA.gov
[14] High Water Level Terminology

The NWS, in coordination with local officials, defines flood levels for each of its river forecast locations, based on the impact over a given area. The flood categories are defined as follows:

- Minor Flooding: Minimal or no property damage, but possibly some public threat (e.g., inundation of roads).
- Moderate Flooding: Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations.
- Major Flooding: Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.
- Record Flooding: Flooding which equals or exceeds the highest stage or discharge observed at a given site during the period of record. The highest stage on record is not necessarily above the other three flood categories – it may be within any of them or even less than the lowest, particularly if the period of record is short (e.g., a few years).

4.3.2 Past Events

A search for the terms "Flood" and "Flash Flood" in NOAA's Storm Events were used to identify past events.

Flooding - Disaster Declarations
Below is a listing of Disaster Declarations for flooding events within the State of New Hampshire. Several severe events have caused significant damage to structures and roadways within the Southwest Region. Some of the historic flood events may be listed under Hurricane/Tropical storm instead of this category.

Hazard	Date	Location	Description of Areas Impacted
Flood	1927	Southern NH	Damage to the road network. Caused many roads to wash out.
Flood	March 11 -21, 1936	NH State	Damage to the road network. Flooding caused by simultaneous heavy snowfall totals, heavy rains and warm weather. Run-off from melting snow with rain overflowed the rivers.
Flood/ Storm	August 27, 1986	Cheshire, Hillsborough Counties, NH	FEMA Disaster **#771-DR** (Presidentially Declared Disaster) $1,005,000 in damage.
Flood/ Storm	April 16, 1987	Cheshire, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, & Sullivan Counties, NH	FEMA Disaster Declaration **#789-DR** (Presidentially Declared Disaster). Flooding of low-lying areas along river caused by snowmelt and intense rain. $4,888,889 in damage.

Hazard	Date	Location	Description of Areas Impacted
Flood	August 7 - 11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan Counties, NH	FEMA Disaster Declaration #**876**. Flooding caused by a series of storm events with moderate to heavy rains. $2,297,777 in damage.
Flood	October 29, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan Counties	FEMA Disaster Declaration # **1144- DR**. Flooding caused by heavy rains. $2,341,273 in damage.
Flood	July 2, 1998	Southern NH	FEMA Disaster Declaration #**1231**. Severe storms and flooding.
Flood	October 26, 2005	Cheshire, Grafton, Merrimack, Sullivan, and Hillsborough Counties, NH	FEMA Disaster Declaration #**1610**. Severe storms and flooding.
Flood	October-November 2005	Cheshire, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan counties	FEMA Disaster Declaration # DR - **1144** - NH DR - 1610.
Flood	May 25, 2006	Belknap, Carroll, Hillsborough, Merrimack, Rockingham, and Strafford Counties, NH	FEMA Disaster Declaration #**1643**. Severe storms and flooding.
Flood	April 16, 2007	All counties, NH	FEMA Disaster Declaration #**1695**. Severe storms and flooding.
Flood	May 26 - 30, 2011	Coos and Grafton County	FEMA Disaster Declaration # DR – **4006**. No local impact.
Flood	May 29 - 31, 2012	Cheshire County	FEMA Disaster Declaration #**4065**. No local impact.

Hazard	Date	Location	Description of Areas Impacted
Flood	June 26 - July 3, 2013	Cheshire, Sullivan, and Grafton Counties	FEMA Disaster Declaration #**4139**. See Flooding-localized on next page for local impact.
Flood	July 1-2, 2017	Grafton County	FEMA Disaster Declaration #**4329**. No local impact.
Flood	Oct. 29-Nov. 1, 2017	Coos, Sullivan, Belknap, Carroll and Grafton Counties	FEMA Disaster Declaration #**4355**; $72,739 (Statewide assistance). No damage to structures and no injuries.
Flood	Mar. 2-8, 2018	Rockingham County	FEMA Disaster Declaration #**4370**; Rockingham County, Severe storm and flooding. No local damage to structures and no injuries.
Severe Storm and Flooding	July 11 - July 12, 2019	Grafton County	FEMA Disaster Declaration #**4457;** $3,064,106 (assistance),
Severe Storm	July 17 - July 19, 2021	Cheshire County	FEMA Disaster Declaration **#4622**; $1,195,832 (Statewide assistance) severe storm and flooding.
Flood	July 29 - August 2, 2021	Cheshire & Sullivan Counties	FEMA Disaster Declaration #**4624**; $10,094, 281 (Statewide assistance) severe storm and flooding.
Severe Storm and Flooding	Dec. 22 - Dec. 25, 2022	Belknap, Carroll, Coos, & Grafton Counties	FEMA Disaster Declaration #**4693**; $2,979,668 (Public Assistance)
Flood	July 9 - July 17, 2023	Belknap, Carroll, Cheshire, Coos, Grafton, Rockingham & Sullivan Counties	FEMA Disaster Declaration #**4740**, $11,685,980 (Public Assistance)
Severe Storm and Flooding	Dec. 17 - Dec. 21, 2023	Carroll, Coos, & Grafton Counties	FEMA Disaster Declaration **#4761**, $3,713,694 (Public Assistance)
Severe Storms and Flooding	Jan. 8 - Jan. 14, 2024	Grafton & Rockingham Counties	FEMA Disaster Declaration **#4771**, $2,572,022 (Public Assistance)
Severe Storms and Flooding	July 10 - July 13, 2024	Coos & Grafton Counties	FEMA Disaster Declaration **#4812**, $4,422,333 (Public Assistance)

Table 9 Flood Disaster Declarations

Past occurrences of flooding in Gilsum & nearby towns.		
May 2012	Belvedere Road (Keene side)	Heavy rain event caused the road to washout. The road was closed for approximately 9 days. No structural damage to homes and no injuries.
May 2012	Hammond Hollow Road	Heavy rain event caused the road to washout. The road was closed for approximately 3 days. No structural damage to homes and no injuries.
May 2012	Whitney Stage Road	Flooding of road due to heavy rain and runoff. No injuries and no structures were impacted; no service interruption. Road damaged but passable.
May 2012	South Woods Road	Flooding of road due to heavy rain and runoff. No injuries and no structures were impacted; no service interruption. Road damaged but passable.
May 2012	Sullivan Road	Flooding of road due to heavy rain and runoff. No injuries and no structures were impacted; and no service interruption.
May 2012	Whitebrook Road	Flooding of road due to heavy rain and runoff. No structures were impacted, however, the septic system of a house was damaged. The road was washed out and closed for one week. No injuries.
May 2012	Vessel Rock Road	Flooding of road due to heavy rain and runoff. No structures were impacted, however, the road was washed out and closed for one day.
2012 & 2013	Nash Corner Road	Flooding of the road occurred due to heavy rain and runoff. The repair took one day; one lane remained open. No injuries and no structures were impacted.
2012 & 2013	Banks Road	Flooding of road due to heavy rain and runoff. A house and a car were damaged. No injuries.
2012 & 2013	Mack Road	Flooding of road due to heavy rain and runoff. One structure was damaged. No injuries.
2012 & 2013	Converse Road	Flooding of road due to heavy rain and runoff. No injuries and no structures were impacted; road damaged and closed for one day.

Past occurrences of flooding in Gilsum & nearby towns.		
2012 & 2013	Centennial Road	Flooding of the road occurred due to heavy rain and runoff. No injuries and no structures were impacted; road closed for several days.
2012 & 2013	Church Street (bridge over Hayward Brook)	Flooding of the road occurred due to heavy rain and runoff. Road closed for 5 days, 2 houses were condemned. No injuries.
2012 & 2013	Eaton Hill Road	Flooding of the road occurred due to heavy rain and runoff. The culvert was upsized in 2004, but severe stormwater caused it to overflow and washed out the road in 2012. Again in 2013 and road was closed partially for 7 days. No injuries and no structures were impacted.
2012 & 2013	Pinnacle Road	Flooding of the road occurred due to heavy rain and runoff. No structures were impacted and no service interruptions. Minimal road damage, but no closures.
7/29/2021	Surry	The Ashuelot River flooded Route 12A at Gilsum Road. Streamflows comparable to those observed after Hurricane Irene in 2011. $10,000 in property damage.
7/29/2021	Alstead	Flash riverine flooding occurred on the evening of the 29th in Alstead. Flood waters upstream in Acworth along the Cold River resulted in a washout of the Route 123A road near Kelley Road. River levels from the USGS Cold River at Alstead gage reported an all time peak flow of 11.46 feet and a flow of 10,500cfs, cresting at 11 PM on the 29th. The period of record is relatively short dating back to 2009, but significant damage occurred in the Cold River basin with an estimated 50 to 75 year flood event based on USGS data. $75,000 in property damage.
7/10/2023	East Alstead	Flooding caused by the significant rainfall over two days damaged property and roads in the Marlow area. Most roads were closed due to flooding and residents were advised to stay home. The flooding produced on the 10-11th of July occurred over areas

Past occurrences of flooding in Gilsum & nearby towns.		
		that were already dealing with previous flooding. The North Fork of the already flooded Ashuelot River flooded portions of Marlow. Another source of flooding came when the Stoddard Lake overflowed totally surrounding homes.
7/10/2023	Alstead Center	Hill Road flooded from Darby Brook near Drewsville Road.
7/10/2023	Surry	The Ashuelot River flooded Gilsum Road between Gilsum and Surry.
5/21/2024	Drewsville	Heavy rain caused a washout on Homestead Road in southern Alstead.

Table 10 Localized Flood Events

In addition to the localized flooding events listed above, Planning Team discissions identified specific roads, culverts, and facilities that continue to experience flooding related impacts. The Team referenced major events (with no date specified) in which all roads experienced either overtopping or damage, with the key exception that Brake Hill Road and Tannery Road were reported as being under water but not damaged once flooding subsided. In contrast, other locations were discussed as recurring problem areas tied to undersized or overwhelmed drainage, including Vessel Rock Road and Church Street, and flooding/erosion concerns along Surrey Road, particularly where water has crossed the roadway during flash events near the depot area and other low points.

Figure 9 Belvedere Road (L), Church Street (R) May 2012

4.3.3 Future Conditions

The Fifth National Climate Assessment has found that extreme precipitation events (defined as events with the top 1% of daily precipitation accumulations) are increasing in the Northeast.

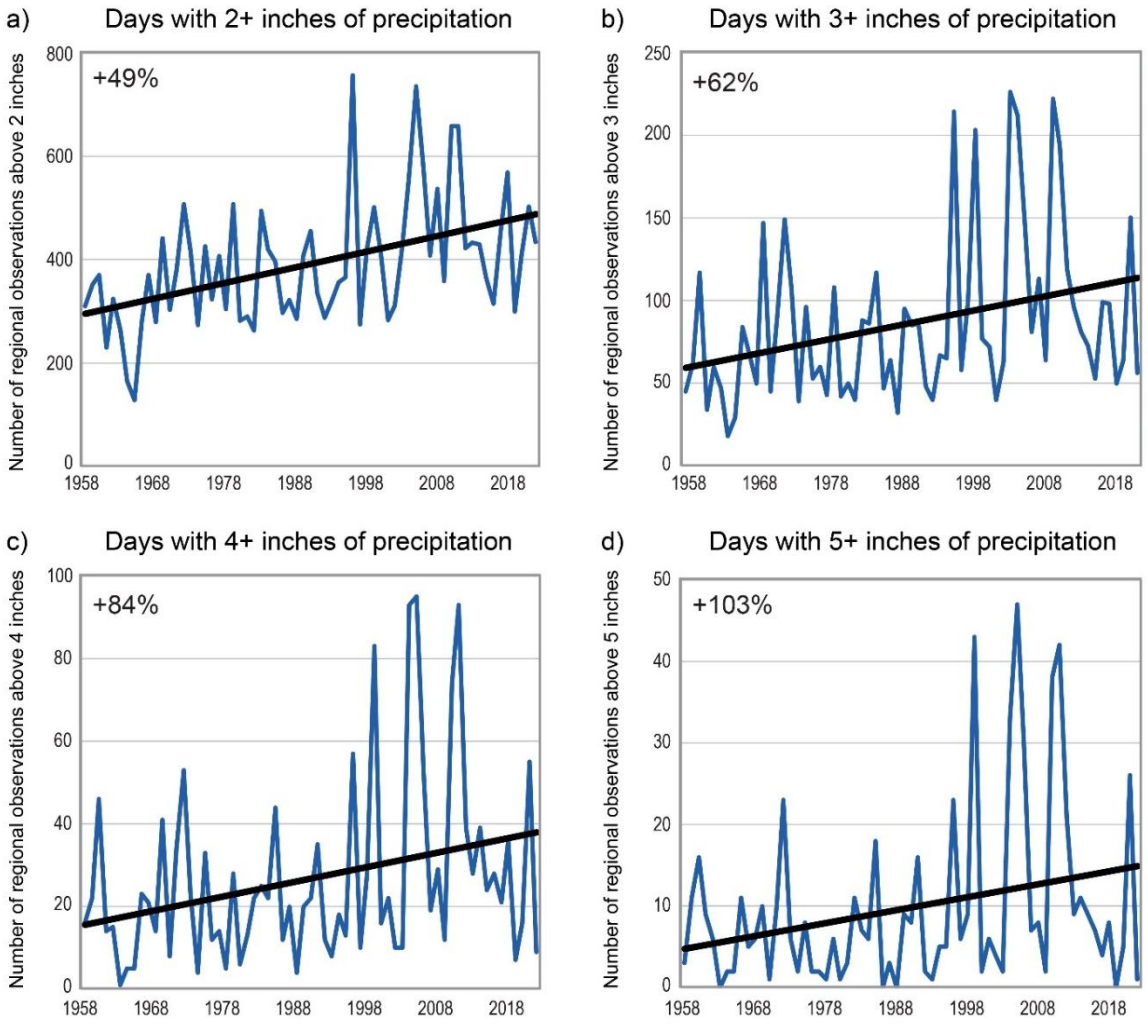


Figure 10 Trends in Extreme Precipitation in the Northeast[15]

Data collected from 10 weather stations distributed throughout the state and analyzed as part of New Hampshire Climate Assessment 2021 help explain what New Hampshire may expect from changes in weather patterns. A weather station in Keene was the closest in geographic proximity that offered a historical perspective as well as projections. The assessment found that from 1901 to 1960, the Keene station measured an average of 6.9 days per year where over an inch of liquid precipitation fell. The average number of days where over 2 inches of liquid precipitation fell in 24 hours was measured to be 0.7. The average amount of liquid precipitation on the wettest day of the year during this period was determined to be 2.2 inches. For the period of 1991 to 2020, the Keene station recorded an average of 10.9 days per year where over an inch of liquid precipitation fell, which represents an increase of 4.1 days from the prior period. The average number of days where more than 2 inches of liquid precipitation fell within 24 hours was determined to be 1.8, an increase of 0.8 days compared to the 1901-1960 period. For the 1991 to 2020 period, on average, there was 2.7 inches of liquid precipitation measured to fall within a 24-

[15] https://nca2023.globalchange.gov/chapter/21/#fig-21-1

hour period, which is an increase of 0.6 inches from the 1901 to 1960 period. The data recorded at the Keene station over these yearly ranges suggests an increase in the number and the severity of extreme precipitation events, which may present a risk of increased vulnerability. Looking into the future, extreme precipitation events (defined as the number of days with more than 1 inch of precipitation falls in 24 hours) will increase by 0.5 days per year between 2010-2039 under a low emissions scenario and by 0.6 days per year under a high emissions scenario.

4.3.4 Potential Occurrences & Impacts

Flooding of wetland and intermittent streams has occurred annually in Gilsum due to accumulation of heavy rain, runoff, and spring thaw. Occasional road repair is required due to spring storm patterns, plugged culverts during spring runoff and mud season.

Planning Team discussions identified limited but notable development-related changes with potential implications for future hazard risk. The primary concern raised was the increased likelihood of accessory dwelling units (ADUs) being constructed in flood-prone areas. Recent state legislation allows one ADU by right on parcels with single-family dwellings, which reduces the level of local review typically applied to new accessory residential units. While this change does not create new development pressure on previously undeveloped land, it may result in additional residential units and increased exposure of people and property within areas already subject to flooding. The Planning Team noted that, over time, incremental increases in residential intensity within flood-prone areas could elevate flood risk and complicate emergency response and recovery, underscoring the importance of continued coordination between land use regulations, floodplain management, and hazard mitigation strategies.

The Planning Team identified the following conditions and vulnerabilities associated with flooding events:

The EOC / Fire Station is vulnerable to flooding.
Vital records protection has the potential for damage due to moisture and flooding.
Heavy rainfall and stormwater runoff, cause recurring roadside erosion and washouts on certain road segments, indicating localized slope and drainage instability that can damage road infrastructure and restrict access during major storm events.
The Town Garage is vulnerable to flooding. Access is limited by catastrophic flooding events (NH 10 closure).
The Town Offices and Library are vulnerable to limited access due to flooding. The food pantry, located at the Town Offices, is also vulnerable.
Surry Road, a secondary evacuation route, is vulnerable to flooding.
NH 10, primary access is vulnerable to flooding throughout town.
Bank erosion during high-flow events affects certain stream and riverbank areas, particularly where invasive vegetation reduces root stability.
Sediment movement during storms contributes to drainage blockages and requires recurring cleanup.
New effective FIRMs will be released soon, Floodplain Ordinance will need updating.

Invasive species growth blocks culverts and contributes to flooding and washouts. NFIP may be under subscribed due to lack of program knowledge.
Flood-prone locations along the Ashuelot River and tributaries are vulnerable to overtopping and bank erosion during tropical rainfall.

4.4 HURRICANE / TROPICAL STORM: HIGH RISK

A tropical cyclone is the generic term for a non-frontal synoptic scale low-pressure system over tropical or sub-tropical waters with organized convection (i.e., thunderstorm activity) and defined cyclonic surface wind circulation. Once formed, a tropical cyclone is maintained by the extraction of heat energy from the ocean at high temperature and heat export at the low temperatures of the upper troposphere.[16]

There are several stages throughout the life cycle of a tropical cyclone:[17]

- Potential Tropical Cyclone: Term used by the National Hurricane Center (NHC) in advisory products to describe a disturbance that is not yet a tropical cyclone, but which poses the threat of bringing tropical storm or hurricane conditions to land areas within 48 hours. This is a new term that was introduced by the NHC in the summer of 2017.[18]
- Tropical Disturbance: A tropical disturbance is a cluster of showers and thunderstorms that flares up over the tropics. It is typically about 100 to 300 miles in diameter and generally moves westward. Tropical disturbances last for more than 24 hours, so there's a clear distinction between diurnal convection and tropical disturbances. Lacking a closed circulation of winds, tropical disturbances do not qualify as tropical cyclones.
- Tropical Storm: Once the maximum sustained winds of a developing tropical cyclone reach 34 knots (39 MPH), the low-pressure system is typically called a tropical storm and is assigned a formal name. The tropical cyclone maintains a tropical-storm status as long as its maximum sustained winds are above 34 knots and less than 64 knots (74 MPH).
- Hurricane: Once a tropical cyclone's maximum sustained winds reach 64 knots (74 MPH), the storm becomes a hurricane (in the North Atlantic and Northeast Pacific Ocean basins).
- Major Hurricane: A tropical cyclone with maximum stained winds of 96 knots (111 MPH) or higher.
- Post-tropical Cyclone: A former tropical cyclone, this term is used to describe a cyclone that no longer possess the sufficient tropical characteristics to be considered a tropical cyclone. These post-tropical cyclones often undergo an extratropical transition and form

[16] Glossary of NHC Terms
[17] Quick Guide to the Stages of Tropical Cyclones
[18] Update on National Hurricane Center Products and Services for 2017; 20170309_pa_2017SeasonChanges.pdf

frontal boundaries. Post-tropical cyclones can continue carrying heavy rains and high winds and cause storm surge.

A subtropical cyclone is a non-frontal low-pressure system that has characteristics of both tropical and extratropical cyclones. Like tropical cyclones, they are non-frontal, synoptic-scale cyclones that originate over tropical or subtropical waters and have a closed surface wind circulation about a well-defined center. In addition, they have organized moderate to deep convection, but lack a central dense overcast. Unlike tropical cyclones, subtropical cyclones derive a significant proportion of their energy from baroclinic sources and are generally cold-core in the upper troposphere, often being associated with an upper-level low or trough. In comparison to tropical cyclones, these systems generally have a radius of maximum winds occurring relatively far from the center (usually greater than 60 n mi), and generally have a less symmetric wind field and distribution of convection.[19]

4.4.1 Extent

One measure of the extent (or relative intensity) of tropical storms and hurricanes is the Saffir-Simpson Hurricane Wind Scale, a 1 to 5 rating system based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous and require preventative measures.

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.

[19] Glossary of NHC Terms

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
3 (major)	111-129 mph 96-112 kt 178-208 km/h	**Devastating damage will occur:** Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	**Catastrophic damage will occur:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	**Catastrophic damage will occur:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Table 11 Saffir-Simpson Hurricane Wind Scale[20]

4.4.2 Past Events

According to historical hurricane tracks, the highest magnitude tropical storm to pass through Cheshire County at a Category 1 hurricane was Gloria in 1985.

Hazard	Date	Location	Comments
Hurricane	September 21, 1938	Southern New England	Flooding caused damage to road network and structures. 13 deaths, 494 injured throughout NH. Disruption of electric and telephone services for weeks. 2 billion feet of marketable lumber blown down. Total storm losses of $12,337,643 (1938 dollars). 186 mph max winds.
Hurricane (Carol)	August 31, 1954	Southern New England	Category 3, winds 111-130 mph. Extensive tree and crop damage in NH, localized flooding.

[20] Saffir-Simpson Hurricane Wind Scale (noaa.gov)

Hazard	Date	Location	Comments
Hurricane (Edna)	September 11, 1954	Southern New England	Category 3 in Massachusetts. Heavy rain in New Hampshire.
Hurricane (Donna)	September 12, 1960	Southern and Central NH	Category 3 (Category 1 in NH). Heavy flooding in some parts of the State.
Tropical Storm (Daisy)	October 7, 1962	Coastal NH	Heavy swell and flooding along the coast.
Tropical Storm (Doria)	August 28, 1971	New Hampshire	Center passed over NH resulting in heavy rain and damaging winds.
Hurricane (Belle)	August 10, 1976	Southern New England	Primarily rain with resulting flooding in New Hampshire. Category 1.
Hurricane (Gloria)	September, 1985	Southern New England	Category 2, winds 96-110 mph. Electric structures damaged; tree damages. Heavy rains, localized flooding, and minor wind damage in New Hampshire.
Hurricane (Bob)	August 19, 1991	Southern New England	Structural and electrical damage in region from fallen trees. 3 people were killed and $2.5 million in damages were suffered along coastal New Hampshire. Federal Disaster FEMA-917-DR.
Hurricane (Edouard)	September 1, 1996	Southern New England	Winds in NH up to 38 mph and 1 inch of rain along the coast. Roads and electrical lines damaged.
Tropical Storm (Floyd)	September 16-18, 1999	Southern New England	FEMA DR-1305-NH. Heavy Rains.
Tropical Storm (Tammy)	October 5-13, 2005	East Coast of US	Remnants of Tammy contributed to the October 2005 floods which dropped 20 inches of rain in some places in NH.
Tropical Storm (Irene)	2011	New England states	FEMA Disaster Declaration #DR-4026 and EM-3333.

Hazard	Date	Location	Comments
Tropical Storm (Sandy)	Oct. 26 to Nov. 8, 2012	Eastern United States	FEMA Disaster Declaration # DR 4095; NH Counties that received the most damage were Belknap, Carroll, Coos, Grafton, Rockingham, and Sullivan. No significant local damage to structures and no services needed. Some minor power outages were noted.
Tropical Storm	8/4/2020	Cheshire County	No damages, injuries or deaths were reported

Table 12 Past Hurricane and Tropical Storm Events

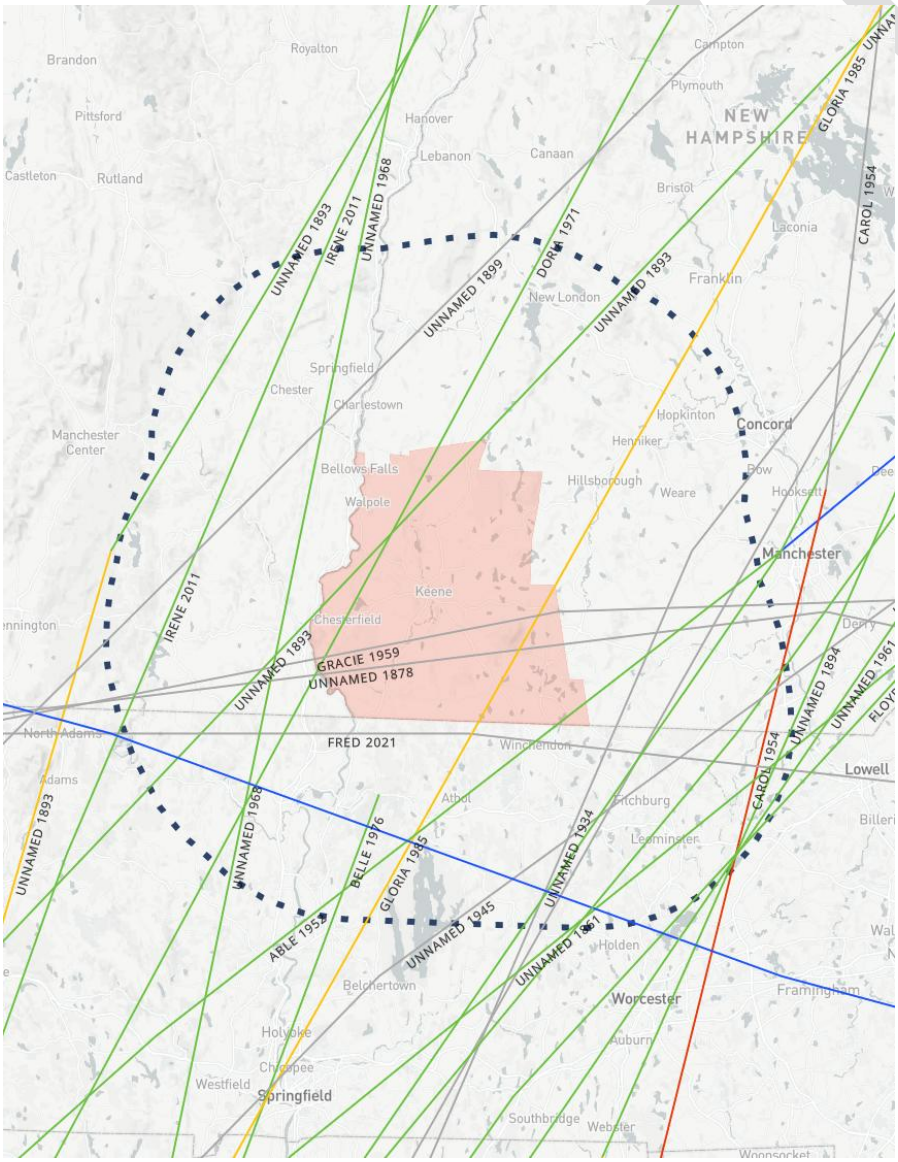


Figure 11 NOAA Hurricane Tracks (within 20 miles of Cheshire County)

4.4.3 Future Conditions

There have been recent increases in tropical cyclone occurrences, however it is unclear whether the change is due to new observation methods.[21]

4.4.4 Potential Occurrences & Impacts

A major hurricane can cause significant damage to the community. Most of the damage is caused by high water and high winds. Gilsum's inland location in southwestern New Hampshire reduces the risk of extremely high winds that are associated with hurricanes; however, tropical storms have occurred. This is a town-wide risk. A severe event could cause injury or death, damage to property, and disruption of utilities.

The Planning Team identified the following conditions and vulnerabilities associated with hurricanes and tropical storms:

Heavy rainfall and stormwater runoff, cause recurring roadside erosion and washouts on certain road segments, indicating localized slope and drainage instability that can damage road infrastructure and restrict access during major storm events. Such as Route 10 between Riverside Drive and Eaton Hill Road, Route 10 between Oak Drive and the Keene town line, Alstead Hill Road between Whitney Stage Road and Hayward Brook Drive, Banks Road at Culvert/Bridge, and low-lying segments near the Ashuelot River corridor. These washouts disrupt travel, increase maintenance costs, and create access challenges for emergency vehicles.
Strong winds and ice storms cause limb and trees to fall along wooded road corridors, resulting in blocked travel routes, infrastructure damage, and restricted emergency access. Treefall onto power lines also causes widespread and prolonged power outages, with cascading impacts on residents and municipal operations. This has occurred in wooded corridors near Centennial Hill, along stretches of Eaton Hill Road, and in forest-adjacent areas near the Ashuelot River.
Flood-prone locations along the Ashuelot River and tributaries are vulnerable to overtopping and bank erosion during tropical rainfall.

4.5 Infectious Disease: Low Risk

Infectious diseases are illnesses caused by organisms such as bacteria, viruses, fungi, or parasites. Many organisms live in and on our bodies. They are normally harmless or even helpful, but under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person, some are transmitted by bites from insects or animals, and others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild infections often get better on their own without treatment, while some life-threatening infections may require hospitalization (Mayo Clinic, n.d.).

[21] Climate Change Indicators: Tropical Cyclone Activity | US EPA

Some diseases are consistently present in a community and, according to the United States Centers for Disease Control and Prevention (CDC), the "baseline" or "endemic level" for these diseases is the number of people normally infected in an underlying population. This number may be more cases than is desired, but it is the typical amount observed in the population. Without intervention to reduce the amount of disease, the disease may continue to occur at this level indefinitely. Thus, the baseline level is often regarded as the expected level of the disease. While some diseases are so rare in each population that a single case warrants an epidemiologic investigation (e.g., anthrax, rabies, plague, polio), there are other diseases that occur more commonly so that only deviations from the norm (i.e., seeing more cases than expected) warrants investigation or could be an indicator of an exposure event(s) or ongoing exposure (e.g., legionella) (CDC, n.d.).

Epidemics occur when an agent (the organism) and susceptible hosts are present in adequate numbers, and the agent can be effectively passed from a source to the susceptible people (similar to dose – response relationship). More specifically, an epidemic may result from:

- A recent increase in amount of virulence of the agent,
- The recent introduction of the agent into a setting where it has not been before,
- An enhanced mode of transmission so that more susceptible persons are exposed,
- A change in the susceptibility of people's response to the agent, and/or
- Factors that increase exposure or involve introduction through new portals of entry.

Epidemics that are caused by infectious diseases, are typically transmitted through food, water, the environment, person-to-person or animal-to-person (e.g., zoonotic infections). Epidemics can also be caused by noninfectious diseases, such as a chemical exposure, that cause increased rates of illness. Infectious diseases that may cause an epidemic can be broadly categorized into the following groups:

- Foodborne (e.g. Salmonellosis, Escherichia coli)
- Water (e.g., Cholera, Giardiasis, Legionellosis)
- Vaccine Preventable (e.g., Measles, Mumps)
- Sexually Transmitted (e.g., Human Immunodeficiency Virus, Syphilis)
- Person-to-Person (e.g., Tuberculosis, Meningitis)
- Healthcare associated (e.g., some opportunistic fungal infections and antimicrobial resistant infections).
- Vector borne disease (e.g., Lyme, West Nile Virus, Powassan Virus)
- Zoonotic (e.g., Rabies, Psittacosis, Avian influenza)
- Opportunistic fungal and fungal infections (e.g., Candidiasis)

An epidemic may also result from a bioterrorist event in which an infectious agent is released into a susceptible population, often through an enhanced mode of transmission, such as aerosolizing (inhalation of small infectious disease particles).

Regarding foodborne and waterborne outbreaks, the epidemic hazard involves the safety of the food and water supply. This food and water safety may be jeopardized because of a fire, flood, hurricane, earthquake, or other natural, technological or man-made disaster (e.g., construction and water pipe damage perpetuating growth of legionella bacteria).

4.5.1 Extent

The magnitude and severity of infectious diseases is described by its speed of onset (how quickly people become sick or cases are reported) and how widespread the infection is. Some infectious diseases are inherently more dangerous and deadly than others, but the best way to describe the extent of infectious diseases relates to the disease occurrence:

- Endemic - Constant presence and/or usual prevalence of a disease or infection agent in a population within a geographic area
- Hyperendemic - The persistent, high levels of disease occurrence
- Cluster - Aggregation of cases grouped in place and time that are suspected to be greater than the number expected even though the expected number may not be known
- Epidemic - A sudden increase in the number of cases of a disease above what is normally expected
- Outbreak - The same as epidemic, but over a much smaller geographical area
- Pandemic - Epidemic that has spread over several countries or continents, usually affecting many people

4.5.2 Past Events

According to the State of New Hampshire Hazard Mitigation Plan, annual infectious disease hazards range from annual norovirus, influenza and foodborne illnesses to outbreaks of Mpox (2022), Hepatitis A (2019-2020), Legionella (2018) and other diseases.[22] Illnesses with notable recent impacts in Gilsum include COVID-19 (144 cases in Gilsum and 137 deaths in Cheshire County, and Lyme Disease (2024 1,457 cases in NH[23]).

Declaration Title	Declaration Date	Declaration Type	Incident Subcategory	Incident Period	Disaster Number
COVID-19 Pandemic	4/3/2020	Major Disaster Declaration (DR)	Biological	Jan 20, 2020 - May 11, 2023	4516
COVID-19	3/13/2020	Emergency Declaration (EM)	Biological	Jan 20, 2020 - May 11, 2023	3445

[22] New Hampshire State Hazard Mitigation Plan (2023)
[23] Reportable Infectious Diseases in New Hampshire, 2020-2025

Table 13 Federal Disaster Declarations Including Hillsborough County[24]

Declaration Title	Declaration Date	Declaration Type	Incident Period	Executive Order
Public Health Outbreak	4/3/2020	Governor Executive Order - State of Emergency	3/13/2020 - 6/11/2021	2020-04

Table 14 State Disaster Declarations Including Hillsborough County

4.5.3 Future Conditions

Vector-borne diseases transmitted by mosquito and tick bites are expected to rise in the future due to milder winters with fewer days of frost. The growth of algae or cyanobacteria is also more common due to warming water temperatures and increased nutrient levels.[25]

4.5.4 Potential Occurrences & Impacts

This is a town wide event; therefore, no specific locations are listed. The magnitude, severity and impact of an infectious disease is described by its speed of onset (how quickly people or animals become sick or cases are reported) and how widespread the infection is. The Planning Team identified the following conditions and vulnerabilities associated with infectious disease risk in Gilsum:

Illnesses with notable recent impacts in Gilsum include COVID-19 (144 cases in Gilsum and 137 deaths in Cheshire County [nearly 20,000 cases]) , and Lyme Disease (2024 1,457 cases in NH) Lyme disease by ticks, EEE from mosquitos can have an impact on humans and animals.
Invasive vegetation contributes to expanded tick habitat, increasing the potential for tick-borne illnesses in Gilsum.

4.6 Landslide / Erosion: Low Risk

Gilsum may be impacted by sheet and gully or fluvial erosion. Sheet erosion is the removal of topsoil from land surfaces by rainfall and overland flow on slopes, fields, construction sites, and disturbed land. Gully / fluvial erosion is the wearing away of streambanks due to flowing water in rivers or streams.

A landslide is the downward or outward movement of earth materials on a slope that reacts to a combination of the force of gravity and a predisposed weakness in the material that allows the sliding process to initiate. The broad classification of landslides includes mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides and earth flows. In Gilsum, landslide risk is most closely associated with rockfall, a specific type of landslide in which individual rocks or rock fragments detach from steep slopes or exposed ledge and fall or bounce downslope. Unlike soil-based landslides, rockfall events are typically localized and episodic and are commonly triggered by freeze–thaw cycles, heavy rainfall, or long-term weathering of exposed bedrock.

[24] Disaster Declarations for States and Counties | FEMA.gov
[25] New Hampshire's Cyanobacteria Plan

Rockfall hazards are most often associated with transportation corridors constructed adjacent to steep slopes or ledge. Landslides may be formed when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock. Although gravity becomes the primary reason for a landslide once a slope has become weak through a process such as the one just described, other causes can include:[26]

- Erosion by rivers or the ocean that creates over-steepened slopes through erosion of the slope's base. In the case of rivers, this can occur as a result of flash flooding
- Rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- Earthquake creates stress that makes weak slopes fail—earthquakes of 4.0 magnitude and greater have been known to trigger landslides
- Wildfires (loss of vegetation)
- Excess weight from accumulation of rain or snow, stockpiling of rock or ore, the formation of waste piles, or building of man-made structures may stress weak slopes to the point of failure

4.6.1 Extent

The Bank Erosion Hazard Index (BEHI**)** is a field-based method used to evaluate the *erodibility potential* of streambanks at either a specific location or along a study reach. The assessment is based on several observable bank characteristics, including top of bank and bankfull height, rooting depth, root density, bank angle, percent bank protection, bank composition, and material stratification. When combined with field-estimated Near Bank Shear Stress (NBS) ratings, BEHI can be used with established bank erodibility curves to estimate potential erosion quantities and rates. These curves graph combinations of BEHI and NBS scores against predicted erosion rates (typically expressed in tons per year).[27]

However, BEHI is a risk and vulnerability index—it is not intended to quantify erosion that has already occurred, such as from a specific storm event. To document actual erosion losses, especially following storms or flooding, other methods are required, such as:

- Cross-section resurveys using monumented benchmarks
- Photogrammetry (e.g., drone-based Structure-from-Motion)
- Sediment volume calculations or erosion pin monitoring

Repeated measurements over time allow practitioners to validate predicted erosion rates and detect changes in bank stability.

While no universally accepted standard or scientific scale has been developed for measuring the severity of all landslides, severity can be measured several other ways:

[26] Landslide Hazards Program | U.S. Geological Survey

[27] https://chesapeakestormwater.net/wp-content/uploads/2022/07/11447-3.pdf

- Steepness/grade of the Slope (measured as a percent)
- Geographical Area
    - Measured in square feet, square yards, etc.
    - More accurately measured using LiDAR/GIS systems
- Earthquake, either causing the event or caused by the event (measured using the Moment Magnitude Intensity or Mercalli Scale)

There are also multiple types of landslides[28]:

- Falls: A mass detaches from a steep slope or cliff and descends by free-fall, bounding, or rolling
- Topples: A mass tilts or rotates forward as a unit
- Slides: A mass displaces on one or more recognizable surfaces, which may be curved or planar
- Flows: A mass moves downslope with a fluid motion. A significant amount of water may or may not be part of the mass

Like flooding, landslides are unique in how they affect different geographic, topographic, and geologic areas. Therefore, consideration of a multitude of measurements is required to determine the severity of the landslide event.

Figure 12 Belvedere Road May 2012

4.6.2 Past Events

Erosion events have occurred in Gilsum, primarily in conjunction with flooding and storm-related washouts. These events have typically affected roadways, culverts, and access routes rather than buildings or critical facilities. To date, erosion- and landslide-related impacts in Gilsum have been limited to transportation infrastructure and temporary access disruptions.

The Hazard Mitigation Planning Team also identified localized slope-related concerns associated with steep terrain. In particular, sections of NH Route 10 are posted with falling rock warning signage, indicating the presence of recurring rockfall hazards along steep

[28] CHAPTER 10 - LANDSLIDE HAZARD ASSESSMENT

roadway slopes. While these conditions have not resulted in damage to structures, they represent a localized public safety and maintenance concern requiring ongoing monitoring and response.

4.6.3 Future Conditions

An increase in extreme precipitation events increases the likelihood of landslide and erosion events. Data collected from 10 weather stations distributed throughout the state and analyzed as part of New Hampshire Climate Assessment 2021 help explain what New Hampshire may expect from changes in weather patterns. A weather station in Keene offered a historical perspective as well as projections. The assessment found that from 1901 to 1960, the Keene station measured an average of 6.9 days per year where over an inch of liquid precipitation fell. The average number of days where over 2 inches of liquid precipitation fell in 24 hours was measured to be 0.7. The average amount of liquid precipitation on the wettest day of the year during this period was determined to be 2.2 inches. For the period of 1991 to 2020, the Keene station recorded an average of 10.9 days per year where over an inch of liquid precipitation fell, which represents an increase of 4.1 days from the prior period.

The average number of days where more than 2 inches of liquid precipitation fell within 24 hours was determined to be 1.8, an increase of 0.8 days compared to the 1901-1960 period. For the 1991 to 2020 period, on average, there was 2.7 inches of liquid precipitation measured to fall within a 24-hour period, which is an increase of 0.6 inches from the 1901 to 1960 period. The data recorded at the Keene station over these yearly ranges suggests an increase in the number and the severity of extreme precipitation events, which may present a risk of increased vulnerability. Looking into the future, extreme precipitation events (defined as the number of days with more than 1 inch of precipitation falls in 24 hours) will increase by 0.5 days per year between 2010-2039 under a low emissions scenario and by 0.6 days per year under a high emissions scenario.

4.6.4 Potential Occurrences & Impacts

Erosion in Gilsum primarily affects roadways and access routes and is most often associated with heavy rainfall, stormwater runoff, and flooding events. Improperly maintained roadside drainage systems and undersized culverts contribute to recurring roadside erosion, washouts, and undercut roadways. The extent of future erosion-related damage is difficult to predict, as impacts vary depending on roadway location, slope, soil conditions, and the capacity of existing drainage infrastructure. In addition to erosion, localized slope instability and rockfall pose a limited but notable risk in areas where roadways are constructed adjacent to steep slopes or exposed ledge. Rockfall events typically involve the detachment of individual rocks or rock fragments during prolonged wet conditions or freeze–thaw cycles and may temporarily obstruct roadways or restrict access. To date, erosion- and landslide-related impacts in Gilsum have been mainly confined to transportation infrastructure, with physical injuries, damage to buildings, or long-

term service interruptions considered unlikely. The Planning Team identified the following conditions and vulnerabilities associated with landslide and erosion events:

Steep slopes in the Centennial Hill area have been identified as potentially vulnerable to movement during prolonged wet conditions.
Heavy rainfall and stormwater runoff, cause recurring roadside erosion and washouts on certain road segments, indicating localized slope and drainage instability that can damage road infrastructure and restrict access during major storm events.
Surry Road, a secondary evacuation route, is vulnerable to flooding and erosion.
Bank erosion during high-flow events affects certain stream and riverbank areas, particularly where invasive vegetation reduces root stability.
Flood-prone locations along the Ashuelot River and tributaries are vulnerable to overtopping and bank erosion during tropical rainfall.

4.7 LIGHTNING: MEDIUM RISK

Lightning is a visible electric discharge produced by a thunderstorm. The discharge may occur within or between clouds, between a cloud and the air, between a cloud and the ground, or between the ground and a cloud.[29]

There are roughly 5-10 times as many cloud flashes as there are cloud to ground flashes. There are two types of ground flashes: negative polarity (those that occur because of electrification in the environment) and positive polarity (charge build up on tall structures, airplanes, rockets, and towers on mountains). Negative polarity lightning goes from cloud to ground while positive polarity lightning goes from ground to cloud.

Thunder always accompanies lightning but may or not be heard depending on the position of the observer. As lightning passes through the air, it heats the air to a temperature of 18,000-60,000 degrees Fahrenheit. This causes the air to rapidly expand and contract creating a sound wave known as thunder. Thunder can be heard up to 10 miles away from the strike. At longer distances thunder sounds like a low rumble as the higher frequency sounds are absorbed by the environment.

4.7.1 Extent

While weather forecasters can and do forecast the likelihood of intense lightening activity, it is impossible to forecast individual strikes as lightning is so widespread, frequent, and random during a storm, as there is still not a full scientific understanding of the cloud electrification processes. Lightning strikes can be measured against each other through electrical calculations of the voltage and amperage that was discharged (the higher the voltage and amperage, the stronger and more severe the individual strike is). For the purposes of emergency management,

[29] http://www.lightningsafety.noaa.gov/science/science_thunder.htm

all lightning strikes are viewed as equally dangerous regardless of their amps or volts, as any lightning strike is strong enough to cause infrastructure damage, injury, or death.

Research shows that the severity of a storm is roughly correlated to lightning frequency; however, there is significant regional variability, and no direct correlation has yet been found.[30] That said, there appears to be a general increase in the frequency of lightning as a thunderstorm becomes more intense (e.g., larger in area and vertical growth, more organized, hail producing, etc.). There is currently not a widely adopted scale for measuring lightning storms in the northeastern United States. When developing fire weather forecasts, the National Weather Service measures the severity of lightning storms using the Lightning Activity Level (LAL) which is based on cloud and storm development as well as number of lightning strikes in a 5-minute period.

Lightning hazards are categorized according to the Lightning Activity Level (LAL) using cloud conditions and precipitation, and an estimate of lightning strikes per every 15 minutes.

LAL	Cloud & Storm Development	Lightning Strikes/15 min.
1	No thunderstorms.	---
2	Cumulus clouds are common but few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. Light rain will occasionally reach the ground. Lightning is very infrequent.	1 - 8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	9 - 15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than 3 must occur within the observation area. Moderate rain is common & lightning is frequent.	16 - 25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent and intense.	>25
6	Similar to LAL 3 but thunderstorms are dry.	16 - 25

Table 15 Lightning Activity Level (Source: NOAA)

[30] The Relationship between Severe Storm Reports and Cloud-to-Ground Lightning Polarity in the Contiguous United States from 1989 to 1998 in: Monthly Weather Review Volume 131 Issue 7 (2003)

4.7.2 Past Events

Cheshire County and the Census tract containing Gilsum received a rating of Relatively High for Lightning Risk according the FEMA's National Risk Index. This finding was informed by a database of cloud-to-ground lightning strikes from 1995 to 2023.[31] There have been no lightning strikes that have caused damage to structures or injuries since the previous hazard mitigation plan that have been recorded. Since New Hampshire's first declaration in 1953, there were no State or federal major disaster declarations in Cheshire County specific to lightning.

4.7.3 Future Conditions

It is highly likely that a lightning event will occur within the next 10 years (67%-100% likelihood of occurrence). Lightning strikes are highly seasonal and occur more often when it is hotter. Some research indicates there will be more lightning strikes in the continental United States as temperature increases.[32]

4.7.4 Potential Occurrences & Impacts

Residents and visitors to the New Hampshire area are more vulnerable to being struck by lightning because of the activities with which they are involved, particularly on those warm summer days when lightning is most likely to occur. More likely to be affected are structures and utilities, often resulting in structure fires and power outages. High elevations and areas around water and wetlands may be more susceptible to lighting strike incidents. Lightning could strike tall trees anywhere in Gilsum and could potentially start wildfires in periods of drought or create telephone and power outages. Church steeples are also at risk.

The Planning Team identified the following conditions and vulnerabilities associated with lightning hazards in Gilsum:

Some town facilities could be damaged by a lightning strike, surge protection and grounding systems should be evaluated.
The Town lacks a consistent understanding of locations that experience repeat lightning-related damage, limiting its ability to identify patterns, assess risk, and prioritize mitigation efforts.

4.8 Severe Winter Weather: High Risk

The State of New Hampshire experiences four types of severe weather during the winter months, which usually bring snow, high winds, and/or rain depending on temperatures:

Heavy Snow In forecasts, the amount of snow that is expected to fall is expressed as a range of values, such as 10-12". There can be considerable uncertainty regarding snowfall values during

[31] National Risk Index Technical Documentation (fema.gov)
[32] Projected increase in lightning strikes in the United States due to global warming | Science

heavy snowstorms and phrases such as "...up to 20 inches" or "12 inches or more" can be utilized. Heavy snow is generally defined as[33]:

- Snowfall accumulating to 4" – 6" or more in depth within 12 hours or less; or
- Snowfall accumulating to 6" – 8" or more in depth within 24 hours or less

These amounts are determined to be significant enough to disrupt or slow transportation systems and public safety departments' response capability.

Blizzard A blizzard is a snowstorm with the following conditions that is expected to prevail for a period of three hours or longer[34]:

- Sustained wind or frequent gusts to 35mph or greater; AND,
- Considerable falling and/or blowing snow that frequently reduces visibility to less than one-quarter mile.

Snow Squall A snow squall is an intense, but limited duration, period of moderate to heavy snowfall, accompanied by strong, gusty surface winds, near zero visibilities and possibly lightning (generally moderate to heavy snow showers). Snow accumulation rates are significant but overall amounts are limited.

Sleet Sleet is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Heavy sleet is a relatively rare event defined as an accumulation of ice pellets covering the ground to a depth of one-half inch or more. Sleet can be extremely slick and hazardous to drive on compared to snow, but it doesn't drift or cause low visibilities.

Nor'easter A Nor'easter is a large cyclonic storm that tracks north/northeastward along the East Coast of North America. It is so named due to the northeasterly prevailing wind direction that occurs during the storm. While these storms may occur at any time of the year, they are most frequent and severe during the months of September through April. Nor'easters usually develop off the east coast between Georgia and New Jersey, travel northeastward, and intensify in the New England region. Nor'easters nearly always bring precipitation in the form of heavy rain and/or snow, as well as gale force winds, rough seas, and coastal flooding.[35]

New Hampshire (New England) is especially susceptible to strong Nor'easters during the winter as the polar Jet stream transports cold, arctic air southward across the northern central US. This airmass then moves eastward toward the Atlantic Ocean where it meets warm air from the Gulf

[33] NOAA's National Weather Service - Glossary
[34] NOAA's National Weather Service - Glossary
[35] http://www.nws.noaa.gov/om/winter/noreaster.shtml

of Mexico generating a strong low-pressure system. The warm waters of the Gulf Stream help keep the coastal waters off of New England relatively mild during the winter, which in turn helps warm the cold winter air over the water. The presence of the relatively warmer, moist air over the Atlantic and cold, dry Arctic air over the land provide the temperature contrast necessary to generate the strong frontal boundaries that help a Nor'easter intensify.

Ice Storm Ice storms typically occur with warm frontal boundaries, where warm air rises up and over a shallow mass of cold air near the earth's surface. When snow falls from clouds near just north of the warm frontal boundary, it will fall through the deep warm layer aloft first and melt completely into a liquid water droplet. As it passes through the shallow cold layer near the surface, the water droplet cools to the point of being supercooled (a liquid raindrop that remains a liquid at the freezing point). When these supercooled water droplets make contact with freezing surfaces on the ground, such as streets and walkways, they freeze on contact forming layers of ice. This process of freezing rain, when persistent over a long period of time, will form layers that may exceed over an inch thick in extreme cases.

Any accumulation of ice can present hazards; however, significant accumulations of ice (1/4" of mean radial ice thickness or greater) can pull down trees and utility lines resulting in loss of power and communications. Walking and driving also becomes very dangerous to almost impossible during an ice storm.[36]

4.8.1 Extent

One measure of the extent (or relative intensity) of severe winter weather is based on how much snow is falling (in inches) and how fast it is falling (inches per hour). The National Weather Service Winter Storm Warning criteria for the State of New Hampshire are as follows:

- 6" or more of snow expected in a 12-hour period; or,
- 9" or more of snow is expected in a 24-hour period.

NOAA has developed the Regional Snowfall Index (RSI) which is a snowfall impact scale that uses the area of snowfall, amount of snowfall, and population to attempt to quantify the societal impacts of a snowstorm.

Category	RSI Value	Description	Category	NESIS Value	Description
1	1–3	Notable	1	1—2.499	Notable
2	3–6	Significant	2	2.5—3.99	Significant
3	6–10	Major	3	4—5.99	Major

[36] NOAA's National Weather Service - Glossary

Category	RSI Value	Description	Category	NESIS Value	Description
4	10–18	Crippling	4	6—9.99	Crippling
5	18.0+	Extreme	5	10.0+	Extreme

Table 16 RSI & NESIS Description

The RSI is an evolution of the previous Northeast Snowfall Impact Scale (NESIS).[37]

4.8.2 Past Events

Cheshire County and Gilsum have experienced a large number of past severe winter weather events and related disaster declarations. Timber has been severely damaged. In recent history, Gilsum has not recorded any loss of life due to the extreme winter weather. Disaster Declarations are included in the following table.

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Ice Storm	December 17-20, 1929	New Hampshire	Unprecedented disruption and damage to telephone, telegraph, and power system. Comparable to 1998 Ice Storm (below).
Blizzard	February 14-17, 1958	New Hampshire	20-30 inches of snow in parts of NH.
Snow Storm	March 18-21, 1958	New Hampshire	Up to 22 inches of snow in south central NH.
Snow Storm	December 10-13, 1960	New Hampshire	Up to 17 inches of snow in southern NH.
Snow Storm	January 18-20, 1961	New Hampshire	Up to 25 inches of snow in southern NH.
Snow Storm	February 2-5, 1961	New Hampshire	Up to 18 inches of snow in southern NH.
Snow Storm	January 11-16, 1964	New Hampshire	Up to 12 inches of snow in southern NH.

[37] Regional Snowfall Index (RSI) | National Centers for Environmental Information (NCEI) (noaa.gov)

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Blizzard	January 29-31, 1966	New Hampshire	Third and most severe storm of 3 that occurred over a 10-day period. Up to 10 inches of snow across central NH.
Snow Storm	December 26-28, 1969	New Hampshire	Up to 41 inches of snow in west central NH.
Snow Storm	February 18-20, 1972	New Hampshire	Up to 19 inches of snow in southern NH
Snow Storm	January 19-21, 1978	New Hampshire	Up to 16 inches of snow in southern NH.
Blizzard	February 5-7, 1978	New Hampshire	New England-wide. Up to 25 inches of snow in central NH.
Ice Storm	Jan. 8-25, 1979	New Hampshire	Major disruptions to power and transportation.
Snow Storm	February, 1979	New Hampshire	President's Day storm.
Snow Storm	April 5-7, 1982	New Hampshire	Up to 18 inches of snow in southern NH.
Ice Storm	February 14, 1986	New Hampshire	Fiercest ice storm in 30 years in the higher elevations in the Monadnock region. It covered a swath about 10 miles wide from the MA border to New London.
Extreme Cold	Nov-Dec, 1988	New Hampshire	Temperature was below 0 degrees F for a month.
Ice Storm	March 3-6, 1991	New Hampshire	Numerous outages from ice-laden power lines in southern NH.
Snow Storm	1997	New Hampshire	Power outages throughout town due to heavy snowfall.

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Ice Storm	January 15, 1998	New Hampshire	Federal disaster declaration **DR-1199-NH**, 20 major road closures, 67,586 without electricity, 2,310 without phone service, $17+ million in damages to Public Service of NH alone.
Ice Storm	2004	New Hampshire	Ice storm resulted in treacherous travel throughout town.
Snow Storm	2006	New Hampshire	Power outages throughout town due to heavy snowfall.
Ice Storm	December 8, 2008	New Hampshire	Local power outage for 9-21 days; downed power lines, restricted access to homes, significant amount of downed timber.
Snow Storm	October 29-30, 2011	New Hampshire	FEMA Disaster Declaration # **DR-4049** (Hillsborough and Rockingham Counties). Severe snowstorm event. Snowfall 34" in a 24-hour period.
Snow Storm	Feb. 8-11, 2013	New Hampshire	FEMA Disaster Declaration # **DR-4105** $6,153,471 statewide. Severe winter storm and snowstorm. No impact on town services except for snow removal.
Snow Storm	November 2014	New Hampshire	"Thanksgiving Storm"- was declared the 4th largest power outage in NH history. Many communities received over 12" of snow. Locally - no injuries or structural damage. No impact on town services except for snow removal.
Snow Storm	Jan. 26-29, 2015	Hillsborough, Rockingham, and Strafford Counties, NH	FEMA Disaster Declaration # **DR-4049**; $4,939,215 Severe winter storm and snowstorm. No local impact.

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Snow Storm	March 14-15, 2017	Belknap, Carroll Counties, NH	FEMA Disaster Declaration # **DR-4316** $74,935; no local impact except for minor power outages.
Heavy Snow	1/4/2018	Cheshire County	The intense low brought heavy snow and high winds to much of the region, with blizzard conditions to the Seacoast area. In addition, the storm brought coastal flooding and erosion along the coast. The storm brought 10 to 15 inches of snow to much of New Hampshire with lesser amounts along the Connecticut River Valley.
Heavy Snow	2/7/2018	Cheshire County	Snowfall amounts ranged from 10 to 18 inches across most of the State with slightly less in the upper Connecticut River Valley.
Snow Storm	March 13-14, 2018	Carroll, Rockingham, and Strafford Counties, NH	FEMA Disaster Declaration # **DR-4371** $74,935; no local impact except for minor power outages.
Heavy Snow	1/20/2019	Cheshire County	Snowfall totals generally ranged from 6 to 10 inches.
Heavy Snow	3/3/2019	Western and Central Hillsborough County	Light snow began on the evening of the 3rd. As low pressure intensified off Cape Cod an intense band of snow developed northwest of the track. Parts of this band clipped southeast New Hampshire with snowfall rates of 1 to 2 inches per hour early in the morning on the 4th, especially near the Massachusetts border. Snow quickly ended by mid morning. Snowfall amounts ranged from 5 to 8 inches.
Heavy Snow	12/1/2019-12/3/2019	Cheshire County	Snowfall totals ranged from 6 to 12 inches by the morning of the 2nd, with storm total snowfall on the afternoon of the 3rd ranging

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
			from 12 inches near the Connecticut River to 24 inches in the eastern part of Cheshire County. Locally higher amounts in excess of 30 inches were measured from the Monadnocks south through Rindge.
Winter Storm	3/23/2020	Cheshire County	Snowfall rates approached one inch per hour at times in the evening, before tapering off quickly around midnight. Total snowfall ranged from 5 to 8 inches.
Winter Storm	12/5/2020-12/6/2020	Cheshire County	Snow totals ranged from around 3 inches in the Connecticut River Valley to as much as 12 inches in the higher terrain.
Winter Storm	12/17/2020	Cheshire County	Snowfall totals ranged from 12 to 24 inches.
Winter Storm	2/1/2021-2/2/2021	Cheshire County	Snowfall ranged from 8 to 12 inches.
Heavy Snow	4/15/2021-4/16/2021	Cheshire County	The heavy wet snow led to isolated power outages in the county that were quickly restored. Storm total snow ranged from 7 to 13 inches.
Winter Storm	1/17/2022	Cheshire County	Snowfall totals generally ranged from 5 inches near the lower elevations around Keene to as much as 10 inches near Mount Monadnock.
Winter Storm	1/29/2022	Cheshire County	Snowfall ranged from 8 inches in the higher terrain of the Monadnocks to 2 inches along the Connecticut River.
Winter Storm	2/25/2022	Cheshire County	Snowfall amounts ranged from 6 to 8 inches.

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Winter Storm	12/16/2022-12/17/2022	Cheshire County	Snowfall totals ranged from 4 inches around Keene, to as high as 18 inches in the Monadnocks.
Winter Storm	1/22/2023-1/23/2023	Cheshire County	Snowfall totals ranged from 6 inches in the Monadnocks to 16 inches near the Connecticut River.
Winter Storm	3/3/2023-3/4/2023	Cheshire County	Snowfall totals ranged from 5 to 9 inches.
Winter Storm	3/13/2023-3/15/2023	Cheshire County	Snowfall totals ranged from 9 inches in the valleys to more than 30 inches in the Monadnocks. Power outages were widespread where snowfall totals exceeded 10 inches, along with numerous downed trees and closed roads.
Winter Storm	1/6/2024-1/7/2024	Cheshire County	Snowfall totals ranged from 5 to 10 inches.
Winter Storm	3/23/2024	Cheshire County	Snowfall rates in excess of 1 inch per hour in the morning led to snowfall totals ranging between 4 and 13 inches.
Winter Storm	3/23/2024	Western and Central Hillsborough County	Snowfall rates in excess of 1 inch per hour in the morning led to snowfall totals ranging between 1 and 9 inches. Around 11:00 AM snow changed to freezing rain and began to rapidly accumulate near sunset. With around 0.50 inches glaze, power outages increased quickly after 8:00 PM, with over 30 percent of customers without power during the night.
Winter Storm	4/3/2024-4/4/2024	Cheshire County	Snowfall totals ranged from 4 inches in the Connecticut Valley to 10 inches near the Monadnocks. Key Impacts: Heavy snow, scattered power outages, transportation

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
			delays. No damages, injuries or deaths were reported locally. **FEMA Disaster Declaration #4799** as Severe Winter Storm and Flooding, (assistance not approved yet). DR counties: Belknap, Carroll, Grafton, Rockingham & Sullivan.
Winter Storm	1/19/2025 - 1/20/2025	Cheshire County	Snow overspread the Monadnocks in the late afternoon and early evening of the 19th. A band of steady moderate snow developed and remained over the area into the early morning of the 20th. Snowfall totals ranged from 5 to 7 inches. Key Impacts: Heavy snow.
Winter Storm	2/8/2025 - 2/9/2025	Cheshire County	Snow overspread the area in the late evening on the 8th. Strong warm air advection resulted in a broad area of steady snow. A focused band of heavier snow lifted through the Monadnock region, with a dry slot eventually approaching and leading to lighter snowfall. At times a very deep snow growth zone also led to periods of extreme snow to liquid ratios, at times exceeding 20 to 1. Snow ended during the morning of the 9th. Snowfall totals ranged from 5 to 8 inches. Key Impacts: Heavy snow.
Winter Storm	2/15/2025 - 2/16/2025	Cheshire County	Light snow overspread the area in the evening on the 15th. This continued into the morning of the 16th when an area of strong warm air advection resulted in a laterally translating band of moderate to heavy snow. This swept through the region by the afternoon of the 16th. Periods of snow continued into the late evening of the 16th, mixing at times with sleet and/or freezing rain within the mid level dry

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
			slot. Snowfall totals ranged from 6 to 8 inches. Key Impacts: Heavy snow.

Table 17 Severe Winter Weather Events, Includes Disaster Declarations

The winter storm of March 2023 yielded nearly three feet of snow locally, bringing down branches and powerlines (see cover photo).

Figure 13 Snow totals March 2023 Winter Storm Gilsum

4.8.3 Future Conditions

New Hampshire Climate Assessment 2021 noted that winters will be warmer in the future and both snowfall and snow cover are likely to decrease (22-42% in nearby Keene by 2099).[38] Minimum temperatures during the winter will rise faster than those in other seasons leading to fewer days below 0 degrees (5.0-6.0 fewer over the period 2010-2039 compared to the historical average) as well as below 32 degrees (11.8-12.9 fewer 2010-2039 compared to historical).

[38] New Hampshire Climate Assessment 2021 (unh.edu)

4.8.4 Potential Occurrences & Impacts

This is a town wide event; therefore, no specific locations are listed. There is no estimate of costs for the impacts of severe winter weather in Gilsum, however the high cost of extended salt and sand use to keep roads open should be considered – as well as payroll for increased staff hours. Occasionally heavy snow events will collapse buildings. Ice storms have disrupted power and communications services. Timberland has been severely damaged. In recent history, Gilsum has not recorded any loss of life due to the extreme winter weather. These chance events with random damage make it difficult to set a cost to repair or replace any of the structures or utilities affected.

The Planning Team identified the following conditions and vulnerabilities associated with severe winter weather:

The town has emergency backup power at several locations, emergency generators are not rated for full operation / heating & cooling during prolonged power outages that may occur resulting from severe winter weather, extreme wind events. The school and community center do not have any emergency backup power source.
Strong winds and ice storms cause limb and trees to fall along wooded road corridors, resulting in blocked travel routes, infrastructure damage, and restricted emergency access. Treefall onto power lines also causes widespread and prolonged power outages, with cascading impacts on residents and municipal operations.
Heavy snow loads create structural stress on certain municipal buildings and town-owned facilities.

4.9 Solar Storms & Space Weather: Low Risk

The term space weather is relatively new and describes the dynamic conditions in the Earth's outer space environment, similar to how the terms "climate" and "weather" refer to the conditions in the Earth's lower atmosphere. Space weather includes any and all conditions and events on the sun, in the solar wind, in near-Earth space, and in our upper atmosphere that can affect space-borne and ground based technological systems.

4.9.1 Extent

Solar activity (also called solar storms or geomagnetic storms) refers to solar flares, coronal mass ejections, high-speed solar wind, and energetic solar particles. One measure of the extent (or relative intensity) of solar storms and space weather comes from the National Oceanic and Atmospheric Administration (NOAA). NOAA uses a series of three scales to alert those who depend on radio communications such as first responders and airlines on days that could create life threatening situations if their radios are impacted. They can also affect our satellite operations and GPS navigation capabilities. Any of these events may occur for a few minutes to several hours, can affect Earth for days to weeks.

NOAA categorizes **geomagnetic storms** on a scale ranging from G1 to G5. A G5 storm, the most extreme level, can result in complete high frequency radio blackouts across the sunlit side of Earth, lasting for several hours.

Scale	Description	Effect	Physical measure	Average Frequency (1 cycle = 11 years)
G 5	**Extreme**	**Power systems:** Widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. **Spacecraft operations:** May experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. **Other systems:** Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.).	Kp = 9	4 per cycle (4 days per cycle)
G 4	**Severe**	**Power systems:** Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. **Spacecraft operations:** May experience surface charging and tracking problems, corrections may be needed for orientation problems. **Other systems:** Induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).	Kp = 8, including a 9-	100 per cycle (60 days per cycle)

Scale	Description	Effect	Physical measure	Average Frequency (1 cycle = 11 years)
G 3	**Strong**	**Power systems:** Voltage corrections may be required, false alarms triggered on some protection devices. **Spacecraft operations:** Surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. **Other systems:** Intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.).	Kp = 7	200 per cycle (130 days per cycle)
G 2	**Moderate**	**Power systems:** High-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. **Spacecraft operations:** Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. **Other systems:** HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.).	Kp = 6	600 per cycle (360 days per cycle)
G 1	**Minor**	**Power systems:** Weak power grid fluctuations can occur. **Spacecraft operations:** Minor impact on satellite operations possible. **Other systems:** Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine).	Kp = 5	1700 per cycle (900 days per cycle

Table 18 NOAA Space Weather Scales (Geomagnetic Storms)

NOAA categorizes **solar radiation storms** on a scale ranging from S1 to S5. A S5 storm, the most extreme level, can result in satellites being rendered useless and complete blackout of high

frequency communications. However, these effects are limited to high latitudes and polar regions.

Scale	Description	Effect	**Physical measure** (Flux level of >= 10 MeV particles)	**Average Frequency** (1 cycle = 11 years)
S 5	**Extreme**	**Biological:** Unavoidable high radiation hazard to astronauts on EVA (extra-vehicular activity); passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. **Satellite operations:** Satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources; permanent damage to solar panels possible. **Other systems:** Complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult.	10^5	Fewer than 1 per cycle
S 4	**Severe**	**Biological:** Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. **Satellite operations:** May experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded. **Other systems:** Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.	10^4	3 per cycle

Scale	Description	Effect	**Physical measure** (Flux level of >= 10 MeV particles)	**Average Frequency** (1 cycle = 11 years)
S 3	**Strong**	**Biological:** Radiation hazard avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. **Satellite operations:** Single-event upsets, noise in imaging systems, and slight reduction of efficiency in solar panel are likely. **Other systems:** Degraded HF radio propagation through the polar regions and navigation position errors likely.	10^3	10 per cycle
S 2	**Moderate**	**Biological:** Passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk. **Satellite operations:** Infrequent single-event upsets possible. **Other systems:** Small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.	10^2	25 per cycle
S 1	**Minor**	**Biological:** None. **Satellite operations:** None. **Other systems:** Minor impacts on HF radio in the polar regions.	10	50 per cycle

Table 19 NOAA Space Weather Scales (Solar Radiation Storms)

NOAA categorizes **radio blackouts** on a scale ranging from R1 to R5. A R5 storm, the most extreme level, results in a complete high frequency radio blackout on the entire sunlit side of Earth.

Scale	Description	Effect	Physical measure	Average Frequency (1 cycle = 11 years)
R 5	**Extreme**	**HF Radio:** Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. **Navigation:** Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.	X20 (2×10^{-3})	Less than 1 per cycle
R 4	**Severe**	**HF Radio:** HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. **Navigation:** Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.	X10 (10^{-3})	8 per cycle (8 days per cycle)
R 3	**Strong**	**HF Radio:** Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. **Navigation:** Low-frequency navigation signals degraded for about an hour.	X1 (10^{-4})	175 per cycle (140 days per cycle)
R 2	**Moderate**	**HF Radio:** Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. **Navigation:** Degradation of low-frequency navigation signals for tens of minutes.	M5 (5×10^{-5})	350 per cycle (300 days per cycle)
R 1	**Minor**	**HF Radio:** Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. **Navigation:** Low-frequency navigation signals degraded for brief intervals.	M1 (10^{-5})	2000 per cycle (950 days per cycle)

Table 20 NOAA Space Weather Scales (Radio Blackouts)

4.9.2 Past Events

This is a hazard that is difficult to detect and the Planning Team was not aware of any specific dates of occurrence. There have been no incidents of damage or interruption of communication services recorded in Gilsum.

The entire State of New Hampshire is at risk of solar storms and space weather. One specific example of an R 3 or Strong radio blackout was observed by NOAA on July 3, 2021.[39] The Planning Team was not aware of any specific events or disruptions.

Since New Hampshire's first declaration in 1953, there were no State or federal major disaster declarations in Cheshire County specific to solar storms and space weather.

4.9.3 Future Conditions

The impact of changes in long-term weather patterns, precipitation, and temperature have an unknown impact on the probability of occurrence of solar storms.

4.9.4 Potential Occurrences & Impacts

The entire State of New Hampshire is at risk of solar storms and space weather. The Planning Team identified the following conditions and vulnerabilities associated with solar storms and space weather:

Solar storms can disrupt communications systems relied upon by emergency responders, and Gilsum has limited local redundancy.
The Town has limited capacity to maintain operations and provide safe, climate-controlled spaces during a prolonged power outage resulting from a solar storm or space weather event. While emergency backup power is available at some locations, existing generators are not rated to support full building operation, including heating and cooling, for extended outages. In addition, the school and community center do not have emergency backup power, further limiting the Town's ability to respond during a multi-day power disruption.

4.10 Tornados / Downbursts / Severe Wind / Hail: Medium Risk

Tornadoes: A tornado is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground. Because wind is invisible, it is hard to see a tornado unless it forms a condensation funnel made up of water droplets, dust and debris. Tornadoes are the most violent of all atmospheric storms.

Straight-line winds: This term describes any thunderstorm wind that is not associated with rotation and is usually used to differentiate from tornadic winds. There are several sub-types of straight-line winds:

- Downdraft - small-scale column of air that rapidly sinks towards the ground.

[39] R3 (Strong) Radio Blackout Observed | NOAA / NWS Space Weather Prediction Center

- Downburst - result of a downdraft, referred to as a macroburst when the area affected is greater than 2.5 miles and microburst when less than 2.5 miles.
- Gust Front - leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. Characterized by wind shift, temperature drop and gusty winds in front of a thunderstorm.
- Derecho - widespread, long-lived wind storm that is associated with a band of rapidly moving showers or thunderstorms. A typical derecho consists of numerous microbursts, downbursts and downburst clusters. By definition, if the wind damage swath extends more than 240 miles and includes wind gusts of at least 58 mph or greater along most of its length, then the event may be classified as a derecho.

4.10.1 Extent

The **Enhanced Fajita Scale** is used to rate the intensity of a tornado by examining the damage caused by the tornado once it has passed.

- **EF-0**: Wind speed 65-85 mph.; frequency 53.5%. Minor damage.
- **EF-1**: Wind speed 86-110 mph.; frequency 31.6%. Moderate damage.
- **EF-2**: Wind speed 111-135 mph.; frequency 10.0%. Considerable damage.
- **EF-3**: Wind speed 136-165 mph.; frequency 3.4%. Severe damage.
- **EF-4**: Wind speed 166-200 mph.; frequency 0.7%. Extreme damage.
- **EF-5**: Wind speed >200 mph.; frequency 0.1%. Total destruction.

Most tornadoes are in the F0 to F2 Class. Building to modern wind standards provides significant property protection from these hazard events. New Hampshire is located within Zone 2 for Design Wind Speed for Community Shelters, which is 160 mph, and is also noted as being within a hurricane susceptible region.

Damaging winds are often called “straight-line” winds to differentiate the damage they cause from tornado damage. Most thunderstorm winds that cause damage at the ground are a result of outflow generated by a thunderstorm downdraft. Damaging winds are classified as those exceeding 50-60mph.[40]

4.10.2 Past Events

The southwestern portion of the state is considered a special wind hazard area as demonstrated by the high proportion of tornadoes and severe wind events that are experienced in this Region annually. On July 3, 1997 several tornadoes struck this section of the State. An F1 tornado caused severe tree loss in Swanzey, destroying a building and damaging the stables at the Cheshire Fairgrounds. Although outside the Southwest Region, the 2008 Barnstead tornado caused significant damage and also involved loss of life. Therefore, this is a real hazard and the damage

[40] Severe Weather 101: Damaging Winds FAQ (noaa.gov)

it could inflict should not to be taken lightly. There was a significant hail event 15 to 18 years ago, residents reported that baseball sized hail damaged roofs and cars.

Hazard	**Date**	**Location**	**Severity** **Remarks/Description of Areas Impacted**
Tornado	September 15, 1922	Cheshire County	F2
Tornado	September 13, 1928	Cheshire County	F2
Tornado	August 13, 1963	Cheshire County	F2
Tornado	June 6, 1963	Cheshire County	F2
Severe Wind	1985	Mill Village/Island Pond Area	Wind shear in 1985 near Mill Village caused damage to one structure.
Severe Wind	1991	NH 123 North, North of Cold Spring Pond	Wind shear across NH 123 in 1991 caused no damage to structures.
Severe Wind	1996	Sandy Beach Rd. Stoddard.	Stoddard experienced a wind shear incident in late 1996. No structures were affected by the incident. Downed branches and power lines.
Tornado	July 2, 1997	Cheshire County	F1
Tornado	July 3, 1997	Greenfield, NH	An F2 Tornado caused damage to a summer camp, the recycling center and completely destroyed a lumber facility.
Severe Wind	2003	Walpole	Hooper Hill area - Trees were uprooted; fallen utility lines - roads were blocked by debris, equipment shed roof damaged.
Tornado (EF2)	July 24, 2008	Deerfield/ Northwood	No impact locally.

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Severe Wind	2011	Southwestern New Hampshire	A microburst hit the area causing a temporary loss of power to some locations in the region. No injuries or structural damage reported. No local impact.
Downburst	June, 2012	Harrisville	A microburst hit Harrisville and caused many downed trees, but no significant damage to structures was recorded. No local impact.
Severe Wind	2014	Southwestern New Hampshire	A microburst hit the region causing a temporary loss of power to some locations in the region. No injuries or structural damage reported. No local impact.
Severe Wind	2016	Roxbury	Severe wind caused a tree to fall onto the roof of the Town Hall causing some damage to the building (estimate $9,000)
Downburst	Oct. 29, 2017	Southwestern New Hampshire	A downburst hit several towns along the Connecticut River causing many downed trees and several homes damaged. No estimate of damage. Short-term power outages occurred. There were no injuries. No local impact.
Tornado (EF0)	5/4/2018	North Walpole	A tornado touched down in northern sections of North Walpole and moved rapidly to the east-northeast. Total track length was about 38.5 miles with a maximum width of about 300 yards.
Severe Wind	4/24/2020	Locke Rd, New Ipswich	Tent collapse during storm, multiple injuries and transports (At least 6 injured after tent collapse in New Ipswich)
Tornado (EF1)	7/18/2022	Spofford	$2,000 in property damage, no deaths or injuries reported. 0.36 miles in length by 250 yards wide.
Tornado (EF1)	7/27/2023	Keene to Dublin	No damages, injuries or deaths were reported. 12.65 miles in length by 200 yards wide.

Hazard	Date	Location	Severity Remarks/Description of Areas Impacted
Tornado (EF1)	6/23/2024	Dublin	$1,000 in property damage, no deaths or injuries reported. 3.36 miles in length by 80 yards wide.

Table 21 Past Events: High Wind, Tornado, Downburst (1950-Present)

Since New Hampshire's first declaration in 1953, there was one major disaster declaration in Cheshire County specific to high winds, tornados or downbursts.

Declaration Title	Declaration Date	Declaration Type	Incident Subcategory	Incident Period	Disaster Number
SEVERE STORMS, TORNADOES, AND FLOODING	Aug 2, 2013	Major Disaster Declaration (DR)	Severe Storm	Jun 26, 2013 - Jul 3, 2013	4139

Table 22 Severe Storm Declarations Including Cheshire County

4.10.3 Future Conditions

Unlike influences of climate change on precipitation and temperature, changes in the occurrence of tornados is more complex. For example, the annual number of tornadoes occurring in the United States EF-1 or greater is stable.[41]

4.10.4 Potential Occurrences & Impacts

- Structures along river corridors and hill tops are more susceptible.
- This is a town wide event; therefore, no specific locations are listed.

The Planning Team identified the following conditions and vulnerabilities associated with severe wind events:

The town has emergency back up power at several locations, emergency generators are not rated for full operation / heating & cooling during prolonged power outages that may occur resulting from severe winter weather, extreme wind events. The school and community center do not have any emergency back up power source.
Strong winds and ice storms cause limb and trees to fall along wooded road corridors, resulting in blocked travel routes, infrastructure damage, and restricted emergency access. Treefall onto power lines also causes widespread and prolonged power outages, with cascading impacts on residents and municipal operations.
Older structures and outbuildings may be vulnerable to wind loads, and there is no local guidance on practical, low-cost wind-hardening measures.

[41] Tornadoes and Climate Change (noaa.gov)

4.11 WILDFIRE: MEDIUM RISK

Gilsum's wildfire risk profile can be further informed by the *Wildfire Risk to Communities*[42] data and Risk Reduction Zones provided by the USDA Forest Service's interactive tool. This resource integrates wildfire likelihood, intensity, structural exposure, and vulnerability to produce community-scale risk indicators that help prioritize fuel treatments, planning measures, and outreach activities. Using this information enables the Town to focus mitigation efforts where they are most likely to reduce wildfire impacts on people, infrastructure, and natural resources.

A wildfire is any non-structural fire, other than prescribed fire, that occurs in the Wildland. Wildland here is defined as consisting of vegetation or natural fuels. Wildfires can be referred to as brushfires, wildland fires, or grass fires depending on the location and what is burning.

The whole town is at risk for wildfires. Much of the debris from the ice storms of 1998 and 2008 continues to pose a wildfire threat as it is more dried out now and deeper in the woods. Continued wind shears, heavy winds, and heavy precipitation events (snow, ice or rain) contributes to available wildfire fuel. As timber harvesting is reduced, wood roads close and debris builds up on the ground, the potential for wildfire increases town-wide.

4.11.1 Extent

Currently, there is not a universally adopted scale for measuring wildfires within the State of New Hampshire. There are numerous factors that can be used to describe the severity and complexity of a wildfire.[43] One of the most common methods is to classify a wildfire according to size:

- Class A - one-fourth acre or less;
- Class B - greater than one-fourth acre, but less than 10 acres;
- Class C - 10 acres or more, but less than 100 acres;
- Class D - 100 acres or more, but less than 300 acres;
- Class E - 300 acres or more, but less than 1,000 acres;
- Class F - 1,000 acres or more, but less than 5,000 acres;
- Class G - 5,000 acres or more.

4.11.2 Past Events

The Planning Team did not identify any wildfires that occurred in Gilsum in the past five years. However, the Town and County have experienced wildfires and related disaster declarations in the past.

[42] Explore your risk - Wildfire Risk to Communities
[43] NH State Hazard Mitigation Plan 2023

Title	Declaration Date	Incident Subcategory	Incident Period	Disaster Number	Declaration Type
Stoddard Fire	Apr 21, 2016	Fire	Apr 21, 2016 - Apr 23, 2016	5123	Major Disaster Declaration (DR)
Forest Fire	July 2, 1953	Fire	July 2, 1953	11	Fire Management Assistance Declaration (FM)

Table 23 Fire Disaster Declarations

4.11.3 Future Conditions

The probability of wildfire is related to drought. During periods of hot, dry weather the risk of wildfires increases. New Hampshire Climate Assessment 2021 helps explain what drought conditions Gilsum may expect in the future due to changes in weather patterns. When comparing the period 1901-1960 to 1991-2020, the report noted an overall *decrease* in the number of dry and moderately dry periods. However, it also concluded that the expected increases in summer temperatures expected over the period 2010-2099 will contribute to more short-term, or "flash drought" conditions in the future.

A recent article published in the New Hampshire Bulletin[44] discusses the rising risk of wildfire in New Hampshire, attributing more rapidly changing conditions brought on by drought conditions and climate change.

4.11.4 Potential Occurrences & Impacts

- The potential for a wildfire is higher in the forested areas of Gilsum;
- A lack of direct access to many remote areas within Town adds to the danger.
- Entire town has minimal forest fire protection (dependence on on-call firefighters and problems with accessibility and communications);

The Planning Team identified the following conditions and vulnerabilities associated with wildfire events:

Dry hydrants and surface water sources may be less reliable in drought periods, reducing available water for wildfire suppression.
Drought conditions increase wildfire risk in certain forested areas with accumulated fuels, access limitations, and vegetation die-off caused by invasive species (emerald ash borer, hemlock wooly adelgid, nematode impacting beech trees) understory die-off leading to increased wildfire hazards and more challenging suppression efforts.

[44] Wildfire risk is rising in New Hampshire — and science has identified the culprit • New Hampshire Bulletin

Large areas of conservation land have limited or no access routes, which may slow wildfire detection and suppression.
Gilsum is densely forested with limited access. The Wildfire Risk to Communities tool rates Cheshire County as very high risk for direct exposure to wildfires and low likelihood for wildfires.

4.12 MANMADE OR TECHNOLOGICAL HAZARDS

4.12.1 Hazardous Materials Spill: Low Risk

The town has not had any known incidents of hazardous materials spills, however, the Planning Team identified it as a potential hazard in certain areas of town.

Potential Occurrence

Public transportation of chemicals and bio-hazardous materials through town on NH 10 by truck is a concern. Gravel excavation operations in town have the potential to pollute heavy metals into the private wells.

A spill could cause water contamination or airborne pollutants to residents which may cause illness or death.
NH 10 is the primary concern, however, this could occur townwide.
There is a potential for death or injury; significant cost for clean-up.

5 COMMUNITY LIFELINES & ASSETS

Community Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The Gilsum Planning Team reviewed the Critical Facilities from the 2017 Plan Update to determine the community's lifelines and assets. Some assets fall into several categories demonstrating their high importance to the community as well as the greater need for protection from hazard events.

The Team assigned Gilsum's Community Lifelines to the following categories:

- **Safety and Security** - Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- **Food, Hydration, Shelter** - Food, Hydration, Shelter, Agriculture
- **Health and Medical** - Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- **Energy** - Power Grid, Fuel
- **Communications** - Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- **Transportation** - Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- **Hazardous Materials** - Facilities, HAZMAT, Pollutants, Contaminants
- **Water Systems** - Potable Water Infrastructure, Wastewater Management

The Planning Team also distinguished Asset categories for this plan update. The Community Lifelines are considered Critical Facilities:

- **PEOPLE**: residents, workers, visiting populations and socially vulnerable populations like seniors, individuals with disabilities, lower-income individuals, etc.
- **STRUCTURES**: like community centers, historic places, planned capital improvement
- **ECONOMIC ASSETS**: Major employers, primary economic sectors, key infrastructure like telecommunications networks
- **NATURAL, HISTORIC & CULTURAL RESOURCES**: Areas of conservation, beaches, parks, critical habitat
- **CRITICAL FACILITIES & INFRASTRUCTURE**: Hospitals, law enforcement, water, power
- **COMMUNITY ACTIVITIES**: Major local events such as festivals or economic events like farming or fishing

Assets Within Hazard Areas

When reviewing and updating the town's assets, the Planning Team considered the vulnerability of assets to the hazards listed in this plan update. Many hazards identified in this plan are regional

risks and, as such, all assets fall into the hazard area. Access to critical facilities is especially vulnerable during extreme precipitation events. Planning Team discussions indicated that all roads in town have experienced flooding during heavy rain events, and all but two roads have experienced some level of erosion or washout during these events. As a result, access to all critical facilities has the potential to be reduced or temporarily compromised during flooding events, even where facilities themselves are not directly inundated. In addition, the Fire Station/Emergency Operations Center is located within the floodplain, increasing its exposure to flooding and underscoring the importance of maintaining reliable access during emergency conditions.

The Community Lifeline Facilities List for the Town of Gilsum has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer for the 2017 Plan Update and reviewed and revised by the Planning Team for the 2026 Update. The Past and Potential Hazards Map at the end of this Plan identifies these facilities.

5.1 Community Lifelines (Critical Facilities)

Category	Type	Name / Location	Vulnerability
Safety & Security	Emergency Operations Center	Gilsum Fire Station 5 Church Street	Flooding (in floodplain), generator should be raised
	Fire Service	Gilsum Fire Station 5 Church Street	Flooding (in floodplain), generator should be raised
	Government Service	Town Offices & Library 650 NH 10	Flooding
	Law Enforcement	Cheshire County Sheriff's Office (Keene)	Any hazard that impacts transportation networks
	Community Safety	Town Garage 719 NH 10	No generator, no smoke detectors, access is vulnerable to flooding
Food, Hydration, Shelter	Shelters	Gilsum Fire Station 5 Church Street	Flooding, generator should be raised, not Red Cross approved
		Gilsum Congregational Church 13 Main Street	Flooding, not Red Cross approved, not available around the clock

Category	Type	Name / Location	Vulnerability
		School / Community building 640 NH 10	No generator, not Red Cross approved, not available around the clock
	Food & Potable Water	Food Pantry @ Town Office 650 NH 10	Flooding
		Private Wells	Vulnerable to drought
		Overflowing artesian well Spring Road	Access controlled by private owner
Transportation	Primary Evacuation Routes	NH 10	Flooding, dam breach (access to NH 9)
	Secondary Evacuation Routes	Surry Road	Flooding, erosion, severe winter weather, downed power lines
		Old Sullivan Road	
		Alstead Hill Road	
Health and Medical	Hospitals	Cheshire Medical Center (Keene)	All medical facilities are susceptible to vulnerabilities that impact transportation routes.
	Clinics	Dartmouth Hitchcock Clinic (Keene)	
	EMS	Cheshire EMS NH 12 Swanzey	
	Helicopter Landing Sites	Off Gilsum Bond Rd Gilsum Steam Academy (640 NH 10)	-
Communications	Radios	Gilsum Fire Station 5 Church Street	Flooding (in floodplain), generator should be raised, vulnerable to solar storms
	Repeater Towers	Old Gilsum Rd Bingham Hill	Still dead spots in town, vulnerable to solar storms
	Cell Towers	Privately owned	vulnerable to solar storms

Table 24 Community Lifelines (Critical Facilities)

5.2 Assets to Protect & Resources

Category	Name / Location		Vulnerability
People	Special Needs Population Elderly and disabled residents – Gilsum FD has list where they reside		Vulnerable to all hazards, list needs updating – populations self-identify
Structures	Transfer Station Lounder Rd.		Isolated area, wildfire
	Gilsum Steam Academy 640 NH 10		No generator
	Gilsum Congregational Church 13 Main St		Flooding, undersized generator
Economic Assets	**Major Employers**	Badger Company 768 NH 10	-
		Gilsum Steam Academy 640 NH 10	-
Natural, Historic & Cultural Resources	**Recreation Areas**	Tennis Courts NH 10	-
		Ballfields Lounder Rd	-
		Surry Mountain Preserve Off Old Gilsum Rd	Wildfire
		Calhoun Forest on White Brook	-
		Gilsum Community Park Next to Town Office	-
		Bears Den State Forest NH 10	-
	Historic Sites / Resources	Gilsum Historical Society (former Town Hall) Main Street	-
		Lois Wright Museum /	
		Stone Arch Bridge (intersection of River Road & NH 10)	
		Post Office 15 Main Street	

Table 25 Assets

Resources	
Emergency Broadcast & Television	WKNE 103.7
	WMUR Channel 9
	WINK 96.9
	WLNH 98.3
	WLKZ 104.9
Transportation	Buses – First Student (Keene)
	Trucks – Local Contractors
	National Guard (Keene)
	Community Volunteer Transportation Company
Bed, Cots, Blankets, Medical Supplies	National Guard (Keene) Red Cross
	Gilsum Fire Station (5 Church Street)

Table 26 Resources

6 EXISTING MITIGATION STRATEGIES AND PROPOSED IMPROVEMENTS

This step identifies and evaluates the mitigation strategies and town programs that are currently in place. It also outlines those programs and recommends improvements to ensure the most comprehensive and effective approach to hazard mitigation.

6.1 EXISTING MITIGATION STRATEGIES

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
Emergency Drills in Schools	This program teaches children how to evacuate schools in case of an emergency. Regional Schools. *Flood, wildfire, severe winter weather*	School Board	Good	School Resource Officer. No changes needed.
Fire & Rescue Regional Mutual Aid	Individual mutual aid agreements with regional towns. This program reduces fire damage by ensuring that there is enough staff during a fire emergency. SWNH Mutual Aid in Keene. *Wildfire*	Gilsum Fire Chief	Good	No changes needed.
Firefighter I Training Level	Almost all firefighters are at Level I. This training reduces the impact of fire	Gilsum Fire Chief	Good	No changes needed.

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
	damage on people/property by ensuring that fire fighters are prepared to respond. Town Wide. *Wildfire*			
EMT Training	Gilsum currently has EMT, EMTI, Paramedics. This training reduces the impact of natural hazards on human life. Town-wide. *Wildfire, extreme temperatures, infectious disease, lightning*	Gilsum Fire Chief	Good	No changes needed.
Fire Prevention Program	This program teaches children & adults how to protect themselves from all fires. Area Covered: Town-wide. *Wildfire*	Gilsum Fire Chief (Fire Warden)	Good	No changes needed.
Hazardous Materials Training	All firemen must be trained to DCON level. This training reduces	Fire Chief	Average	Keene responds to HazMat incidents.

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
	potential secondary impacts of natural hazards. Area Covered: Town-wide. *Hazardous materials*			
Cheshire EMS Ambulance	Gilsum is served by Chesire EMS ambulance service based in Swanzey, NH. Gilsum, and surrounding towns. *Wildfire, extreme temperatures, infectious disease, lightning*	Cheshire EMS	Good	17 – 18 minute response time.
Shelter Locations: Fire Station, Congregational Church, Gilsum STEAM Academy, Badger Co.	Town Wide. *All hazards*	Gilsum Fire Chief/ EMD	Good	Establish Red Cross approval for shelter locations; get MOU between town & Badger for emergency shelter use.
Communications Operability in EOC	In Gilsum, cell phones are used for emergency communication.	Gilsum EMD	Fair	Radio repeater underway; radios need

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
	Area Covered: Town/county wide. *All hazards*			updating (in process).
General Road Maintenance Program	The town repairs as needed. Area Covered: Town-wide. *Flooding / erosion, severe winter weather*	Gilsum Selectmen/Road Agent	Good	Continue culvert repairs and replacement.
Shoreline Protection Act	State Shoreline Protection Act. Town-wide around designated water bodies. *Flood / erosion*	NH DES Wetland Dept.	Good	No authority to enforce.
Building Code	Town-wide. *Severe wind*	Building Inspector	Good	No changes needed.
Town Master Plan	Town-wide. *Flood, drought*	Gilsum Planning Board	Average	Update as needed.
Emergency Generators	The Gilsum Town Hall, Fire Station, Congregational Church, and Bager Company have generators. Town-wide. *All hazards*	School and town	Good	The school / community center needs a generator.

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
Burn Permits	The Gilsum Fire Warden provides fire safety information when authorizing burning permits. Town-wide. *Wildfire*	Fire Warden	Good	Residents need education regarding the need for a burn permit.
Floodplain Development Ord.	Town-wide. *Flood / erosion*	Gilsum Selectmen, Planning Board	Good	Will need to be updated following the release of new effective FIRMs.
Emergency Operations Plan (2014)	The Emergency Operations Plan (or EOP) was updated in 2014. This plan outlines how the town should react in case of an emergency. Town-wide. *All hazards*	Gilsum EMD	Average	Update needed.
Vital Records Protection	The town has a safe for storing vital town records. Gilsum Town Hall. *All hazards*	Gilsum Selectmen	Average	No changes needed.
Subdivision Regulations for	The town adopted subdivision regulations for	Gilsum Planning Board and Road Agent	Good	No changes needed.

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
New Road Design	new road designs that cover drainage. Town-wide. *Flood / erosion*			
Hazardous Tree Removal	Town works to remove hazardous trees in town as they are identified; also utility providers provide tree clearing. Town-wide. *Severe wind, severe winter weather*	Road Agent; Utility providers	Good	Budgeted and well used, could be a bigger budget.
Ashuelot River Management Plan	Ashuelot River Area. *Flood / erosion*	ARLAC	Good	Update nearly complete.
National Flood Insurance Program	Member for nearly 30 years. Town-wide. *Flood*	Selectmen, Planning Board, or designee	Good	Encourage resident participation.
Health Officer	Town-wide. *Flood, drought, infectious disease*	Gilsum Selectmen	Good	No changes needed.
Fire Inspector	Town-wide. *Wildfire*	Fire Chief	Good	No changes needed.

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
Bridge Monitoring	Town-wide. *Flood / erosion*	NH DOT / Road Agent	Good	No changes needed.
Hazardous Material Response	Town-wide. *Hazardous materials*	Fire Department and Keene HazMat Team	Good	No changes needed.
Welfare Officer	Town-wide *Extreme temperatures*	Gilsum Selectmen	Good	No changes needed.
Zoning Ordinance	Town-wide *Flood / erosion, landslide*	Planning Board	Good	Solar ordnance pending.
Culvert Design Standards	Town-wide, mandated by State *Flood / erosion*	Road Agent	Good	No changes needed.
List for outreach to residents with special needs	Town-wide *All hazards*	Fire Chief / Welfare Officer	Avg.	List needs updating, share in Town newsletter.
Brush Clearing near bridges & culverts	Town-wide *Flood / erosion*	Road Agent / ConCom	Avg.	Organize regular invasives mitigation with town volunteers.
Stormwater structure & road maintenance	Town-wide *Flood / erosion*	Road Agent / NHDOT	Good	More funding is always helpful.

Existing Protection Program	Description/Area/ Hazard Covered	Responsible Local Agent	Effectiveness (Poor, Avg, Good)	Proposed Improvements, Comments
Driveway Regulations & Permitting	Town-wide *Flood / erosion*	Road Agent	Good	No changes needed.

Table 27 Existing Mitigation Strategies & Proposed Improvements

6.2 Status of Previous Priority Mitigation Actions

The Planning Team reviewed the previous (2017), prioritized mitigation implementation schedule and action plan. The following steps were considered:

Step 1: Categorize Status of Implementation

- What items have been completed? If so, what was the date? Are there outcomes, photos, etc?
- What items are in progress? What is the estimated completion date?
- What items have been deleted/canceled?
- What items should be deferred to this plan update's new action plan?
- What items are completed and ongoing?
- What items should be considered as existing protections?

Step 2: Discuss Status and Progress

- If the action was completed, did it have the intended results? Did it achieve the goals outlined in the plan? What factors led to success?
- If the action was not completed, what were the barriers? Was there a lack of political support, funding, staff availability or another obstacle? Should the action be included in the updated mitigation strategy?
- If the action is in-progress, what were the challenges so far? What steps need to happen to complete the project?

Step 3: Note if the Action (or a modified version) should be considered for the 2026 Action Plan

- Yes/No
- Provide comments as desired.

Mitigation Action	Who (Leadership)	Step 1: Status	Step 2: Discuss Status and Progress	Step 3: 2026?
Replace and upsize culvert on Eaton Hill Road.	Road Agent	defer	Financing needed, replace as needed	yes

Mitigation Action	Who (Leadership)	Step 1: Status	Step 2: Discuss Status and Progress	Step 3: 2026?
Make information available about NFIP to improve public awareness.	Selectmen	complete	Available in BOS office, add links to website *Existing protection*	yes
Adopt culvert design standards and installation methods.	Road Agent	complete	Mandated by the state *Existing protection*	no
Prepare/maintain a list of resources available throughout town.	Fire Chief	In progress	What do we need for resources, conveyance to the public, what are the priorities (needs planning)	yes
Maintain an updated list of residents with special needs.	Fire Chief	ongoing	Republish in town newsletter; very helpful for FD *Existing protection*	yes
Clear brush and dead wood near culverts and bridges.	Road Agent	ongoing	Environmental compliance issues, barberry, olive, buckthorn, invasives are prolific, Japanese knotweed. Program is working well *Existing protection*	yes
Improve stormwater and road maintenance.	Road Agent/ NHDOT	ongoing	Change to continual upgrade and maintenance *Existing protection*	yes
Support the Ashuelot River Corridor Management Implementation Plan.	Conservation Commission	complete	Cons Comm member Chapman is the Gilsum rep on ARLAC; new corridor plan is available *Existing protection*	no

Mitigation Action	Who (Leadership)	Step 1: Status	Step 2: Discuss Status and Progress	Step 3: 2026?
Maintain updates of Master Plan, Building Codes, and land use documents.	Planning Board	ongoing	Adopted ADU ordinance, proposing solar energy ordinance in 2026. Building codes are national standards – enforced by Code Enforcement Officer *Existing protection*	yes
Maintain strict requirements on burn permits.	Fire Chief	ongoing	The state has added the online permitting system. No cat. 3 permits issued without warden or dep. Warden visiting location *Existing protection*	yes
Update the Emergency Operations Plan in 2019.	Selectmen	Deferred	EOP still needs updating, change leadership to EMD, pursue grant funding	yes
Continue to host the annual fire station open house.	Fire Chief	cancelled	Open doors all year round – not necessary, annual outreach at school	no
Continue bridge monitoring and inspections.	NH DOT/Road Agent	ongoing	State has protocol for inspection; town monitors following weather events *Existing protection*	yes
Replace and upsize culvert on Banks Street.	Road Agent	deferred	On NHDOT Ten Year Plan	no
Require and enforce driveway permits.	Road Agent	ongoing	Working well *Existing protection*	yes

Mitigation Action	Who (Leadership)	Step 1: Status	Step 2: Discuss Status and Progress	Step 3: 2026?
Install additional fire ponds and drywells.	Fire Chief	Partially complete	Need to fix what is already in place, permitting barriers with Ashuelot, 3 ponds were added (Hammond Hollow Rd, Lovell Rd, Alstead Hill Rd), 2 need to be fixed (one near boy scout area Ashuelot, Main St & NH 10 frog pond); need outside assistance to determine new areas *** ask SWRPC	yes
Consider the adoption of a steep slope ordinance and erosion control standards.	Planning Board	Deleted	Percentage of land in conservation and barriers to implementation.	no
Hazardous tree removal.	Road Agent	ongoing	Budgeted and well used, could be a bigger budget. *Existing protection*	yes

Table 28 Status of Previous Priority Mitigation Actions

7 IDENTIFYING GAPS IN COVERAGE & PROPOSED SOLUTIONS

This chapter identifies the hazard-related issues that require additional action and presents targeted solutions to address them. Problems included here reflect incomplete actions carried forward from the prior plan, existing protections that require added effort to remain effective, and vulnerabilities identified by the Planning Team through discussion, mapping, and public input.

For each problem, the chapter outlines one or more proposed solutions identified by the Planning Team. In developing these solutions, the Team considered a range of approaches, including Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection and Nature-Based Solutions, and Education and Awareness Programs. These solutions reflect a range of potential approaches and are intended to capture the full set of ideas discussed, regardless of current capacity or constraints. Feasibility, authority, and implementation considerations are evaluated separately through the prioritization and STAPLEE review process.

7.1 POTENTIAL MITIGATION STRATEGIES

Problem [actions on existing protections]	**Project**	**Hazard**
The town has emergency back up power at several locations, emergency generators are not rated for full operation / heating & cooling during prolonged power outages that may occur resulting from severe winter weather, extreme wind events. The school and community center do not have any emergency back up power source.	New generators for the Town office/library 20kw, Community Building/School 50kw estimated, and portable 15kw for the Fire Department/Church use. Sizes estimated based PT professional expertise. Current units are way too small to handle loads of the buildings.	severe winter weather, extreme wind events, Solar storm / space weather, extreme temperatures
Adherence to burn bans, burn permit conditions, and awareness of fire risk depends on ongoing public education.	Post a “FIRE DANGER” sign.	wildfire
New effective FIRMs will be released soon	Update Floodplain Development Ordinance	flooding
Emergency Operations Plan was last updated in 2014	Update EOP	All hazards
Invasive species growth blocks culverts	Organize regular invasives mitigation with town volunteers	flooding
NFIP may be under subscribed due to lack of program knowledge.	Hold NFIP workshops to provide information and incentives for property owners to acquire flood	flooding

	insurance. Provide training / workshops for local officials to gain an understanding of NFIP and flood maps.	
Problem	**New Project Ideas**	**Hazard**
Dry wells during past droughts have occurred without a consistent method for tracking or identifying affected areas.	Identify feasible, low-burden methods for the Town to collect and summarize information on drought-related private well failures or water shortages, including who would collect the information, when it would be collected, and how it could be stored or mapped, in order to better understand whether certain areas of the community are more vulnerable during prolonged droughts.	Drought
Prolonged drought can leave agricultural operations without adequate water for crop production.	Provide educational resources from UNH Cooperative Extension on Town website. Search | Extension	Drought
Dry hydrants and surface water sources may be less reliable in drought periods, reducing available water for wildfire suppression.	Identify alternative water resources for fire suppression during periods of drought. Develop agreements for secondary water resources to be used during drought conditions.	Drought, Wildfire
Drought conditions increase wildfire risk in certain forested areas with accumulated fuels, access limitations, and vegetation die-off caused by invasive species.	Develop a monitoring program for high fuel and die-off areas along White Brook Road, pit off NH 10 near Badger, Bears Den area, along highways, Smith Hill Rd, and slopes of Centennial Hill.	Drought, Wildfire
Steep slopes in the Centennial Hill area have been identified as potentially vulnerable to movement during prolonged wet conditions.	Conduct a targeted field assessment of steep slope areas on Centennial Hill to identify locations where saturated soils, snowmelt, or prolonged rainfall could cause slope movement or debris to reach Centennial Road. Based on the findings, the Town would prioritize and implement site-specific measures such as drainage improvements, debris control features, or roadway protection to reduce impacts to the road.	Landslide

Heavy rainfall and stormwater runoff, including cause recurring roadside erosion and washouts on certain road segments, indicating localized slope and drainage instability that can damage road infrastructure and restrict access during major storm events.	Identify and prioritize road segments experiencing recurring stormwater washouts based on safety, emergency access, and usage, evaluate underlying drainage or roadway conditions, and implement targeted low-cost drainage, ditching, armoring, or culvert improvements to reduce erosion and access disruptions during heavy rainfall events.	Landslide, flooding, tropical storm / hurricane
Loss of deep-rooted native vegetation due to invasive plants, insects, or pathogens can weaken slopes and contribute to landslide risk.	Coordinate with the Conservation Commission and volunteers to identify steep slope areas where invasive plants or vegetation loss may weaken slope stability, and conduct targeted workdays to remove invasives and restore native deep-rooted vegetation.	Landslide
Extreme temperature response in Gilsum relies on strong informal community supports that are not yet formalized for prolonged or round-the-clock emergencies.	Establish memorandums of understanding with identified emergency shelter locations, including Badger Company, to formalize facility use and ensure reliable, long-term shelter access during prolonged or around-the-clock extreme temperature events.	Extreme Temperatures
Existing backup power resources have not been evaluated for their ability to support essential functions during extreme temperature emergencies.	This is the same at #1 in existing protections actions	Extreme Temperatures
Extreme temperatures can damage infrastructure, including pipes and electrical systems.	Develop and distribute public education materials on low-cost actions to reduce extreme temperature impacts to private infrastructure, such as preventing frozen pipes and managing electrical demand during heat events, while reinforcing information on available heating / cooling centers.	Extreme Temperatures
Extreme heat and cold can increase the need for emergency response due to increase demand for	Develop a simple interdepartmental plan outlining notification triggers and wellness check procedures to anticipate and reduce preventable emergency calls during extreme heat and cold events.	Extreme Temperatures

health and welfare services.		
The EOC / Fire Station is vulnerable to flooding.	Develop and implement a continuity plan for the Emergency Operations Center that identifies alternate operating locations, protects critical equipment and records, and ensures emergency functions can continue during flooding at the fire station.	Flooding
The Town Garage is vulnerable to flooding. Access is limited by catastrophic flooding events (NH 10 closure).	Establish a plan to maintain DPW operations when NH Route 10 is closed by flooding by pre-staging critical materials and equipment, identifying alternate access routes, and arranging secondary storage or mutual aid for sand, salt, and emergency traffic control supplies.	Flooding
The Town Offices and Library are vulnerable to limited access due to flooding. The food pantry, located at the Town Offices is also vulnerable.	Evaluate hillside runoff patterns behind the Town Offices and Library and identify targeted drainage improvements, such as interceptor swales, trench drains, or redirection of concentrated flows, to reduce flooding and maintain access to the building and food pantry during storm events.	Flooding
Surry Road, a secondary evacuation route, is vulnerable to flooding and erosion.	Evaluate Surry Road to identify specific segments vulnerable to flooding and erosion, determine underlying causes such as inadequate drainage, undersized culverts, or low roadway elevations, and prioritize corrective measures to maintain the road's function as a secondary evacuation route.	Flooding
NH 10, primary access is vulnerable to flooding throughout town.	Document the community impacts of NH Route 10 flood closures and implement a targeted public education strategy to reduce risks associated with temporary loss of primary access to and from Gilsum.	Flooding
Some culverts and drainage structures experience capacity constraints or become overwhelmed during major rain events, contributing to localized flooding.	Identify undersized culverts and drainage structures, develop a replacement and upsizing schedule based on priority locations.	Flooding

Bank erosion during high-flow events affects certain stream and riverbank areas, particularly where invasive vegetation reduces root stability.	Identify erosion hotspots where invasives are reducing bank stability, implement volunteer invasive removal and native revegetation, and pursue stabilization designs for priority sites with active bank failure.	Flooding
Flooding from prolonged rainfall or tropical systems can temporarily restrict road access in low-lying or poorly drained areas.	Identify low-lying or poorly drained road segments vulnerable to access restrictions during prolonged rainfall or tropical systems and prioritize drainage, culvert, or roadway improvements to reduce temporary flooding and maintain access.	Flooding
Sediment movement during storms contributes to drainage blockages and requires recurring cleanup.	Identify priority areas. Implement nature-based solutions such as vegetated swales, sediment forebays, or check dams at priority drainage locations to slow runoff, capture sediment, and reduce drainage blockages during storm events.	Flooding
Flood-prone locations along the Ashuelot River and tributaries are vulnerable to overtopping and bank erosion during tropical rainfall.	Identify flood-prone river and tributary segments with elevated risk of overtopping or bank erosion and implement riparian buffer restoration and floodplain reconnection where feasible, while strengthening protections for adjacent wetlands to reduce erosion and flood impacts over time.	Flooding, Hurricane / Tropical Storm
Strong winds and ice storms cause limb and tree fall along wooded road corridors, resulting in blocked travel routes, infrastructure damage, and restricted emergency access. Treefall onto power lines also causes widespread and prolonged power outages, with cascading impacts on residents and municipal operations.	Increase funding for hazardous tree removal program and improve coordination with Eversource to reduce wind and ice related treefall impacts on roads and utility lines.	Hurricane / Tropical Storm, Severe Winter Weather, Tornado / Downburst / Severe Wind
Illnesses with notable recent impacts in Gilsum include COVID-19 (144 cases in Gilsum and 137	Provide public education and outreach on infectious disease prevention and vector risk reduction, including tick- and mosquito-borne illnesses, by sharing guidance from state and	Infectious Disease

deaths in Cheshire County [nearly 20,000 cases]) , and Lyme Disease (2024 1,457 cases in NH) Lyme disease by ticks, EEE from mosquitos can have an impact on humans and animals.	regional health agencies to reduce exposure risks for residents and animals.	
Invasive vegetation contributes to expanded tick habitat, increasing the potential for tick-borne illnesses in Gilsum.	Coordinate with the Conservation Commission and volunteers to identify and manage invasive vegetation in priority areas, including along trails, road edges, and public lands, to reduce tick habitat and lower the risk of tick-borne illnesses in Gilsum.	Infectious Disease
Understanding Repeat Lightning-Damage Locations	Identify and document locations with a history of repeated lightning-related damage and evaluate feasible protective measures to reduce future impacts to structures, utilities, and critical facilities.	Lightning
Surge and Grounding Protection for Town Facilities	Evaluate and upgrade surge protection and grounding systems at Town-owned facilities to reduce damage to electrical and communications equipment from lightning strikes.	Lightning
Heavy snow loads create structural stress on certain municipal buildings and town-owned facilities.	Identify municipal buildings vulnerable to heavy snow loads and establish a monitoring and roof-clearing protocol, including thresholds, responsible parties, and safe procedures, to reduce the risk of structural damage during severe winter weather.	Severe winter weather
Solar storms can disrupt communications systems relied upon by emergency responders, and Gilsum has limited local redundancy.	Radio repeater is underway; radios are in the process of being updated for Public Works.	Solar storm / space weather
Prolonged power outages resulting from regional geomagnetic disturbances could affect critical community functions, and Gilsum has limited alternative power options.	This is the same as #1 in existing protections.	Solar storm / space weather

Older structures and outbuildings may be vulnerable to wind loads, and there is no local guidance on practical, low-cost wind-hardening measures.	Provide link to FEMA guidance on Town website. Wind Retrofit Guide for Residential Buildings FEMA P-804	Tornado / Downburst / Severe Wind
Gilsum is densely forested with limited access. The Wildfire Risk to Communities tool rates Cheshire County as very high risk for direct exposure to wildfires and low likelihood for wildfires.	Assess Gilsum's actual vulnerability to wildfire.	Wildfire
	Develop a Community Wildfire Protection Plan (NHDNCR funded)	
	Update Master Plan to address density, emergency access, and water supplies.	
	Include the fire department in the site plan review process. Require safe access & maintenance thereof for fire apparatus.	
Accumulated and standing dead forest fuels, including those resulting from invasive insects and pathogens, increase wildfire intensity risk during dry conditions.	Identify forested areas with accumulated or pest-related dead fuels and implement targeted fuel reduction measures, such as selective thinning, removal of downed woody debris, or management of dead and dying trees, to reduce wildfire risk.	Wildfire
Large areas of conservation land have limited or no access routes, which may slow wildfire detection and suppression.	Evaluate options to improve detection, access routes, or staging locations to support timely wildfire suppression while minimizing environmental impacts.	Wildfire

Table 29 Potential Mitigation Strategies

7.2 Proposed Mitigation Strategies Analysis

The goal of each strategy identified in the previous section is the reduction or prevention of damage from a hazard event. In order to determine their effectiveness in accomplishing this goal, a set of evaluation criteria was applied to each strategy. The STAPLEE method analyzes the Social, Technical, Administrative, Political, Legal, Economic, and Environmental aspects of a project and is commonly used by public administration officials and planners to support decision-making. As the Planning Team examined the potential strategies in greater detail, some actions were consolidated and others were not advanced for STAPLEE scoring. In several cases, the strategy reflected protections or programs that are already in place and do not require additional action

at this time; in other cases, further review indicated that the issue does not currently rise to a level warranting a new mitigation project. Strategies that did not require further action were therefore omitted from the STAPLEE ranking table, allowing the evaluation to focus on those actions where additional mitigation measures may be most appropriate. Each mitigation strategy was ranked using the following criteria:

Social: Is the proposed strategy socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?

Technical: Will the proposed strategy work? Will it create more problems than it solves? Will the strategy reduce losses in the long term with minimal secondary impacts?

Administrative: Can the community implement the strategy? Is there someone to coordinate and lead the effort? Is outside help needed? Is funding available or can it be obtained? Can the project be accomplished in a timely manner?

Political: Is the strategy politically acceptable? Is there public support both to implement and to maintain the project? Is there enough support to ensure success?

Legal: Is the community authorized to implement the proposed strategy? Is there a clear legal basis or precedent for this activity? Is the action likely to be challenged by stakeholders who will be negatively affected?

Economic: What are the costs and benefits of this strategy? What benefits will this action provide? Does the cost seem reasonable for the size of the problem and the likely benefits? Is outside funding needed? What burden will be placed on the tax base to implement this action?

Environmental: How will the strategy impact the environment? Will the strategy need environmental regulatory approvals?

2 = Excellent 1 = Average 0 = Poor

Risk Rating: 5 = Multi Hazard 3 = High 2 = Medium 1 = Low

Hazard	Risk	Rank	Hazard	Risk	Rank
Drought	7	Med.	Severe Winter Weather	18	High
Landslide	1.6	Low	Solar Storm/Space Weather	1	Low
Extreme Temperatures	6.9	Med.	Tornado/Downburst/Severe Wind	12	Med.
Flood / Erosion	18	High	Wildfire	7.8	Med.
Hurricane/Tropical Storm	18	High			
Infect. Disease	4.6	Low			
Lightning	6.9	Med.			

STAPLEE CHART

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
1	*The town has emergency back up power at several locations, emergency generators are not rated for full operation / heating & cooling during prolonged power outages that may occur resulting from severe winter weather, extreme wind events. The school and community center do not have any emergency back up power source.* -- New generators for the Town office/library 20kw, Community Building/School 50kw estimated, and portable 15kw for the Fire Department/Church use. Sizes estimated based PT professional expertise. Current units are too small to handle loads of the buildings. *[severe winter weather, extreme wind events, solar storm / space weather, extreme temperatures]*	2	2	2	2	2	1	1	5	17
2	*Emergency Operations Plan was last updated in 2014. The EOC / Fire Station is vulnerable to flooding.* -- Update EOP including a continuity plan for the Emergency Operations Center that identifies alternate operating locations, protects critical equipment and records, and ensures emergency functions can continue during flooding at the fire station. *[all hazards]*	2	2	1	2	2	2	1	5	17
3	*Dry hydrants and surface water sources may be less reliable in drought periods, reducing available water for wildfire suppression.* -- Identify alternative water resources and storage for fire suppression during	2	1	1	2	1	2	1	5	15

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	periods of drought. Develop agreements for secondary water resources to be used during drought conditions. *[Drought, Wildfire]*									
4	*Drought conditions increase wildfire risk in certain forested areas with accumulated fuels, access limitations, and vegetation die-off caused by invasive species* (e*merald ash borer, hemlock wooly adelgid, nematode impacting beech trees) understory die-off leading to increased wildfire hazards and more challenging suppression efforts.* -- Develop a monitoring program for high fuel and die-off areas along White Brook Road, pit off NH 10 near Badger, Bears Den area, along highways, Smith Hill Rd, and slopes of Centennial Hill. *[Drought, Wildfire]*	2	1	1	2	2	2	2	5	17
5	*Heavy rainfall and stormwater runoff, cause recurring roadside erosion and washouts on certain town road segments, indicating localized slope and drainage instability that can damage road infrastructure and restrict access during major storm events.* -- Eaton Hill Rd. needs an upsized culvert. *[landslide, flooding, tropical storm / hurricane]*	2	2	2	2	2	2	1	5	18
6	*The Town Garage is vulnerable to flooding. Access is limited by catastrophic flooding events (NH 10 closure).* -- Establish a plan to maintain DPW operations when NH Route 10 is closed by flooding by pre-staging critical	2	1	2	2	1	2	1	5	16

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	materials and equipment, identifying alternate access routes, and arranging secondary storage or mutual aid for sand, salt, and emergency traffic control supplies. *[Flooding, severe winter weather]*									
7	*The Town Offices and Library are vulnerable to limited access due to flooding. The food pantry, located at the Town Offices, is also vulnerable.* -- Evaluate hillside runoff patterns behind the Town Offices and Library and identify targeted drainage improvements, such as interceptor swales, trench drains, or redirection of concentrated flows, to reduce flooding and maintain access to the building and food pantry during storm events. *[Flooding]*	1	1	1	1	2	1	0	3	10
8	*Surry Road, a secondary evacuation route, is vulnerable to flooding and erosion. (State road, no jurisdiction)* -- Evaluate Surry Road to identify specific segments vulnerable to flooding and erosion, determine underlying causes such as inadequate drainage, undersized culverts, or low roadway elevations, and prioritize corrective measures to maintain the road's function as a secondary evacuation route. *[Flooding]*	1	1	1	1	0	0	1	3	8
9	*NH 10, primary access is vulnerable to flooding throughout town.* -- Document the community impacts of NH Route 10 flood closures and implement a targeted public education strategy to reduce risks associated with temporary loss of primary access to and from	2	2	2	2	2	2	1	5	18

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	Gilsum. Check Ready.gov *[Flooding, severe winter weather]*									
10	*Some culverts and drainage structures experience capacity constraints or become overwhelmed during major rain events, contributing to localized flooding.* -- Identify undersized culverts and drainage structures, develop a replacement and upsizing schedule based on priority locations (Vessel Rock Rd, Church St, Garnet Ct, Surry Rd SADES ID 27677 – PT noted difficulties with structure owners or abutters). *[Flooding]*	0	2	1	1	0	2	1	3	10
11	*Bank erosion during high-flow events affects certain stream and riverbank areas, particularly where invasive vegetation reduces root stability.* -- Bank failure identified at Hammond Hallow Rd, Banks Rd, Sullivan Rd. Implement volunteer invasive removal and native revegetation with Con Com & ARLAC, and pursue stabilization designs with NHDES for priority sites with active bank failure. *[Flooding, erosion]*	1	1	1	1	0	1	2	3	10
12	*Sediment movement during storms contributes to drainage blockages and requires recurring cleanup.* -- Identify priority areas. Implement nature-based solutions such as vegetated swales, sediment forebays, or check dams at priority drainage locations to slow runoff, capture sediment, and reduce drainage blockages during storm events. *[Flooding]*	1	2	2	1	1	2	2	3	14

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
13	*New effective FIRMs will be released soon, Floodplain Ordinance will need updating.* -- Update Floodplain Development Ordinance. *[Flooding]*	1	2	2	1	2	2	1	3	14
14	*Dry wells during past droughts have occurred without a consistent method for tracking or identifying affected areas. During previous drought periods, some private wells in Gilsum have gone dry or experienced reduced yield, but reports are handled individually and are not logged in a centralized way. Without a consistent process to track, map, or summarize drought-related well impacts, the Town has limited ability to identify clusters, coordinate support, or evaluate long-term drought vulnerability across different parts of the community.* -- Identify feasible, low-burden methods for the Town to collect and summarize information on drought-related private well failures or water shortages, including who would collect the information, when it would be collected, and how it could be stored or mapped, in order to better understand whether certain areas of the community are more vulnerable during prolonged droughts. *[Drought]*	2	1	1	1	2	1	2	2	12
15	*NFIP may be under subscribed due to lack of program knowledge.* -- Provide information and incentives for property owners to acquire flood insurance. Provide training / workshops for local officials to gain an	1	2	1	1	1	2	1	3	12

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	understanding of NFIP and flood maps. *[Flooding]*									
16	*Flood-prone locations along the Ashuelot River and tributaries are vulnerable to overtopping and bank erosion during tropical rainfall.* -- Identify flood-prone river and tributary segments with elevated risk of overtopping or bank erosion and implement riparian buffer restoration and floodplain reconnection where feasible, while strengthening protections for adjacent wetlands to reduce erosion and flood impacts over time. *[Flood / Erosion, Hurricane]*	1	1	1	1	0	1	2	5	12
17	*Prolonged drought can leave agricultural operations without adequate water for crop production.* -- Provide educational resources from UNH Cooperative Extension on Town website. Search | Extension *[Drought]*	1	2	2	2	2	2	2	2	15
18	*Extreme temperature response in Gilsum relies on strong informal community supports that are not yet formalized for prolonged or round-the-clock emergencies.* -- Establish memorandums of understanding with identified emergency shelter locations, including Badger Company, to formalize facility use and ensure reliable, long-term shelter access during prolonged or around-the-clock extreme temperature events. Contact American Red Cross for	2	2	2	2	2	2	1	5	18

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	Facility Assessment. *[Extreme Temps, flooding, severe winter weather]*									
19	*Extreme temperatures can damage infrastructure, including pipes and electrical systems.* -- Develop and distribute public education materials on low-cost actions to reduce extreme temperature impacts to private infrastructure, such as preventing frozen pipes and managing electrical demand during heat events, while reinforcing information on available heating / cooling centers. *[Extreme Temps]*	1	1	1	1	2	2	1	2	11
20	*Understanding Repeat Lightning-Damage Locations* -- Identify and document locations with a history of repeated lightning-related damage and evaluate feasible protective measures to reduce future impacts to structures, utilities, and critical facilities. *[Lightning]*	1	1	1	2	1	2	2	2	12
21	*Residents are not always informed of pending hazard events.* -- Promote NH Alerts in newsletters and other outreach. *[All hazards]*	1	2	1	2	2	2	1	5	16
22	*Surge and Grounding Protection for Town Facilities* -- Evaluate and upgrade surge protection and grounding systems at Town-owned facilities to reduce damage to electrical and communications equipment from lightning strikes. *[Lightning]*	1	2	2	1	2	2	1	2	13
23	*Older structures and outbuildings may be vulnerable to wind loads, and there is no*	1	1	2	1	2	2	1	2	12

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	local guidance on practical, low-cost wind-hardening measures. -- Provide link to FEMA guidance on Town website. Wind Retrofit Guide for Residential Buildings FEMA P-804 *[Severe Wind]*									
24	*Large areas of conservation land have limited or no access routes, which may slow wildfire detection and suppression.* -- Evaluate options to improve detection, access routes, or staging locations to support timely wildfire suppression while minimizing environmental impacts. *[Wildfire]*	1	2	2	1	1	2	2	2	13
25	*Gilsum is densely forested with limited access. The Wildfire Risk to Communities tool rates Cheshire County as very high risk for direct exposure to wildfires and low likelihood for wildfires.* -- Update Master Plan to address density, emergency access, and water supplies; include the fire department in the site plan review process. Require safe access & maintenance thereof for fire apparatus. *[Wildfire]*	2	2	2	1	2	1	2	2	14
26	*Steep slopes in the Centennial Hill area have been identified as potentially vulnerable to movement during prolonged wet conditions.* -- Conduct a targeted field assessment of steep slope areas on Centennial Hill to identify locations where saturated soils, snowmelt, or prolonged rainfall could cause slope movement or debris to reach Centennial Road. Based on the	1	2	1	1	1	1	2	1	10

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	findings, the Town would prioritize and implement site-specific measures such as drainage improvements, debris control features, or roadway protection to reduce impacts to the road. *[Landslide]*									
27	*Illnesses with notable recent impacts in Gilsum include COVID-19 (144 cases in Gilsum and 137 deaths in Cheshire County [nearly 20,000 cases]) , and Lyme Disease (2024 1,457 cases in NH) Lyme disease by ticks, EEE from mosquitos can have an impact on humans and animals.* -- Provide public education and outreach on infectious disease prevention and vector risk reduction, including tick- and mosquito-borne illnesses, by sharing guidance from state and regional health agencies to reduce exposure risks for residents and animals. *[Infectious Disease]*	1	1	2	1	2	2	2	1	12
28	*Invasive vegetation contributes to expanded tick habitat, increasing the potential for tick-borne illnesses in Gilsum.* -- Coordinate with the Conservation Commission and volunteers to identify and manage invasive vegetation in priority areas, including along trails, road edges, and public lands, to reduce tick habitat and lower the risk of tick-borne illnesses in Gilsum. *[Infectious Disease]*	1	1	2	2	1	2	2	1	12
29	*Solar storms can disrupt communications systems relied upon by emergency*	1	1	2	2	2	2	1	1	12

Action #	***Problem Statement*** -- **Action** ***[Hazard Addressed]***	SOCIAL	TECHNICAL	ADMIN.	POLITICAL	LEGAL	ECONOMIC	ENVIRO.	RISK rating	Score
	responders, and Gilsum has limited local redundancy. -- Radio repeater is underway; radios are in the process of being updated. *[Solar Storms & Space Weather]. Are the new radios high frequency?*									
30	*Many hazard mitigation strategies involve public education. Gilsum does not have a defined procedure for keeping residents and businesses informed.* -- Identify the best means to share hazard mitigation educational materials with the public. *[All hazards]*	2	2	1	2	2	2	1	5	17

Table 30 STAPLEE Analysis

8 IMPLEMENTATION SCHEDULE AND ACTION PLAN

The following questions were asked to develop an implementation schedule for the identified priority mitigation strategies:

WHO? Who will lead the implementation efforts? Who will put together funding requests and applications?

WHEN? When will these actions be implemented, and in what order?

HOW? How will the community fund these projects? How will the community implement these projects? What resources will be needed to implement these projects?

The Planning Team developed a prioritized schedule for implementation that focuses on realistic and actionable projects. Only those actions that require new efforts and are expected to be initiated or completed within the five-year planning window have been included in the priority list.

The Planning Team used other criteria in addition to the STAPLEE score to determine whether a strategy is included and how it is prioritized. Criteria included overall feasibility and general benefits as well as the extent the action will preserve historical structures, contribute to plan goals, reduce risk to existing buildings, or limit risk to new development. After the Team identified which actions were most important and realistic, they applied the STAPLEE score to help prioritize actions.

Prioritized projects within the Action Plan are categorized by general timeframes: *Short-term (1–2 years)*, *Mid-term (3–4 years)*, and *Long-term (4–5 years)*. Actions involving routine maintenance or ongoing operations that were addressed previously or through additional existing maintenance protocols identified in Chapter 6 are not included in the prioritized list; instead, they are documented in the Existing Protection Matrix as part of the community's current capabilities.

While several other projects scored well using the STAPLEE methodology, they were excluded from the priority list because they are not currently feasible due to resource, capacity, or timing constraints. These projects may still be pursued if future opportunities arise that would support their implementation.

8.1 PRIORITIZED ACTION PLAN

# (from STAPLEE)	Priority	Action	Who	When	How / Cost
2	High	Update EOP including a continuity plan for the Emergency Operations Center that identifies alternate operating locations, protects	EMD	Short-term	$10,000 HSEM Grants

# (from STAPLEE)	Priority	Action	Who	When	How / Cost
		critical equipment and records, and ensures emergency functions can continue during flooding at the fire station. *[all hazards]*			
3	High	Identify alternative water resources and storage for fire suppression during periods of drought. Develop agreements for secondary water resources to be used during drought conditions. *[Drought, Wildfire]*	Fire Chief	Mid-term	$5,000 - $15,000 (planning) CWDG Grant & Town Budget
11	High	Bank failure identified at Hammond Hallow Rd, Banks Rd, Sullivan Rd. Implement volunteer invasive removal and native revegetation with Con Com & ARLAC, and pursue stabilization designs with NHDES for priority sites with active bank failure. *[Flooding, Erosion]*	Road Agent, ConCom, NHDES	Short-term	$15,000 - $40,000 per site ARM Grant & Town Budget
24	High	Establish memorandums of understanding with identified emergency shelter locations, including Badger Company, to formalize facility use and ensure reliable, long-term shelter access during prolonged or around-the-clock extreme temperature events. Contact American Red Cross for Facility Assessment. *[Extreme Temps, flooding, severe winter weather]*	EMD, Badger Liaison	Short-term	No cost, volunteer time
37	High	Identify the best means to share hazard mitigation educational materials with the public. *[All hazards]*	BOS, EMD	Short-term	No cost, volunteer time
5	Medium	Eaton Hill Rd. needs an upsized culvert. *[landslide, flooding, tropical storm / hurricane]*	Road Agent	Short-term	$5,000 Town Budget
9*	Medium	Document the community impacts of NH Route 10 flood closures and	EMD	Short-term	No cost, volunteer time

# (from STAPLEE)	Priority	Action	Who	When	How / Cost
		implement a targeted public education strategy to reduce risks associated with temporary loss of primary access to and from Gilsum. Check Ready.gov *[Flooding, severe winter weather]*			
24	Medium	Evaluate options to improve detection, access routes, or staging locations to support timely wildfire suppression while minimizing environmental impacts. *[Wildfire]*	Fire Chief	Long-term	$3,000 CWDG Grant & Town Budget
1	Medium (School) / Low (Town Office)	New generators for the Town office/library 20kw, Community Building/School 50kw estimated, and portable 15kw for the Fire Department/Church use. Sizes estimated based PT professional expertise. Current units are too small to handle loads of the buildings. *[severe winter weather, extreme wind events, solar storm / space weather, extreme temperatures]*	Selectboard	Long-term	$70,000 FEMA Hazard Mitigation Grants
13	Low	Update Floodplain Development Ordinance. *[Flooding]*	Planning Board	Short-term	No cost, volunteer time
15*	Low	Provide information and incentives for property owners to acquire flood insurance. Provide training / workshops for local officials to gain an understanding of NFIP and flood maps. *[Flooding]*	Selectboard or designee	Mid-term	<$1,000 Town Budget
17*	Low	Provide educational resources from UNH Cooperative Extension on Town website. *[Drought]*	Selectboard or designee	Short-term	<$100 (staff time) Town Budget
25	Low	Update Master Plan to address density, emergency access, and water supplies; include the fire department in the site plan review process. Require safe access &	Planning Board, Fire Chief	Short-term	No cost – volunteer time

# (from STAPLEE)	Priority	Action	Who	When	How / Cost
		maintenance thereof for fire apparatus. *[Wildfire]*			

Table 31 Implementation Strategy for Priority Mitigation Actions

* Items to be included in action #37 Public Outreach Strategies.

9 ADOPTION, MONITORING AND IMPLEMENTATION

9.1 ADOPTION

The Gilsum Board of Selectmen adopted the Gilsum Hazard Mitigation Plan Update 2026 on _____, 2026. A copy of the resolution can be found at the end of this chapter. Adopted policy addresses the actions for implementation set forth in the chart "Implementation Strategy for Priority Mitigation Actions" in Chapter 8 and in the "Monitoring & Updates" sub-section contained in this Chapter (9). All other sections of this Plan are supporting documentation for information purposes only and are not included as the statement of policy.

9.2 MONITORING & UPDATES

Recognizing that many mitigation projects are ongoing, and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail altogether, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates of the Plan where necessary. The Planning Team acknowledged that monitoring of the plan since the previous update had not been completed due to a lack of capacity. However, many priority projects that had been identified in the previous plan update were successfully completed as shown in the Status of Previous Priority Actions table (Section 6.2).

In order to track progress and update the Mitigation Strategies identified in the Action Plan, the Gilsum Hazard Mitigation Planning Team will revisit the Gilsum Hazard Mitigation Plan Update 2026 annually, or after a hazard event. The Emergency Management Director is responsible for initiating this review and should consult with the Board of Selectmen and other key local officials. Changes should be made to the Plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with the timeframe, the community's priorities, and funding resources. Priorities that did not make the implementation list, but are identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this Plan to determine feasibility of future implementation. In keeping with the process of adopting the Gilsum Hazard Mitigation Plan Update 2026, a public meeting to receive public comment on plan maintenance and updating will be held during the annual review period and the final product adopted by the Board of Selectmen appropriately. The Planning Team has established that its annual meeting will be held in November or December each year in advance of the Select Board establishing the Town Budget for the following year. The Emergency Management Director will present the progress of the plan, as well as challenges to a joint public meeting of the Select Board and Planning Board in January of each year. This meeting will be advertised to the community by posting it on the Town Office sign, as an addition to the Town calendar, and posting of the agenda to the Town website. A project status sheet is included at the end of this plan (Appendix H) to record progress on mitigation actions.

The Town of Gilsum, NH Hazard Mitigation Plan Update 2026 must be reviewed, revised as appropriate, and resubmitted to FEMA for approval every **five years** in order to maintain eligibility for all Hazard Mitigation Assistance (HMA) funding. This update was prepared with assistance from Planners at Southwest Region Planning Commission trained in Hazard Mitigation Planning. Data and maps used to prepare this plan are available at their office and should be used in preparing future updates.

9.3 IMPLEMENTATION OF THE PLAN THROUGH EXISTING PROGRAMS

Since adoption of the previous Hazard Mitigation Plan, mitigation actions have been carried out primarily through existing regulatory, maintenance, and operational programs rather than through formal incorporation into other adopted planning documents. While the prior plan informed ongoing activities such as floodplain management, ordinance enforcement, and routine capital maintenance, it was not formally integrated into other planning mechanisms such as the Master Plan.

In addition to work by the Hazard Mitigation Planning Team and town departments, several other mechanisms exist which will ensure that the Gilsum Hazard Mitigation Plan Update 2026 continues to receive the attention it requires for satisfactory use.

Master Plan

The Master Plan is reviewed periodically by the Planning Board. Mitigation priorities identified in the Hazard Mitigation Plan update will be considered and addressed during any updates to the Master Plan to ensure consistency across planning efforts.

Zoning Ordinance and Regulations

Some of the implementation strategies proposed involve revisions to the Zoning Ordinance. The Local Hazard Mitigation Planning Team will oversee the process to begin working with the Planning Board to develop appropriate language for the recommended modifications to ensure planning efforts are consistent across devices.

Emergency Operations Plan

The Town's EOP will be updated soon. The committee responsible for updating the EOP will use the hazard profiles in this Plan Update to inform the updating of the EOP to ensure emergency operations align with known hazards. The Risk Assessment from the previous LHMP update was used to inform the EOP.

Continued Public Involvement

In keeping with the process of adopting the Gilsum Hazard Mitigation Plan Update 2026, the Emergency Management Director, under direction of the Board of Selectmen will be responsible for ensuring that the town departments and the public have adequate opportunity to participate in the maintenance and update of the Hazard Mitigation Plan Update 2026. A public meeting will

be held to receive public comment during the annual review period, and the final product adopted by the Board of Selectmen.

During the maintenance, implementation, monitoring, evaluation and update process of the Hazard Mitigation Plan Update 2026, the following techniques may be used to ensure continued public involvement:

- Provide invitations to the Board of Selectmen;
- Provide invitations to the Budget Committee;
- Provide invitations to the Town Department heads;
- Post on interactive websites;
- Post notices of meetings at the Town Offices, and the Town website;
- Post Hazard Mitigation Plan Update on the Town website.

A number of Implementation Action items which will be undertaken relate to public education and involvement. Additionally, members of the public including area businesses, organizations, and communities will be invited to participate in the yearly process of updating the Gilsum Hazard Mitigation Plan Update 2026. These outreach activities will be undertaken during the Plan's annual review and during any Hazard Mitigation Planning Team meetings the Board of Selectmen calls to order.

9.4 ADOPTION CERTIFICATE

See following page

CERTIFICATE OF ADOPTION

GILSUM, NEW HAMPSHIRE

BOARD OF SELECTMEN

A RESOLUTION ADOPTING THE

GILSUM HAZARD MITIGATION PLAN UPDATE 2026

WHEREAS, the Town of Gilsum has developed and received Approval Pending Adoption from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update 2026 under the requirements of 44 CFR 201.6; and

WHEREAS, public and committee meetings were held between October 23, 2025 – February 2, 2026 regarding the development and review of the Gilsum Hazard Mitigation Plan Update 2026**;** and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedure for the Town of Gilsum; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the Town of Gilsum, with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this Plan will make the Town of Gilsum eligible for funding to alleviate the impacts of future hazards; now, therefore, be it RESOLVED by the Board of Selectmen:

A. The Plan is hereby adopted as an official plan of the Town of Gilsum;

B. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;

C. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.

IN WITNESS WHEREOF, the undersigned has affixed his/her signature this ___ day of _____, 2026

_____ Gilsum Board of Selectmen, Chairman

_____ Board of Selectmen

_____ Board of Selectmen

ATTEST_____

APPENDICES

Appendix A. ASSESSING RISK

Method for Rating Impacts, Probability of Occurrence, and Overall Risk

Impact

The impact is an estimate generally based on a hazard's effects on humans, property, and businesses. The Planning Team came together and determined the impact rating for each of the previously identified hazards. If a hazard was identified as a threat to the entire community, the impact rating was determined with the entire community in mind. The average impact score was calculated by computing the average of the human, property, and business impact scores. The impact ratings were broken into the following categories:

1: Inconvenience, reduced service/productivity, minor damages, non-life-threatening injuries

3: Moderate to major damages, temporary closure and reduced service/productivity, numerous injuries, and deaths

6: Devastation and significant injuries and deaths, permanent closure and/or relocation of services, long-term effects

Probability of Occurrence

The probability of occurrence is a numeric value that represents the likelihood that the given hazard will occur within the next 10 years. This value was chosen based on historical information provided by subject matter experts. Planning Team came together and determined the probability of occurrence rating for each of the previously identified hazards. The probability of occurrence ratings was broken into the following categories:

1: 0-33% Probability of occurring within 10 years (Low)

2: 34-66% Probability of occurring within 10 years (Medium)

3: 67%-100% Probability of occurring within 10 years (High)

Overall Risk

The overall risk is a representation of the combined potential impact and probability of occurrence ratings. This is calculated by multiplying the probability of occurrence rating score by the impact rating score (the average of the human, property, and business impacts). The goal of identifying the overall risk of each identified hazard is to assist the community in determining which hazards pose the largest potential threat to the community. This will allow the Planning Team to use the overall risk ratings to develop targeted mitigation actions that allocate funding

and resources to the highest rated hazards first. The overall risk ratings are broken down and color coded into the following categories: 1-6 low risk; 7-12 medium risk; 13-18 high risk

Appendix B. Documentation of the Planning Process

Agendas

Town of Gilsum
Hazard Mitigation Planning Team
Meeting 1
Agenda
Gilsum Fire Station
5 Church St., Gilsum, NH
October 23, 2025, 5:00 p.m.

I. Welcome & Introductions (5 min)
II. Project Administration & Access (5 min)
III. Project Overview: *What is Hazard Mitigation?* (20 min)
    a. Changes in Requirements (Public Meetings, Hazard Mapping)
    b. Working Backwards: Expectations & Plan Review Tool *(Gilsum NH Final Local Review Tool PDF)*
    c. Monitoring and Evaluation of Existing Plan?
IV. Mission Statement (5 min) *To foster, promote, and implement actions to eliminate or reduce the long-term risk to human life and property from the effects of identified natural and manmade hazards.*
V. Revisit Hazard Profiles and Risk Assessment (55 min)
    a. Discussion: Hazard events since last update – what are the local impacts of these events? (Spreadsheet: *Hazard Events Since Last Update*)
    b. Review/Revise Hazard Rankings with consideration of future conditions – determine ranks for any newly identified hazards, discuss new development in hazard prone areas (Pg. 20, *Risk Assessment PDF, Hazard Events Since Last Update*)
VI. Public Engagement Strategies (20 min)
    a. Stakeholder Outreach (x2)
    b. Community Survey (*Community Survey PDF.*)
    c. Addition to Town Webpage / Town Newsletters / Social Media
    d. Comment Period
    e. Public Meetings (x2)
    f. Other?
VII. Next Steps (10 min)
    a. Homework: Review Critical Facilities, Assets & Community Lifelines (Ch. 5, pg. 21 of existing plan; *Community Lifeline Activity PDF.*)
    b. Hazard Mapping
VIII. Next Meeting: November 13th, 5:00 p.m.

Town of Gilsum
Hazard Mitigation Planning Team
Meeting 2
Agenda
5 Church St., Gilsum, NH
November 13, 2025, 5:00 p.m.

I. (5:00) Recap of Meeting 1

II. (5:05) Update: Public Outreach – Community Survey Distribution; Public Meeting 1

III. (5:10) Review Goals – Do they address identified hazards? (Pg. 5 existing plan, *State HMP Goals PDF*)

IV. (5:15) Critical Facilities, Assets & Community Lifelines – What are asset vulnerabilities? (Ch. 5, pg. 21 of existing plan; *Community Lifeline Activity PDF*)

V. (5:45) Review Existing Protections – What needs updating? What is the authority to expand these or lack of ability? (Ch. 7, pg. 27-28)

VI. (6:15) Review Previous Action Plan – Was it completed? Is it still a problem? Why? (Ch. 9, pg. 35-36, *Review Existing Action Plan Activity PDF*)

VII. (6:40) Changes in Development – Has development or policy changed in hazard-prone areas since the last plan? If so, has it increased or decreased the community's vulnerability?

VIII. (6:50) Mapping Activity (*Mapping Activity Handout PDF*)

IX. (6:55) Next Steps: Homework (5 min)
   a. Distribute Community Survey
   b. Contribute to Past and Potential Hazards Map

X. Next Meeting Date: Thursday, December 11, 2025

Town of Gilsum
Hazard Mitigation Planning Team
Meeting 3
Agenda
5 Church St., Gilsum, NH
December 11, 2025, 5:00 p.m.

I. (5:00) Recap of Meeting 2

II. (5:05) Update: Public Outreach – Community Survey Responses

III. (5:10) Review Previous Action Plan – Was it completed? Is it still a problem? Why? (Ch. 9, pg. 35-36, *Review Existing Action Plan Activity PDF*)

IV. (5:40) Changes in Development – Has development or policy changed in hazard-prone areas since the last plan? If so, has it increased or decreased the community's vulnerability?

V. (5:50) Review & Develop Problem Statements – Why, specifically, is each hazard a problem in Gilsum? (*Problem Statements PDF,* Ch. 6, pg. 24)

VI. (6:55) Next Steps: Homework (5 min)
   a. Brainstorm Projects!
   b. Distribute Community Survey
   c. Contribute to Past and Potential Hazards Map

VII. Next Meeting Date: Thursday, January 8, 2026

Town of Gilsum
Hazard Mitigation Planning Team
Meeting 4
Agenda
5 Church St., Gilsum, NH
January 8, 2026, 5:00 p.m.

I. 5:00 **Recap of Meeting 3** *Meeting 3 Notes*

II. 5:05 **Public Outreach** *Community Survey Results* Town of Gilsum Hazard Mitigation Community Survey – Results

III. 5:10 **Analyze Mitigation Strategies** *STAPLEE Gilsum*

IV. 5:50 **Prioritized Action Plan & Implementation Schedule** Nominate projects to consider for the next 5-year action plan. Determine a timeline, responsible party and approximate cost and potential funding. *Prioritize Actions & Schedule*

V. 6:40 **Plan Maintenance Requirements** Review the discussion questions and provide suggestions to improve maintenance, evaluation, ongoing public involvement and integration with the Town's other planning mechanisms. *Element D Handout*

VI. 6:55 **Next Steps:**
   a. Finalize Outstanding Items: final input due **January 15**
   b. Planning Team Draft Plan & Map: Review Jan. 20 – Jan. 30
   c. Draft Plan Comment Period: Feb. 2 – Feb. 21
      i. Public Meeting 2: BOS Feb. 16
   d. Review Comments (email), submit draft to HSEM: Feb. 25

Meeting Notes

Gilsum Hazard Mitigation Plan (HMP) Update – Meeting 1 Summary

Meeting Overview

Date/Location: October 23, 2025 – Gilsum Fire Station

Purpose: Kick off the HMP update; review FEMA process and requirements; begin risk assessment; plan public and stakeholder outreach.

Key Discussion and Outcomes

Confirmed administrative requirements: sign-in sheets to document time and round-trip mileage for match; two required public meetings to be held during Select Board meetings (script and minutes language to be provided by SWRPC).

Established shared project folder (agenda, worksheets, prior plan, state plan references, NOAA events, survey draft) and planned a large-format hazard map for participant mark-up at the next meeting.

Reviewed recent/local events and capabilities, including multi-day power outage impacts (March 2023) and historic flood/washout events (2005; 2012–13). Discussed drought-related well impacts and fire suppression water limitations.

Discussed shelter/backup power context: church wired for a portable generator; Town Offices have an on-demand generator; Badger Balm identified as a potential partner site (space, generator, kitchen, showers) subject to further verification.

Completed preliminary hazard risk discussion using the NH impact/probability scale and captured Gilsum-specific observations (e.g., flooding and severe winter weather as principal risks; lightning and power reliability concerns; invasive species as a driver of bank instability).

Refined resident survey approach and language: SurveyMonkey plus paper copies; QR flyer; clarify hazard terminology (including environmental contamination and critical infrastructure failure); frame development limitation language as “discourage building in hazard-prone areas.”

Decisions

Use FEMA Local Mitigation Planning Handbook and NH State HMP hazard definitions for consistency across the plan.

Document transparently that annual monitoring since the last plan was informal and “as needed.”

Proceed with SurveyMonkey survey plus paper distribution at library/post office and other venues.

Action Items and Next Steps

SWRPC: Provide public-meeting scripts/agendas and sample minutes language; print and bring a large hazard map for mark-up; finalize survey flyer and social media text; verify NOAA event queries and compile local event impacts spreadsheet.

Team/Town: Post and distribute survey (website/Facebook/bulletin boards) and place paper copies at key locations; bring photos and location-specific notes for hazards/impacts; compile invasive species priorities and lightning repeat locations for mapping.

Next Milestone: Next meeting proposed for November 13, 2025 to conduct hazard mapping and continue plan content updates.

Gilsum Hazard Mitigation Plan (HMP) Update – Meeting 2 Summary

Meeting Overview

Date/Location: November 13, 2025 – Gilsum Fire Station

Purpose: Advance outreach; refine mitigation goals; update critical facilities/lifelines; continue review of existing protections and vulnerabilities.

Key Discussion and Outcomes

Public outreach package finalized in shared folder (QR half-sheet flyer and social media text). Town planned postings via website and Facebook pages, plus physical bulletin boards; hard-copy surveys encouraged at the library and Mobile Food Pantry.

Stakeholder invitations sent to neighboring communities; City of Keene noted Route 10 access risk tied to Three Mile Swamp overtopping if dam capacity is exceeded.

Survey target set for completion around December 15, with flexibility to extend; aspirational response target discussed (approximately 70) with recognition that no minimum response count is required.

Reviewed and refined state and local mitigation goals: removed one local goal that was redundant/unclear; simplified language to "identify cost-effective hazard mitigation measures"; clarified FEMA "whole community" concept as broader stakeholder involvement.

Updated critical facilities, assets, and lifelines (Chapter 5): identified generator coverage and flood vulnerabilities; discussed shelter designations (Church, Fire Station; School can shelter but lacks generator) and potential Badger Balm role pending approval and Red Cross considerations.

Communications discussion: radio repeater replacement underway (Old Gilsum Road); dead spots noted; discussed options and constraints (e.g., ham radio, FirstNet, volunteer capacity).

Decisions

Extend survey window if response counts are low; maintain both digital and paper collection methods.

Add Welfare Officer as a key role for vulnerable-population outreach and support coordination in emergencies.

Carry forward facility and culvert vulnerability updates for confirmation at Meeting 3.

Action Items and Next Steps

SWRPC: Upload updated risk assessment and an outreach logging sheet to the shared folder for final plan documentation.

Team/Town: Distribute survey widely and track posting locations; confirm whether Badger Balm can be formally referenced as a shelter/resource; continue reviewing and correcting the existing protections list; refine priority culvert/roadway concern list.

Next Milestone: Next meeting scheduled for December 11, 2025 to develop problem statements and draft mitigation project concepts.

Gilsum Hazard Mitigation Plan (HMP) Update – Meeting 3 Summary

Meeting Overview

Date/Location: December 11, 2025 – Gilsum Fire Station

Purpose: Review outreach progress; update status of existing protections and prior actions; discuss development trends; develop hazard-based problem statements to drive mitigation project development.

Key Discussion and Outcomes

Survey update: 21 responses at the time of the meeting. Top concerns: drought, flooding, and heavy snow/ice storms; top technological concern: critical infrastructure failure. Priority assets: roads/bridges, fire station, and electricity. Preferred information sources: NH Alerts, Fire Department Facebook page, and town website.

Reviewed prior (2017) plan actions and assigned status categories (completed, ongoing, deferred, removed). Distinguished routine operating practices as existing protections versus new mitigation actions.

Discussed development trends and hazard exposure: identified concern that statewide ADU-by-right changes could increase development in flood-prone areas due to reduced local review; noted limited current development pressure.

Developed and refined problem statements by hazard category (drought, flooding, severe winter weather, wildfire, landslide/erosion, extreme temperatures, and others), emphasizing Gilsum's specific vulnerabilities and constraints (jurisdiction, capacity, and resource limitations).

Introduced NH Stream Crossing Initiative Data Viewer as a tool to support culvert inventory, condition assessment, and prioritization; confirmed that private-road constraints affect feasibility for some actions.

Decisions

Keep survey open through the end of December to capture additional responses.

Use the final problem statements as the basis for generating a comprehensive draft mitigation project list for STAPLEE discussion and prioritization at Meeting 4.

Action Items and Next Steps

All: Continue survey distribution; provide feedback on drafted problem statements; add local event impacts, locations, and costs to the NOAA events spreadsheet; identify any additional mitigation concepts (including aspirational projects).

SWRPC: Translate problem statements and map inputs into a draft project list and preliminary STAPLEE scoring framework for Meeting 4.

Next Milestone: Next meeting scheduled for January 8, 2026 to review the project list, confirm priorities, and assign leads/timeframes/funding approaches.

Gilsum Hazard Mitigation Plan (HMP) Update – Meeting 4 Summary

Meeting Overview

Date/Location: January 8, 2026 – Gilsum Fire Station

Primary Purpose: Review proposed mitigation projects; apply STAPLEE considerations; confirm the Priority Action Plan list with leads, timeframes, and funding approach; set plan maintenance expectations.

Key Discussion and Outcomes

Confirmed the most important outcome was a complete, realistic project list for the Action Plan.

Survey closed with 22 responses; key concerns remained drought, severe winter weather, flooding, and power outages; survey reinforced interest in backup power and shelter readiness.

STAPLEE discussion focused on fit, feasibility, and jurisdiction. Road washout project was split into: (7A) town roads (implementable) and (7B) state roads (advocacy only).

Removed or reclassified projects that were completed, not FEMA-eligible, not demonstrated as local issues, or already routine operations.

Identified priority actions and assigned leads/timeframes, including shelter MOUs (Badger), fire suppression water storage planning, bank erosion/invasives hotspots, EOP update, and targeted outreach related to Route 10 flood closures and NH Alerts enrollment.

Decisions

Treat many outreach-focused items as a consolidated public education package (separate table or coordinated rollout) rather than numerous standalone projects.

Annual plan maintenance: reconvene once per year (target November–December) aligned with budgeting season; EMD will convene and track status updates.

Action Items and Next Steps

SWRPC: Provide editable PDFs for mapping repeat lightning locations and erosion hotspots; integrate meeting revisions; deliver draft plan by January 20 for content review; prepare public comment materials (flyer/QR) and host plan and comment form on SWRPC site.

Town/Team: Mark up erosion hotspots (Banks Road, Sullivan Road) and lightning repeat locations; support plan posting and outreach via town website/Facebook/newsletter as feasible; review and respond to any substantive public comments during February comment period.

Next Milestone: Public comment period planned for February 2–February 21, followed by final revisions and FEMA submission.

Sign In Sheets

Gilsum Hazard Mitigation Planning Team

Meeting 1

Date: October 13, 2025

Sign In Sheet

Name	Title(s)/Affiliation(s)	Round Trip Travel Time (hours)	Time Spent Outside of Meeting (hours)
TOM JULIAS	Planning Board Chair		
BRIAN J GOULD	Assistant Fire Chief		
Chris Hamilton	Volunteer Fire/Rescue		
MARIEN MACOMBER	ROAD AGENT		
			1
RAYT CUSHMAN	Selectboard		

Gilmer Hazard Mitigation Planning Team

Meeting 1

Date: November 13, 2023

Sign In Sheet

Name	Title(s) & Affiliation(s)	Round Trip Travel Time (hours)	Time Spent Outside of Meeting (hours)
Chip Chapman	Fire Coordinator ALCAC	20 min	3 hrs
Tom Julius	Planning Board Chair	5	1 hr
Chris Hamilton	Ranger	0	½ hr
Marian Maggard	Road Agent	0	½ hr
Dee Dooley	Sand Volcano		2 hr
Bart Cauley	Public	30	

Gilmer Hazard Mitigation Planning Team

Meeting 3

Date: December 11, 2023

Sign In Sheet

Name	Title(s) & Affiliation(s)	Round Trip Travel Time (hours)	Time Spent Outside of Meeting (hours)
Dee Dooley	Sand Volcano		1
Chris Hamilton	Ranger		1.5
Tom Julius	Planning Board Chair		0.5
Chip Chapman	ALCAC Fire Coordinator		2.0
Bart Cauley	Public		.5
Chad Lovell	Volunteer Firefighter		

Survey

The community hazard survey was shared on the Gilsum Fire Department Facebook page, on the Badger Company bulletin board, published in the Badger newsletter, and hard copies as well as the QR code flyer shared at the Town Office and Library.

Town of Gilsum Seeks Community Input for Hazard Mitigation Plan Update

The Town of Gilsum is in the process of updating its Hazard Mitigation Plan, a vital tool used to identify local risks—such as flooding, severe storms, and winter weather—and to outline strategies that reduce their impact on our community. As part of this effort, we are seeking input from residents, business owners, and other stakeholders through a brief Hazard Mitigation Survey.

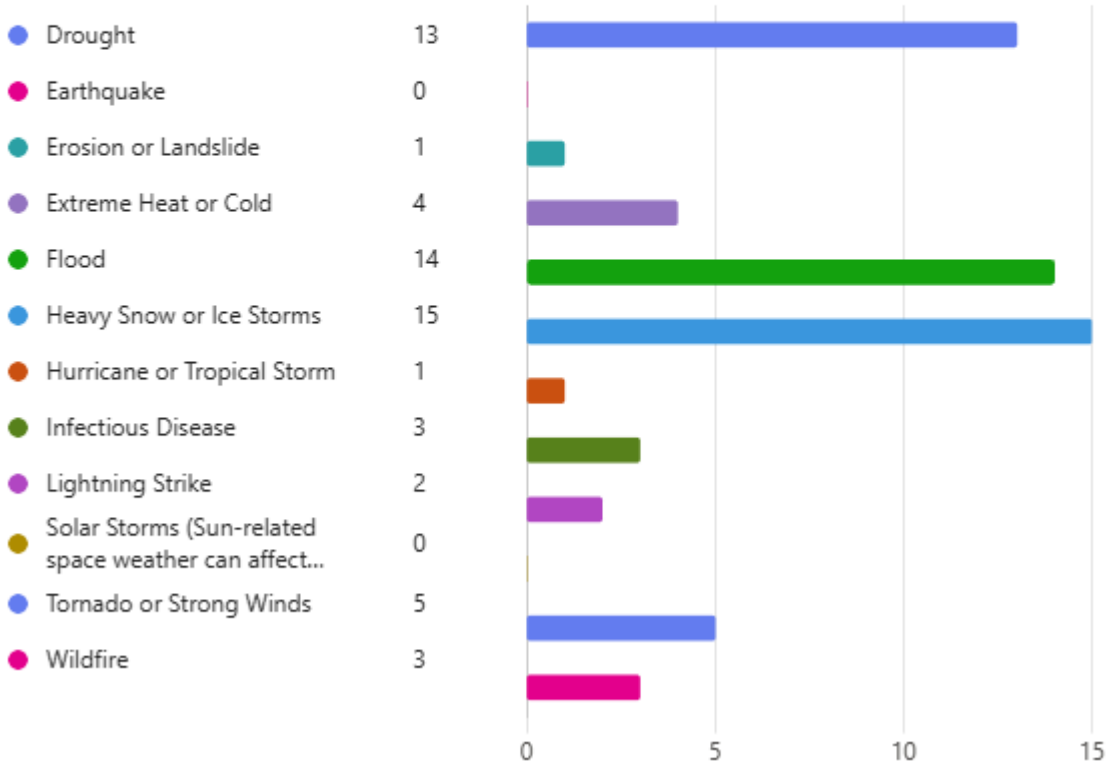
Your feedback will help the town better understand which hazards concern you most, how prepared you feel, and what steps you believe should be taken to improve community resilience. Whether you've lived here your whole life or just moved to town, your perspective is valuable. The survey will be open until **December 15th.**

The survey is quick, anonymous, and open to all. You can take it online by scanning the QR code, going to https://forms.office.com/r/ipwKXvuXd2, visiting the Town's website, or filling out a hard copy at the Town Offices.

Thank you for helping us plan for a safer future!

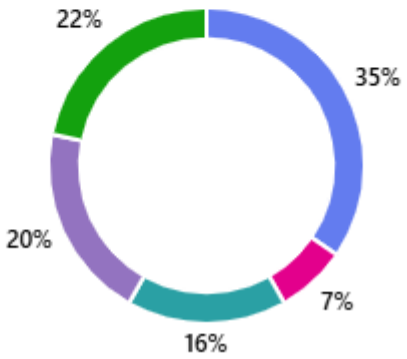
1. What natural hazards worry you the most? Choose up to 3.
(Intent: Establish what hazards respondents are most concerned about based on list s developed during the last plan update. The results can be compared to planning te am's risk ratings.)

More details

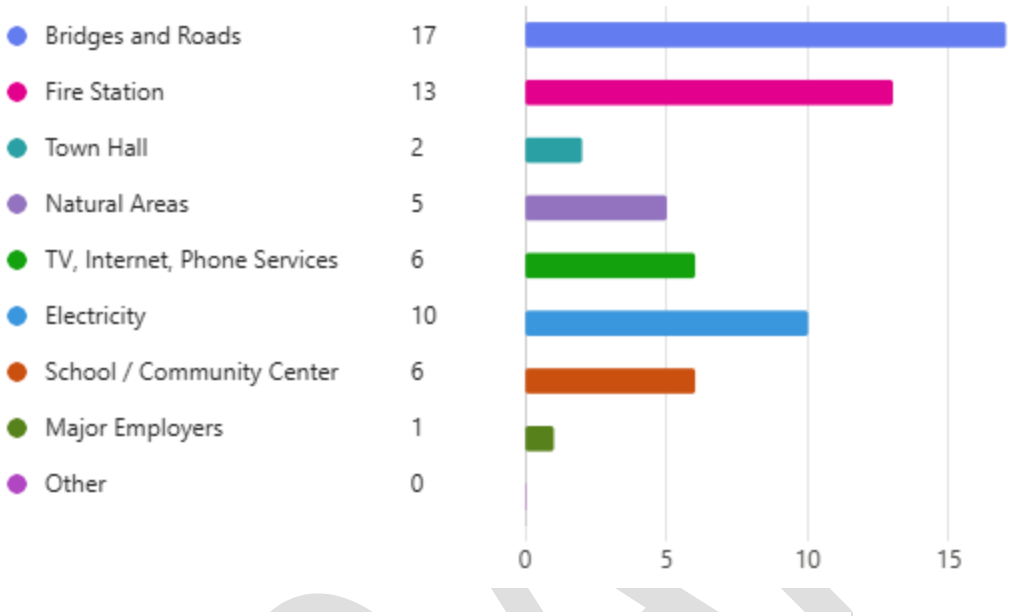


2. What manmade or technological hazards concern you most? Choose up to 3. *(Intent: Establish what hazards respondents are most concerned about based on lists developed during the last plan update. The results can be compared to planning team's risk ratings.)*

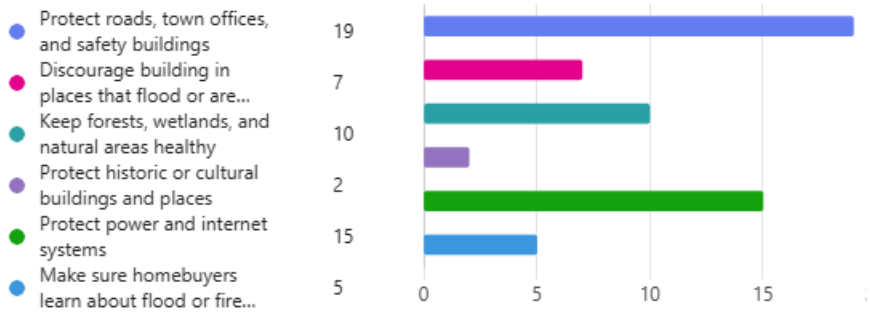
Critical Infrastructure Failures (old or failing roads, bridges, buildings, dams, and utility systems)	19
Violence or Attacks (armed attack, terrorist attack, bomb / explosion, other violence)	4
Cyber or Data Security Treats (cyber-attacks, hacking, online security threats)	9
Hazardous Materials Spills (chemical spills, radiation exposure)	11
Environmental Contaminants (contaminants such as PFAS, micro plastics, etc. known or anticipated in th...	12



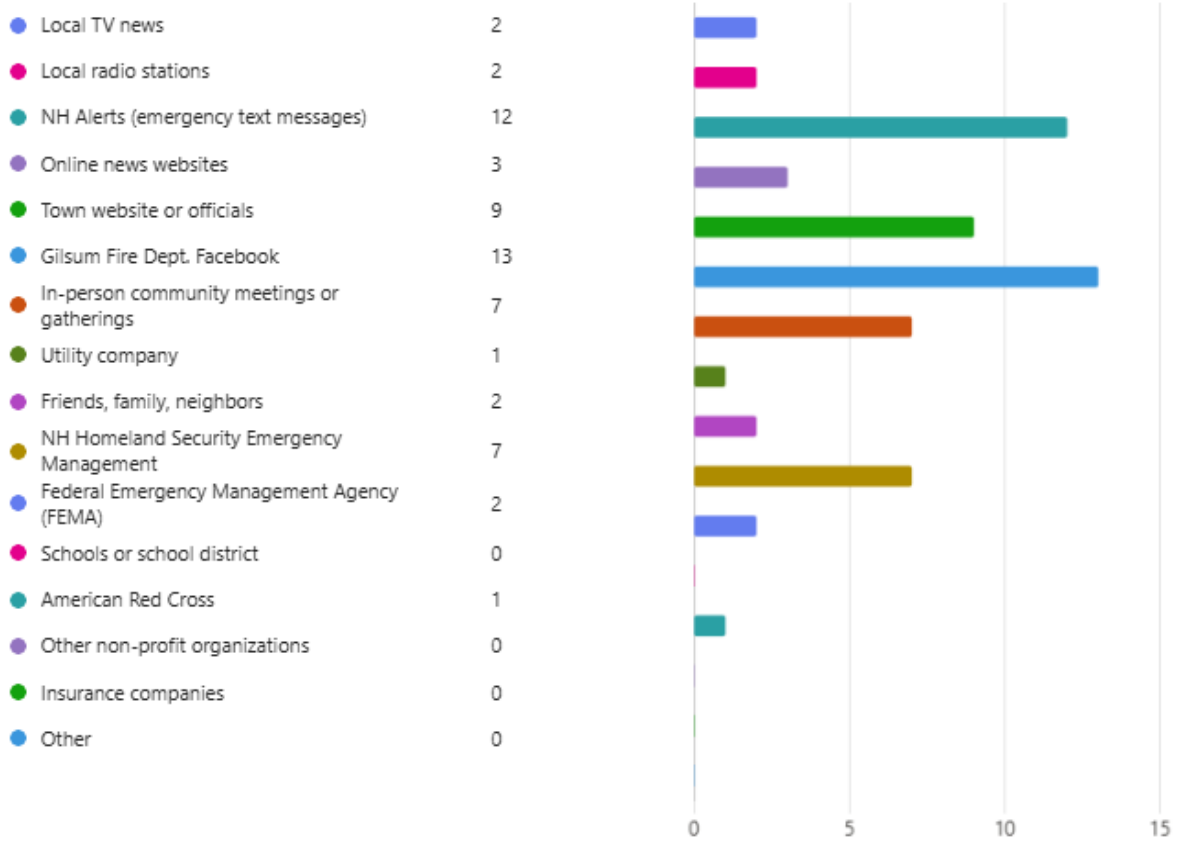
3. What parts of town do you think are most important to protect? Choose up to 3. *(Intent: Inform what asset and types of facilities are considered to be more valuable. They could be prioritized for funding / planning efforts in the Towns action plan/ mitigation strategy.)*



4. What should the Town do to lower future damage from natural disasters? Choose up to 3. *(Intent: The following list was developed by FEMA and elaborates on and provides specific examples of the four major project categories eligible for mitigation actions and funding: structure/infrastructure, policy/planning/regulation, natural systems protection, education and awareness. The results will determine with types of projects are viewed as more effective and have more support.)* Mor



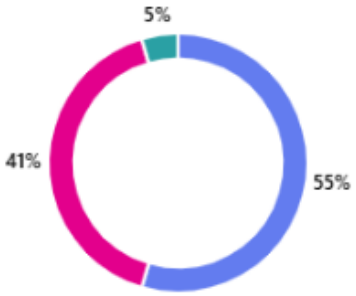
5. Which of these sources would you listen to for tips on keeping your home safe from natural disasters? Choose up to 3. *(Intent: Determine which sources are seen as most trusted to inform future education and outreach actions.)*



6. Do you have air conditioning in your home? *(Intent: We want to know what extent the community may be vulnerable to extreme heat events. This helps us decide if public cooling spaces are needed during heat waves. Your answer will not affe ct your property taxes. The survey does not collect names or addresses your responses are private and confidential.)*

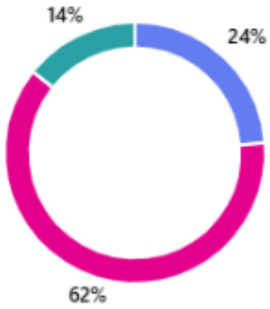
7. Do you have a generator that can provide power at your home during a power outage? *(Intent: We want to understand how many households in our community have backup power. This helps us learn how vulnerable the community is during power outages — including whether some residents might need a public space to stay warm or cool, or have medical equipment that needs electricity. Your answer will not affect your property taxes. The survey does not collect names or addresses — your responses are private and confidential.)*

Yes	12
No	9
Prefer not to say	1



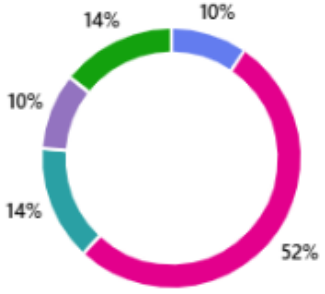
8. Do you have a disability or health condition that might make it harder for you during or after a disaster? (This could include needing medical equipment, having trouble walking, seeing, hearing, or remembering.) *(Intent: We want to know what extent our outreach and the results reflect vulnerable populations that could face more negative consequences during and after a disaster)*

Yes	5
No	13
Prefer not to say	3

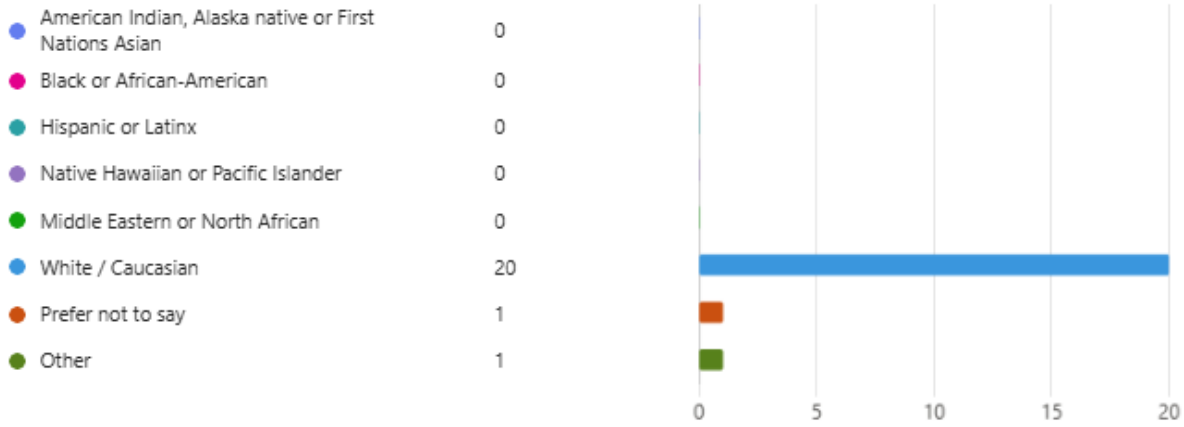


9. What is your household income? *(Intent: We want to know what extent our outreach and the results reflect vulnerable populations. This helps us understand how well we are reaching people of different income levels.)*

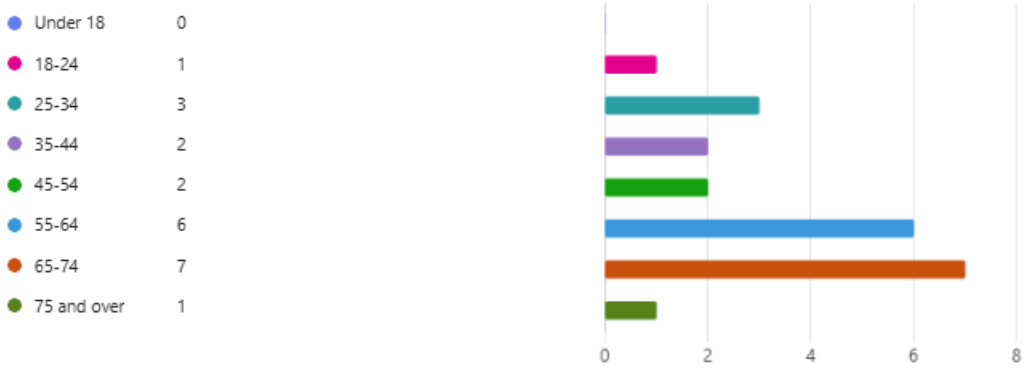
$0 - $29,999	2
$30,000 - $59,000	11
$60,000 - $89,999	3
$90,000 - $119,999	2
$120,000+	3



10. Which of the following describes your race? Select all that apply. *(Intent: We want to know what extent our outreach a nd results reflect different populations.)*



11. What is your age?



12. Do you have any other ideas or worries about natural disasters or hazards in town?(Intent: We want people to be able to write about specific issues or concerns that came to mind as a result of thinking about each question. The prompt allows people to provide more information about the impacts or consequences of a hazard that could be in the form of specific locations in harms way, positive of negative experiences with sources of information, or specific assets they feel should be prioritized. Plan developers will utilize this information, in coordination with Town staff, to add to vulnerabilities not already documented, problem statements, potential mitigation actions in the Hazard Mitigation Plan)

8 Responses

ID ↑	Name	Responses
1	anonymous	My biggest concern is the Stream that runs through the center of town, and the Ashuelot river. While there has been much done since previous floods, more work is needed to ensure future floods do not reach levels from the past.
2	anonymous	Route 10 needs to be kept open for travel in both north and south directions in the event of a disaster.
3	anonymous	Because I don't live in a main road, I worry if there is a natural disaster I won't be able to leave my house.
4	anonymous	Another concern: dead end roads that become impassable due to flooding, trees and wires down, etc. This happened on my road after the flooding of 2011, and 22 homes were unable to get out for five days until one lane of travel was established. I realize that the Town cannot force connections, but I hope the Plan identifies all of the roads in town so that if something does happen, the Fire Department knows where there are potentially vulnerable populations.
5	anonymous	Road repair & road drainage infrastructure maintenance
6	anonymous	Space junk or meteor strike
7	anonymous	Na
8	anonymous	I have a home without home owner's insurance. If we were to have a fire we would lose everything.

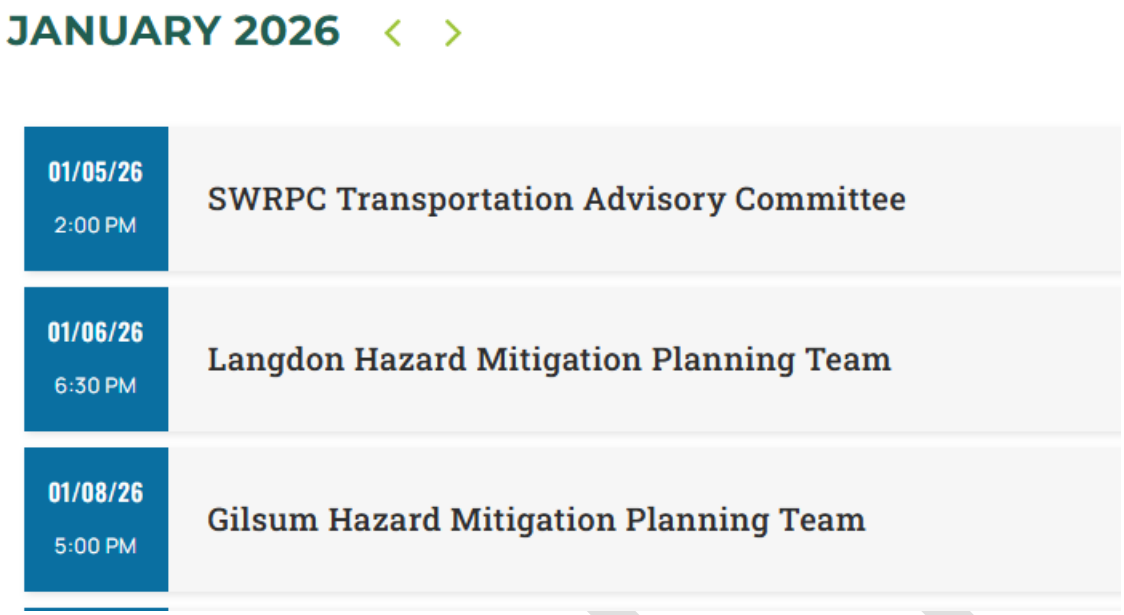
Other Outreach

Planning Team meeting dates were shared on the SWRPC website calendar and biweekly e-newsletter *Happenings* as follows:

Other Meetings

Thursday, October 23, 2025

The **Gilsum Hazard Mitigation Plan Update Work Group** will meet at 5:00 p.m. at the Gilsum Fire Station, Church Street, Gilsum, NH. For more information, please contact Sarah Bollinger of SWRPC staff.



The plan update process was shared in the *Highlights* Newsletter which is mailed to all 34 municipalities within the southwest region.

Hazard Mitigation Planning

In November, SWRPC continued to work with the communities of Fitzwilliam, Gilsum, Hancock, Langdon, New Ipswich, and Roxbury to update their local hazard mitigation plans. Residents are encouraged to provide information about manmade and natural hazards to assist in the update by contacting Sarah Bollinger (sbollinger@swrpc.org) or Henry Underwood (hunderwood@swrpc.org) of SWRPC staff. Notably, the comment period for New Ipswich's draft plan extends through Friday, December 12th and Langdon is currently soliciting input from residents and others through an online survey. For more information about recent plan updates and input opportunities, please visit www.swrpc.org/news.

Mapping Input

To capture both Planning Team and public input of hazard event spatial data, a draft map was developed with the previous plan material and displayed at Town Offices and Library through November and December 2025. The map was shared with the following instructions:

Hazard Map Update Instructions

Your local knowledge is essential to improving our understanding of the hazards that affect the community. Please use the large town map and tables to share your observations.

1. Identify Where Hazards Have or Could Affect the Community

Please annotate the map:

- **Mark past hazard events:**
  Identify where known hazard events have occurred since the last plan update. Label each with the hazard type (e.g., flood, wildfire), a brief note on what happened, and - if you know it - the year or date.
- **Mark areas of concern for potential events:**
  Highlight locations where you believe future hazard events could occur. Describe the hazard type and the potential impacts (e.g., "steep slope prone to washout," "low spot floods in spring").
- **Mark areas where issues have been resolved:**
  Some past hazard areas have been addressed through local projects (e.g., culvert replacement, drainage improvements). If you know of these fixes, mark the location and briefly explain how the issue was resolved.

Examples of hazards to consider for the map:

- Dam Failure
- Erosion
- Flood
- Landslide
- Tornado / High Wind
- Wildfire
- Aging Infrastructure
- Ice jams

2. Update the Hazard Events Table

The **Hazard Events Table** printed on the map records the location, type, and impacts of past hazard events. Please:

- **Review existing entries** - Are they accurate and complete? Can you add more detail about what happened, where, and why?
- **Add new events** - For events not yet listed, fill in the blanks directly on the table. Include:
  - Hazard type (e.g., windstorm, snowstorm, flooding)
  - Date or year
  - Location (cross streets, landmarks, etc.)
  - Impacts (e.g., road closures, power loss, property damage)

Your additions will help the town better understand risk areas and support future planning and grant applications.

3. Update the FEMA Lifelines and Other Assets Table

This table includes important community facilities and infrastructure. Please:

- **Review the listed assets** - Are there any that are missing?
- **Describe hazard vulnerabilities** - Next to each facility, note how it might be affected by a hazard (e.g., "Fire Pond 5891 is in an area prone to road washouts during flooding and may become inaccessible").

If you're unsure where a facility is located, try to mark it on the map based on your best knowledge.

4. Where do you anticipate future development?

Mark areas of the map where new development is most likely to occur based on current patterns and regulations; make note of the type of anticipated development (residential, commercial, infrastructure, etc.).

Regional Stakeholder Outreach

The draft plan and update process was shared with a variety of regional stakeholders with a request for input, including:

Local and regional agencies involved in hazard mitigation activities:

Army Corps of Engineers
Gilsum Planning Team

Local and regional agencies involved in hazard mitigation activities:

NH Geological Survey
NHDES Dam Bureau
NHDOT Bureau of Planning and Community Assistance
Southwest Region Planning Commission Executive Director
Homeland Security and Emergency Management

Agencies that have the authority to regulate development:

Gilsum Planning Board
Gilsum Zoning Board of Adjustment
NHDES Watershed Management Bureau

Neighboring communities:

Alstead EMD
Alstead Board of Selectmen
Marlow EMD
Marlow Board of Selectmen
Stoddard EMD
Stoddard Board of Selectmen
Sullivan EMD
Sullivan Board of Selectmen
Keene EMD
Keene City Manager
Surry EMD
Surry Board of Selectmen

Representatives of businesses, academia, and other private organizations:

Eversource
Keene State College
SAU 93
Monadnock Collaborative Chamber
Monadnock Economic Development Corporation (MEDC)
Antioch University New England

Representatives of nonprofit organizations, including community-based organizations.

Able NH
Cheshire Medical Center, Center for Population Health
Greater Monadnock Public Health Network
Home Healthcare Hospice & Community Services
Monadnock Area Peer Support
Monadnock Family Services
Monadnock United Way
Southwestern Community Services
Monadnock Conservancy

Selectboard Minutes

From the November 3, 2025 Gilsum Selectboard Meeting (Public Meeting 1)

Town of Gilsum
Selectboard Meeting
Held in Gilsum Public Library
November 3rd, 2025, 6:00pm

Board Present: Clem Lounder, Chair; Brian Bazarnicki, Member; Bill Mitchell, Member; Selectboard Asst. Hailey Hrabovsky

Others: Dee Denehy, Bruce Murphy

6:03pm Chair Clem Lounder calls meeting to order

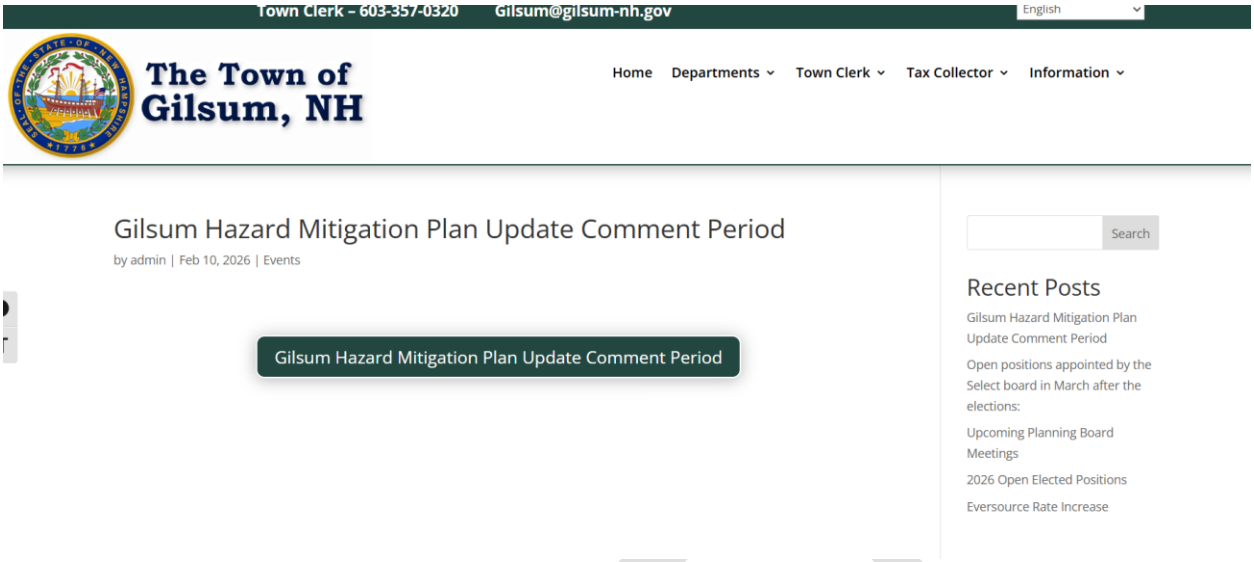
Lounder motions to approve 10/27/2025 minutes as amended
Bazarnicki 2nds
Vote: Unanimous
Motion passed

Bazarnicki motions to accept 11/03/2025 check manifest
Mitchell 2nds
Vote: Unanimous
Motion passed

Bill Signing -- Financial
Profit and Loss are in the Selectmen's Office to view and updated weekly.

SWPC; Hazard Mitigation Plan: Statement from Dee Denehy:
"The Town is updating its Hazard Mitigation Plan, a process that takes place every five years to keep the plan current and effective. A Hazard Mitigation Plan helps our community identify the natural and human-caused hazards we face, such as flooding, severe storms, or wildfire. It outlines long-term strategies to reduce risk and keep people and property safe. Having an approved plan also makes the town eligible for certain grants that can fund improvements for mitigation projects before or after a disaster strikes. As we update our plan, we're inviting everyone to get involved: you can take a short community survey and participate in a mapping activity to share your local knowledge and concerns. Your input is a key part of making this plan as useful and effective as possible. A link to the community survey can be found on the Town website. The hazard map will be posted at Town Hall from November 15th until December 15th, feel free to draw right on the map your experiences of hazards in Gilsum. Try to record the year of the event as well as any impacts. Planning Team meetings are open to the public. A draft of the updated plan will be available for review and comment later in the winter."

Draft Review Period Shared on Town Website



Selectboard Minutes

From the February 2, 2026 Gilsum Selectboard Meeting (Public Meeting 2)

Town of Gilsum
Selectboard Meeting
Held in Gilsum Public Library
February 2nd, 6:00pm

Dee Denehy; Hazard Mitigation: The hazard mitigation plan is now in a public comment period. Lounder would like to have input from the public if they know of someone that can write up easements, also if someone has knowledge about getting a generator for the school. The town needs a heating and cooling shelter in town. Denehy is going to bring in "draft F memorandum of understanding with Badger" for the Selectboard to review to use as an emergency shelter. Discussion on generators and where it would be needed, it will need more research.

Appendix C. RESOURCES

Resources Used in the Preparation of this Plan

NH HSEM's *State of New Hampshire Multi-Hazard Mitigation Plan* 2023
FEMA's Understanding Your Risks: Identifying Hazards and Estimating Losses
FEMA's *Local Multi-Hazard Mitigation Planning Guidance*
Town of Gilsum Annual Report 2024

Agencies

New Hampshire Homeland Security and Emergency Management (HSEM) 603-271-2231
Field Representative Hillsborough County 603-271-2231
Field Representative Cheshire County 603-271-2231
Federal Emergency Management Agency (FEMA) 877-336-2734
NH Regional Planning Commissions:
Central NH Regional Planning Commission 603-226-6020
Lakes Region Planning Commission 603-279-8171
Nashua Regional Planning Commission 603-424-2240
North Country Council 603-444-6303
Rockingham Planning Commission 603-778-0885
Southern New Hampshire Planning Commission 603-669-4664
Southwest Region Planning Commission 603-357-0557
Strafford Regional Planning Commission 603-994-3500
Upper Valley Lake Sunapee Regional Planning Commission 603-448-1680
NH Executive Department:
Governor's Office of Energy and Community Services 603-271-2611
NH Department of Cultural Resources: 603-271-2540
Division of Historical Resources 603-271-3483
NH Department of Environmental Services: 603-271-3503
Air Resources 603-271-1370
Air Toxins Control Program 603-271-0901
Asbestos Program 603-271-1373
Childhood Lead Poisoning Prevention Program 603-271-5733
Environmental Health Tracking Program 603-271-4072
Environmental Toxicology Program 603-271-3994
Health Risk Assessment Program 603-271-6909
Indoor Air Quality Program 603-271-3911
Occupational Health and Safety Program 603-271-2024
Radon Program 603-271-4764
Geology Unit(NH Geological Survey) 603-271-1975
Pollution Preventive Program 603-271-6460
Waste Management 603-271-2900
Water Supply and Pollution Control 603-271-3414
Rivers Management and Protection Program 603-271-8801
NH Office of Energy & Planning (OSI) 603-271-2155
Jennifer Gilbert, State Coordinator, Floodplain Management 603-271-1762

NH Municipal Association 603-224-7447
NH Fish and Game Department 603-271-3421
Region 1, Lancaster 603-788-3164
Region 2, New Hampton 603-744-5470
Region 3, Durham 603-868-1095
Region 4, Keene 603-352-9669
NH Department of Business and Economic Affairs:
Economic Development 603-271-2591
Travel and Tourism 603-271-2665
NH Department of Natural and Cultural Resources:
Division of Forests and Lands 603-271-2214
Division of Parks and Recreation 603-271-3556
NH Department of Transportation 603-271-3734
Northeast States Emergency Consortium, Inc. (NESEC) ..... (781) 224-9876
US Department of Commerce: ..... (202) 482-2000
NOAA: National Weather Service; Gray, ME ..... (207) 688-3216
US Department of the Interior: 202-208-3100
US Fish and Wildlife Service 603-225-1411
US Geological Survey 603-225-4681
US Army Corps of Engineers ..... (978) 318-8087
US Department of Agriculture:
Natural Resource Conservation Service 603-868-7581
Cheshire County, Walpole 603-756-2988
Sullivan County, Newport 603-863-4297
Hillsborough County, Milford ..... 673-2409 Ext. #4

Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP) ..... NH Homeland Security and Emergency Management
406 Public Assistance and Hazard Mitigation ..... NH Homeland Security and Emergency Management
Aquatic Resource Mitigation Fund (ARM) ..... NH Department of Environmental Services
Community Development Block Grant (CDBG) ..... NH CDFA, NH OSI, also refer to RPC
Community Wildfire Defense Grant (CWDG) ..... NH Forests and Lands (USDA, US Forest Service)
Dam Safety Program ..... NH Department of Environmental Services
Emergency Generators Program by NESEC‡ ..... NH Homeland Security and Emergency Management
Emergency Watershed Protection (EWP) Program ..... USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP) ..... NH HSEM, NH OSI
Flood Plain Management Services (FPMS) ..... US Army Corps of Engineers
Mitigation Assistance Planning (MAP) ..... NH Homeland Security and Emergency Management
Mutual Aid for Public Works ..... NH Municipal Association
National Flood Insurance Program (NFIP) † ..... NH OSI, NH HSEM
Power of Prevention Grant by NESEC‡ ..... NH Homeland Security and Emergency Management
Project Impact ..... NH Homeland Security and Emergency Management
Roadway Repair & Maintenance Program(s) ..... NH Department of Transportation
Section 14 Emergency Stream Bank Erosion & Shoreline Protection ..... US Army Corps of Engineers
Section 103 Beach Erosion ..... US Army Corps of Engineers
Section 205 Flood Damage Reduction ..... US Army Corps of Engineers
Section 208 Snagging and Clearing ..... US Army Corps of Engineers
Shoreline Protection Program ..... NH Department of Environmental Services

Various Forest and Lands Program(s) ..... NH Department of Natural and Cultural Resources
Wetlands Programs ..... NH Department of Environmental Services

‡NESEC - Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NH HSEM for more information or visit the Consortium's website at http://www.nesec.org/index.cfm.

† Note regarding **National Flood Insurance Program** (NFIP) and **Community Rating System** (CRS):
The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. The NH Office of Strategic Initiatives can provide additional information regarding participation in the NFIP-CRS Program

FEMA Region I Mitigation Planning Webliography

Hazard Mitigation is sustained action taken to reduce or eliminate risk to people and their property from natural hazards over the longest possible term.

REGULATORY INFORMATION

Final Rule
44 CFR 201.6
http://www.fema.gov/pdf/help/fr02-4321.pdf

Disaster Mitigation Act of 2000 (DMA 2K)
http://www.fema.gov/library/viewRecord.do?id=1935

DISASTERS AND NATURAL HAZARDS INFORMATION

FEMA-How to deal with specific hazards
http://www.ready.gov/natural-disasters

Natural Hazards Center at the University of Colorado
http://www.colorado.edu/hazards

National Oceanic and Atmospheric Administration (NOAA): Information on various projects and research on climate and weather.
http://www.websites.noaa.gov

National Climatic Data Center active archive of weather data.
http://lwf.ncdc.noaa.gov/oa/ncdc.html

Northeast Snowfall Impact Scale
http://www.erh.noaa.gov/rnk/Newsletter/Fall%202007/NESIS.htm

Weekend Snowstorm Strikes The Northeast Corridor Classified As A Category 3"Major"Storm
http://www.publicaffairs.noaa.gov/releases2006/feb06/noaa06-023.html

FLOOD RELATED HAZARDS

FEMA Coastal Flood Hazard Analysis & Mapping
http://www.fema.gov/national-flood-insurance-program-0/fema-coastal-flood-hazard-analyses-and-mapping-1

Floodsmart
http://www.floodsmart.gov/floodsmart/
National Flood Insurance Program (NFIP)
http://www.fema.gov/nfip
Digital quality Level 3 Flood Maps
http://msc.fema.gov/MSC/statemap.htm
Flood Map Modernization
http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization
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Reducing Damage from Localized Flooding: A Guide for Communities, 2005 FEMA 511
http://www.fema.gov/library/viewRecord.do?id=1448
FEMA Non-Regulatory RISK MAP Products
https://www.fema.gov/flood-maps/tools-resources/risk-map/products
FIRE RELATED HAZARDS
Firewise
http://www.firewise.org
NOAA Fire Event Satellite Photos
http://www.osei.noaa.gov/Events/Fires
U.S. Forest Service, USDA
http://www.fs.fed.us/land/wfas/welcome.htm
Wildfire Hazards - A National Threat
http://pubs.usgs.gov/fs/2006/3015/2006-3015.pdf
GEOLOGIC RELATED HAZARDS
USGS Topographic Maps
http://topomaps.usgs.gov/
Building Seismic Safety Council
http://www.nibs.org/?page=bssc
Earthquake hazard history by state
http://earthquake.usgs.gov/earthquakes/states/
USGS data on earthquakes
http://earthquake.usgs.gov/monitoring/deformation/data/download/
USGS Earthquake homepage
http://quake.wr.usgs.gov
National Cooperative Geologic Mapping Program (NCGMP)
http://ncgmp.usgs.gov/
Landslide Overview Map of the Conterminous United States
http://landslides.usgs.gov/learning/nationalmap/
Kafka, Alan L. 2008. Why Does the Earth Quake in New England? Boston College, Weston
Observatory, Department of Geology and Geophysics
http://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html

Map and Geographic Information Center, 2010, "Connecticut GIS Data", University of Connecticut
http://magic.lib.uconn.edu/connecticut_data.html
2012 Maine earthquake
http://www.huffingtonpost.com/2012/10/17/maine-earthquake-2012-new-england_n_1972555.html
NH Geologic Survey
https://des.nh.gov/land/geology
NH Geologic Survey Maps
https://des.nh.gov/land/geology/geologic-maps

WIND-RELATED HAZARDS

ATC Wind Speed Web Site
http://www.atcouncil.org/windspeed/index.php
Hilliard 2/20/2014 Pg. 3
U.S. Wind Zone Maps
http://www.fema.gov/safe-rooms/wind-zones-united-states
Tornado Project Online
http://www.tornadoproject.com/
National Hurricane Center
http://www.nhc.noaa.gov
Community Hurricane Preparedness Tutorial
http://meted.ucar.edu/hurrican/chp/hp.htm
National Severe Storms Laboratory, 2009, "Tornado Basics",
http://www.nssl.noaa.gov/primer/tornado/tor_basics.html

DETERMINING RISK AND VULNERABILITY

HAZUS
http://www.hazus.org
FEMA Hazus Average Annualized Loss Viewer
http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cb8228309e9d405ca6b4db6027df36d9&extent=-139.0898,7.6266,-48.2109,62.6754
Vulnerability Assessment Tutorial: On-line tutorial for local risk and vulnerability assessment
http://www.csc.noaa.gov/products/nchaz/htm/mitigate.htm
Case Study: an example of a completed risk and vulnerability assessment
http://www.csc.noaa.gov/products/nchaz/htm/case.htm

GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND MAPPING

The National Spatial Data Infrastructure & Clearinghouse (NSDI) and Federal Geographic Data Committee (FGDC) Source for information on producing and sharing geographic data
http://www.fgdc.gov
The OpenGIS Consortium Industry source for developing standards and specifications for GIS data

http://www.opengis.org

Northeast States Emergency Consortium (NESEC): Provides information on various hazards, funding resources, and other information

http://www.nesec.org

US Dept of the Interior Geospatial Emergency Management System (IGEMS) provides the public with both an overview and more specific information on current natural hazard events. It is supported by the Department of the Interior Office of Emergency Management.

http://igems.doi.gov/

FEMA GeoPlatform: Geospatial data and analytics in support of emergency management

http://fema.maps.arcgis.com/home/index.html

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DATA GATHERING

National Information Sharing Consortium (NISC): brings together data owners, custodians, and users in the fields of homeland security, public safety, and emergency management and response. Members leverage efforts related to the governance, development, and sharing of situational awareness and incident management resources, tools, and best practices

http://nisconsortium.org/

The Hydrologic Engineering Center (HEC), an organization within the Institute for Water Resources, is the designated Center of Expertise for the US Army Corps of Engineers

http://www.hec.usace.army.mil/

National Water & Climate Center

http://www.wcc.nrcs.usda.gov/

WinTR-55 Watershed Hydrology

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?&cid=stelprdb1042901

USACE Hydrologic Engineering Center (HEC)

http://www.hec.usace.army.mil/software/

Stormwater Manager's Resource Center SMRC

http://www.stormwatercenter.net

USGS Current Water Data for the Nation

http://waterdata.usgs.gov/nwis/rt

USGS Water Data for the Nation

http://waterdata.usgs.gov/nwis /

Topography Maps and Aerial photos

http://www.terraserver.com/view.asp?tid=142

National Register of Historic Places

http://www.nps.gov/nr/about.htm

National Wetlands Inventory

http://www.fws.gov/wetlands/ ICLUS Data for Northeast Region

http://www.epa.gov/ncea/global/iclus/inclus_nca_northeast.htm

New Hampshire Dry Well Reports Dashboard

https://nhdes.maps.arcgis.com/apps/dashboards/32232fe277b74f66a89e9a4d72419370

New Hampshire Stream Crossing Initiative Data Viewer
https://nhdes.maps.arcgis.com/apps/webappviewer/index.html?id=21173c9556be4c52bc20ea706e1c9f5a

PLANNING

American Planning Association
http://www.planning.org
PlannersWeb - Provides city and regional planning resources
http://www.plannersweb.com

FEMA RESOURCES

Federal Emergency Management Agency (FEMA)
www.fema.gov
Hilliard 2/20/2014 Pg. 5
National Mitigation Framework
http://www.fema.gov/national-mitigation-framework
Federal Insurance and Mitigation Administration (FIMA)
http://www.fema.gov/fima
Community Rating System (CRS)
http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-rating-system
FEMA Building Science
http://www.fema.gov/building-science
National Flood Insurance Program (NFIP)
http://www.fema.gov/national-flood-insurance-program
Floodplain Management & Community Assistance Program
http://www.fema.gov/floodplain-management
Increased Cost of Compliance (ICC): ICC coverage allows homeowners whose structures have been repeatedly or substantially damaged to cover the cost of elevation and design requirements for rebuilding with their flood insurance claim up to a maximum of $30,000.
http://www.fema.gov/national-flood-insurance-program-2/increased-cost-compliance-coverage
National Disaster Recovery Framework
http://www.fema.gov/national-disaster-recovery-framework
Computer Sciences Corporation: contracted by FIMA as the NFIP Statistical Agent, CSC provides information and assistance on flood insurance to lenders, insurance agents and communities
www.csc.com
Integrating the Local Natural Hazard Mitigation Plan into a Community's Comprehensive Plan: A Guidebook for Local Governments
https://www.fema.gov/ar/media-library/assets/documents/89725
Mitigation Best Practices Portfolio
http://www.fema.gov/mitigation-best-practices-portfolio

FEMA Multi-Hazard Mitigation Planning Website http://www.fema.gov/multi-hazard-mitigation-planning
FEMA Resources Page http://www.fema.gov/plan/mitplanning/resources.shtm
Hilliard 2/20/2014 Pg. 6
Local Mitigation Plan Review Guide http://www.fema.gov/library/viewRecord.do?id=4859

Local Mitigation Planning Handbook complements and liberally references the Local Mitigation Plan Review Guide above
http://www.fema.gov/library/viewRecord.do?id=7209
HAZUS
http://www.fema.gov/protecting-our-communities/hazus
Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards
http://www.fema.gov/library/viewRecord.do?id=6938
Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials
http://www.fema.gov/library/viewRecord.do?id=7130
IS-318
Mitigation Planning for Local and Tribal Communities
Independent Study Course
http://training.fema.gov/EMIWeb/IS/is318.asp
REGION I MITIGATION PLANNING CONTACTS
Melissa Surette
Senior Planner
Phone: (617) 956-7559
Email: melissa.surette@fema.dhs.gov
Josiah (Jay) Neiderbach
FEMA Region I – Mitigation Division
Phone: 617-832-4926 desk / 202-285-7769 cell
Email: josiah.neiderbach@fema.dhs.gov
OTHER FEDERAL RESOURCES
U.S. Army Corps of Engineers: Provides funding for floodplain management planning and technical assistance and other water resources issues.
www.nae.usace.army.mil
Natural Resources Conservation Service: Technical assistance to individual land owners, groups of landowners, communities, and soil and water conservation districts.
www.nrcs.usda.gov
NOAA Coastal Services Center
http://www.coast.noaa.gov/
Rural Economic and Community Development: Technical assistance to rural areas and smaller communities in rural areas on financing public works projects.
www.rurdev.usda.gov

Farm Service Agency: Manages the Wetlands Reserve Program (useful in open space or acquisition projects by purchasing easements on wetlands properties) and farmland set aside programs
www.fsa.usda.gov
National Weather Service: Prepares and issues flood, severe weather and coastal storm warnings. Staff hydrologists can work with communities on flood warning issues; can give technical assistance in preparing flood-warning plans.
www.weather.gov/gyx
Economic Development Administration (EDA): Assists communities with technical assistance for economic development planning
www.osec.doc.gov/eda/default.htm
National Park Service: Technical assistance with open space preservation planning; can help facilitate meetings and identify non-structural options for floodplain redevelopment.
www.nps.gov
Fish and Wildlife Services: Can provide technical and financial assistance to restore wetlands and riparian habitats.
www.fws.gov
Department of Housing & Urban Development
www.hud.gov
Small Business Administration: SBA can provide additional low-interest funds (up to 20% above what an eligible applicant would qualify for) to install mitigation measures. They can also loan the cost of bringing a damaged property up to state or local code requirements.
www.sba.gov/disaster
Environmental Protection Agency
www.epa.gov

SUSTAINABILITY/ADAPTATION/CLIMATE CHANGE

Why the Emergency Management Community Should be Concerned about Climate Change: A discussion of the impact of climate change on selected natural hazards
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http://www.cna.org/sites/default/files/research/WEB%2007%2029%2010.1%20Climate%20Change%20and%20the%20Emergency%20Management%20Community.pdf

Resilient Sustainable Communities: Integrating Hazard Mitigation& Sustainability into Land Use
http://www.earth.columbia.edu/sitefiles/file/education/documents/2013/Resilient-Sustainable-Communities-Report.pdf
U.S. EPA
http://www.epa.gov/climatechange/
NOAA National Ocean Service (NOS)
http://oceanservice.noaa.gov/

The Northeast Climate Research Center (NRCC) folks were heavily involved in climate data in the NCA, below. They have a wealth of historic climate data and weather information, trends, etc. http://www.nrcc.cornell.edu/

NOAA RISA for the Northeast (Regional Integrated Sciences and Assessments)
http://ccrun.org/home

Community and Regional Resilience: Perspectives from hazards, disasters, and emergency management
http://www.resilientus.org/library/FINAL_CUTTER_9-25-08_1223482309.pdf

National Fish, Wildlife and Plants Climate Adaptation Strategy
www.wildlifeadaptationstrategy.gov

ICLEI Local Governments for Sustainability
http://www.icleiusa.org/

Kresge Foundation Survey
http://www.kresge.org/news/survey-finds-communities-northeast-are-trying-plan-for-changes-climate-need-help-0

New England's Sustainable Knowledge Corridor
http://www.sustainableknowledgecorridor.org/site/

The Strategic Foresight Initiative (SFI)
http://www.fema.gov/pdf/about/programs/oppa/findings_051111.pdf

Northeast Climate Choices
http://www.climatechoices.org/ne/resources_ne/nereport.html

Northeast Climate Impacts Assessment
http://www.northeastclimateimpacts.org/

Draft National Climate Assessment Northeast Chapter released early 2013
http://ncadac.globalchange.gov/

Northeast Chapter of the National Climate Assessment of 2009:
http://www.globalchange.gov/images/cir/pdf/northeast.pdf
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NEclimateUS.org

ClimateNE
www.climatenortheast.com

Scenarios for Climate Assessment and Adaptation
http://scenarios.globalchange.gov/

Northeast Climate Science Center
http://necsc.umass.edu/

FEMA Climate Change Adaptation and Emergency Management
https://www.llis.dhs.gov/content/climate-change-adaptation-and-emergency-management-0

Climate Central
http://www.climatecentral.org

Centers for Disease Control and Prevention (CDC) Climate and Health
https://www.cdc.gov/climate-health/index.html

OTHER RESOURCES

New England States Emergency Consortium (NESEC): NESEC conducts public awareness and education programs on natural disaster and emergency management activities throughout New England. Resources are available on earthquake preparedness, mitigation, and hurricane safety. www.nesec.org

Association of State Floodplain Managers (ASFPM): ASFPM has developed a series of technical and topical research papers, and a series of Proceedings from their annual conferences. www.floods.org

National Voluntary Organizations Active in Disaster (VOAD) is a non-profit, nonpartisan membership organization that serves as the forum where organizations share knowledge and resources throughout the disaster cycle—preparation, response, recovery and mitigation. http://www.nvoad.org/

Appendix D. HAZARD MITIGATION RESOURCE PROFILES

The following are fact sheets about the various hazard mitigation grant programs.

U.S. Army Corps of Engineers

Contacts:

John Kennelly, Chief, Special Studies Section (for Flood Plain Management Services activities), Phone: (978) 318-8505, Fax: (978) 318-8080, E-mail: John.R.Kennelly@usace.army.mil

Mike Keegan, Chief, Project Planning Section (for Section 14, 103, and 205 authorities), Phone: (978) 318-8087, Fax: (978)318-8080, E-mail: Michael.F.Keegan@usace.army.mil

Address: US Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Description and Mission:

The Corps of Engineers is a multi-disciplinary engineering and environmental organization that has been identifying and meeting the water resources needs of the nation. These needs have been in the areas of flood damage reduction, flood plain information and management, navigation, shore protection, environmental restoration, water supply, streambank protection, recreation, and fish and wildlife resources conservation, as well as technical assistance in other water resources areas.

The New England District (NAE) of the Corps of Engineers is responsible for managing the Corps' civil responsibilities in a 66,000 square-mile region encompassing the six New England states east of the Lake Champlain drainage basin. The District and its leadership are headquartered in

Concord, Massachusetts. The missions of the New England District are many and varied. They include:

- flood damage reduction
- navigation improvements and maintenance
- natural resource management
- streambank and shoreline protection
- disaster assistance
- environmental remediation and engineering
- engineering and construction management support to other agencies

Flood Mitigation Involvement:
As a result of the catastrophic floods in 1936, 1938 and 1955, the Corps was called upon to undertake a comprehensive flood damage reduction program. Since then the Corps has built many flood control structures throughout New England. These include 35 dams and reservoirs, five hurricane protection barriers (two are operated by the Corps) and approximately 60 local flood protection projects. The New England District has also completed two nonstructural projects involving the relocation of flood prone property and the acquisition of natural flood storage areas. The Corps also provides technical assistance to states and municipalities in locally constructed flood damage mitigation projects and to promote wise and informed use of floodplain and natural retention areas in order to minimize potential future flood damages.

Mitigation Goals and Objectives:
The New England District has two primary mitigation objectives with respect to flood damage reduction. The first objective is the operation and maintenance of the 35 flood control reservoirs and two hurricane barriers that provide protection to the Connecticut, Merrimack, Thames, Naugatuck, and Blackstone River Basins. The second objective is to continue to work with the states and communities in New England to address flooding problems affecting the region.
Projects Desired: The Corps of Engineers has several programs available under its Civil Works authorities to address flooding problems. These programs provide assistance either through the construction of structural and nonstructural projects to mitigate the flooding problem or by providing technical information to assist mitigation performed at the state or local level. Flood damage reduction projects constructed by the Corps of Engineers must demonstrate, based on current Federal guidelines, that the flood damages prevented by the project's construction exceed its total cost. The Corps must also demonstrate that the 10-year frequency flood discharge at the point of concern is equal to or greater than 800 cubic-feet per second (cfs). Technical assistance provided by the Corps does not need to meet the above criteria.
COE Resources with Respect to Hazard Mitigation:
The New England Division assists in meeting national, regional and local needs through a variety of means. Congressionally authorized water resources investigations have resulted in the planning, design and implementation of many flood control and flood damage reduction projects.

Work conducted under a Congressional authorization can be extensive and there is currently no monetary limit of funding. Typically there is a 1 - 2 year minimum delay in the identification of a proposed investigation and the funding of that work. The first phase of study, the Reconnaissance investigation, is 100 percent Federally funded and must be completed within twelve months. The second phase, the Feasibility investigations, must be cost-shared with a local sponsor where the sponsor provides 50 percent of the cost of the feasibility study. Congress in a Water Resources Development Act must specifically authorize construction of any project resulting from a General Investigation study. The cost of implementation for flood damage reduction projects is generally 65 percent Federal and 35 percent non-Federal.

Through the Continuing Authorities Programs of the Corps many structural and non-structural local protection project reducing or eliminating damages from flooding have been constructed. Investigations initiated under the Corps Continuing Authorities do not require specific congressional authorization and are initiated simply with a request from the State or community to the New England District. The following is a list of Continuing Authorities applicable to flood mitigation:

Section 14 - Emergency Stream Bank & Shoreline Protection: This work consists of evaluating alternatives to provide emergency protection to public facilities, such as highways and bridges that are threatened due to erosion. The current Federal limit on Section 14 projects is $500,000. The local sponsor is required to provide 25 percent of the cost of developing plans and specifications and of construction.

Section 103 - Beach Erosion: Investigations conducted under this authority are to determine methods of protecting public facilities that have been threatened by beach erosion. Currently there is a Federal limit of $2,000,000 and the local sponsor is required to contribute 35 percent of plans, specifications and construction. The local sponsor is also required to cost-share equally the cost of the feasibility investigation that exceeds $100,000. The first $100,000 is at full Federal expense.

Section 205 - Flood Damage Reduction: Investigations are conducted under this program to assist local communities to identify flooding problems and to formulate and construct alternatives for flood damage reduction. The local sponsor is required to cost-share equally in the cost of the feasibility investigation that exceeds $100,000 and the Federal limit is $5,000,000. The local sponsor is required to contribute 25 percent of the cost of plans, specifications and construction.

Section 208 - Snagging and Clearing: This emergency program is designed to reduce flood damage potential by identifying and removing obstructions that contribute to flooding by causing higher flood stages in the floodways. The Federal limit under this program is $500,000 and the

local sponsor is required to contribute 25 percent of the cost of plans, specifications and construction.

The New England Division also has two Planning Assistance Programs, which provide opportunities for the States to obtain assistance in addressing water resource issues. These programs are the Section 22, Planning Assistance to the States (PAS) program and the Section 206, Flood Plain Management Services (FPMS) program.

Planning Assistance to States Program (PAS): The Planning Assistance to States Program is designed to assist the States in developing comprehensive plans to meet State planning goals. The program is extremely flexible in the type and the methodology of investigations. Studies conducted under the PAS program require a 50/50 cost share with a local sponsor. The existing funding limits are $300,000 per state and a national budget not to exceed $5,000,000.

Flood Plain Management Services (FPMS): The FPMS Program is designed for the Corps to assist States and local communities to improve management of flood plains by performing technical assistance and conducting special investigations. Cost recovery has been implemented in this program effective in FY 1991. Under cost recovery, assistance provided to Federal agencies and private interests must be fully reimbursed by those customers. States and local communities are still provided technical assistance at 100 percent Federal cost. One of the major efforts being conducted under the FPMS program at this time is the preparation of Hurricane Evacuation Studies. These studies are jointly funded with the Federal Emergency Management Agency.

Ice Engineering Research Division; U.S. Army Cold Regions Research and Engineering Laboratory

Contact:

Dr. J-C Tatinclaux, Chief, Ice Engineering Research Division
Phone: (603) 646-4187 Fax: (603) 646-4477
E-mail: Jean-Claude.Tatinclaux@crl02.usace.army.mil
Website: http://www.crrel.usace.army.mil/ierd/

Address: US Army Cold Regions Research and Engineering Laboratory
Ice Engineering Research Division
72 Lyme Road
Hanover, NH 03755-1290

Description and Mission:
The US Army Cold Regions Research and Engineering Laboratory (CRREL) is a Corps of Engineers' research laboratory that is dedicated to multi-disciplinary engineering and research that

addresses the problems and opportunities unique to the world's cold regions. CRREL exists largely to solve the technical problems that develop in cold regions, especially those related to construction, transport, and military operations. Most of these problems are caused by falling and blowing snow, snow on the ground, ice in the air and in the ground, river ice, ice on seas and lakes, and ice effects on manmade materials. CRREL serves the Corps of Engineers and its clients in three main areas:

- Traditional military engineering, which deals with problems that arise during conflict;
- Military construction and operations technology, i.e., the building and maintenance of military bases, airfields, roads, ports, and other facilities; and
- Civil works, which involves the Corps in such things as flood protection, navigation on inland waterways and coastal engineering.

CRREL also deals with cold regions problems for the other defense services, for civilian agencies of the federal government and to some extent for state agencies, municipalities, and private industry.

CRREL's Ice Engineering Research Division (IERD) was created to research, analyze and solve ice problems in and around water bodies, including ice jam flooding and ice accumulation in lock chambers, to ice buildup at water intakes and the destructive forces that moving ice exerts on riverine or coastal structures. In cooperation with the New England District (NAE) of the Corps of Engineers (located in Concord, MA), IERD personnel provide technical assistance before, during and after ice jam flood emergencies. IERD research has resulted in the design and construction of a number of low-cost ice control structures as well as nonstructural mitigation measures. IERD also provides instruction on dealing with river ice problems to local emergency management agencies.

Flood Mitigation Involvement:

IERD is frequently called upon by the various Corps Districts to provide technical assistance to states and municipalities in the form of emergency mitigation. IERD is also involved with Corps and local agencies in developing locally constructed flood damage mitigation projects and promoting wise and informed use of floodplain areas in order to minimize potential future flood damages.

Mitigation Goals and Objectives:

The IERD has two primary mitigation objectives with respect to flood damage reduction. The first objective is to work with the Corps and other federal, state, and local agencies to design and implement ice control methods to reduce ice-related flood potential. The second is to work with the states and communities nationwide as well as in New England to address ice-related emergency flooding problems affecting the region.

Projects Desired: CRREL and IERD are national resources ready to apply our unique facilities and capabilities to solve problems and conduct innovative, state-of-the-art research and technical support. There are a number of mechanisms that enable IERD and the rest of CRREL to partner with various Federal, non-DoD and private sector entities. The Federal Technology Transfer Act of 1986 (15 USC 3710a) allows CRREL to collaborate with any non-Federal partner on research and technical support consistent with the mission of the laboratory. The Intergovernmental Cooperation Act (31 USC 6505) lets CRREL work with state and local governments on a broad range of reimbursable projects. Under the "Authority to Sell" (10 USC 2539b), CRREL can provide test and evaluation services to the states and the private sector. This includes the testing and evaluation of materials, equipment, models, computer software, and other items. The laboratory can also provide support to other Federal agencies via the Economy in Government Act (31 USC 1535) through MOUs/MOAs that establish a framework for the partnership and provide a concise description of the planned work. CRREL's 35 active Cooperative Research and Development Agreements (CRADAs) with industry and academia and 17 Intergovernmental Cooperation Agreements with states and local governments in 1998 demonstrate a robust program in this area and the relevance of CRREL's research to many segments of American society beyond DoD.

The Corps of Engineers has several programs available under its Civil Works authorities to address flooding problems. These programs provide assistance either through the construction of structural and nonstructural projects to mitigate the flooding problem or by providing technical information to assist mitigation performed at the state or local level. Flood damage reduction projects constructed by the Corps of Engineers must demonstrate, based on current Federal guidelines, that the flood damages prevented by the project's construction exceed its total cost. The Corps must also demonstrate that the 10-year frequency flood discharge at the point of concern is equal to or greater than 800 cubic-feet per second (cfs). Technical assistance provided by the Corps does not need to meet the above criteria. Through the Corps, IERD has been involved in Section 205 Flood Damage Reduction program, Section 22 Planning Assistance to States Program (PAS)) projects, the Section 206 Flood Plain Management Services (FPMS) program funded jointly with FEMA, and numerous instances of technical assistance.

CRREL IERD Resources with Respect to Hazard Mitigation:

Corps: CRREL works jointly with the Corps' New England Division to address regional and local ice-related hazard mitigation needs through a variety of means. Congressionally authorized water resources investigations have resulted in the planning, design and implementation of many flood control and flood damage reduction projects. Work conducted under a Congressional authorization can be extensive and there is currently no monetary limit of funding. Typically there is a 1 - 2 year minimum delay in the identification of a proposed investigation and the funding of that work. The first phase of study, the Reconnaissance Investigation, is 100 percent federally funded and must be completed within twelve months. The second phase, the Feasibility Investigations, must be cost-shared with a local sponsor where the sponsor provides 50 percent of the cost of the feasibility study. Congress in a Water Resources Development Act must specifically authorize construction of any project resulting from a General Investigation study.

The cost of implementation for flood damage reduction projects is generally 65 percent Federal and 35 percent non-Federal.

Through the Continuing Authorities Programs of the Corps many structural and non-structural local protection project reducing or eliminating damages from flooding have been constructed. Investigations initiated under the Corps Continuing Authorities do not require specific congressional authorization are initiated simply with a request from the State or community to the New England District. The following is a list of Continuing Authorities applicable to flood mitigation:

Section 205 - Flood Damage Reduction: Investigations are conducted under this program to assist local communities to identify flooding problems and to formulate and construct alternatives for flood damage reduction. The local sponsor is required to cost-share equally in the cost of the feasibility investigation that exceeds $100,000 and the Federal limit is $5,000,000. The local sponsor is required to contribute 25 percent of the cost of plans, specifications and construction.

Section 22 - Planning Assistance to States Program (PAS): The Planning Assistance to States Program is designed to assist the States in developing comprehensive plans to meet State planning goals. The program is extremely flexible in the type and the methodology of investigations. Studies conducted under the PAS program require a 50/50 cost share with a local sponsor. The existing funding limits are $300,000 per state and a national budget not to exceed $5,000,000.

Section 206 - Flood Plain Management Services (FPMS): The FPMS Program is designed for the Corps to assist States and local communities improve management of flood plains by performing technical assistance and conducting special investigations. Cost recovery has been implemented in this program effective in FY 1991. Under cost recovery, assistance provided to Federal agencies and private interests must be fully reimbursed by those customers. States and local communities are still provided technical assistance at 100 percent Federal cost. One of the major efforts being conducted under the FPMS program at this time is the preparation of Hurricane Evacuation Studies. These studies are jointly funded with the Federal Emergency Management Agency.

Personnel:

IERD was created to research, analyze and solve ice problems in and around water bodies. The technical experience of the staff and their in-depth research and field capabilities combine with CRREL's unique Ice Engineering Facility to form one of the premier ice engineering organizations in the world. IERD has a staff of 15 engineers and technicians experienced in technical analyses, methods, and engineering solutions to ice problems -- that is, any situation where the effects of ice cause flooding, increase operational and maintenance requirements of water control projects, impede navigation, or adversely impact the environment in cold regions.

Equipment and Facilities:
The Ice Engineering Facility was built to increase the research capabilities of the U.S. Army Cold Regions Research and Engineering Laboratory. It is a two-story building approximately 160 by 210 feet containing three primary cold spaces: the test Basin, Flume, and Research Area. We have recently designed and built a new Wind Tunnel Facility. In addition there is a machine room in the basement, an instrumentation corridor separating the flume and test basin spaces, a shop/storage area, and one sample-storage cold room.

The Test Basin was designed primarily for large-scale work on ice forces on structures, such as drill platforms and bridge piers, and for tests using model icebreakers. The Basin is 30 feet wide, 8 feet deep and 120 feet long. The room is designed to operate at any temperatures between +65° and -10°F with very even temperature distribution, which results in uniform ice thickness. Other studies conducted in the Test Basin concern the formation of ice pressure ridges, ice problems in and around navigation locks, and vertical uplift forces.

The Flume is situated in a room where the temperature can be regulated between +65° and -20° F. The Flume is 2 by 4 feet in cross section and 120 feet long. It can tilt from +2° to -1° slope, have a flow capacity of nearly 14 cubic feet per second and have a refrigerated bottom. Some other studies conducted in the Flume are the formation of ice covers and frazil ice, the hydraulics of ice-covered rivers, the formation of ice jams, and the effect of ice covers on sediment transport and scour.

Possibly the most versatile portion of the Ice Engineering Facility is the Research Area. This room is 80 by 160 feet clear span and has a temperature range of +65° to -10°F. Piping capable of providing a flow of 1, 2, 4 or 8 cubic feet per second is located on one side of the room, and a large drain trough is on the other. The floor is designed for loads up to 400 pounds per square foot. Models of reaches can be constructed in this area to test ways to alleviate ice jams through channel modification. Tests of the bearing capacity of large ice sheets and cold-testing of vehicles and structures are a few of the other potential uses of this space. Tests conducted in this room will help to alleviate much of the flooding caused by ice jams.

USDA, Natural Resources Conservation Service

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Description and Mission:
The Natural Resources Conservation Service (NRCS) is a Federal agency within the US Department of Agriculture. The mission of the NRCS is to help people conserve, improve and sustain our natural resources and environment. NRCS, formerly the Soil Conservation Service, is the lead federal agency for conservation on private land. NRCS provides conservation technical assistance through local conservation districts and Resource Conservation and Development (RC&D) Councils to individuals, communities, watershed groups, tribal governments, federal, state, and local agencies, and others. NRCS has an interdisciplinary staff of professional engineers, planners, biologists, foresters, agronomists, and soil scientists working together to provide the necessary technical assistance to solve resource or environmental problems. NRCS products typically include conservation plans, study reports, engineering designs, and resource maps.

Authorities and Funding:
NRCS state and field offices derive funding from two possible sources, direct Federal appropriations and reimbursable agreements with agencies and units of government. NRCS manages several programs; Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Wetland Reserve Program (WRP), Forestry Incentives Program (FIP), and Farmland Protection Program (FPP) which provide cost-share assistance to landowners and users (primarily agricultural or forestry land) to install conservation practices to restore and protect natural resources. NRCS can also provide technical assistance ranging from preliminary reviews to complete detail designs to landowners/users solving resource problems even if financial assistance is not being provided for the installation of conservation practices. This assistance is dependent on staff availability and priorities.

NRCS also manages the Emergency Watershed Protection (EWP) program, which can provide financial and technical assistance to units of government and groups to repair damages sustained from a natural disaster (flood, fire, hurricane, tornado) creating an imminent hazard to life and property. The restoration efforts must be environmentally and economically cost effective and typically includes clearing debris from clogged stream channels, stabilizing eroded stream banks and restoring vegetation for stabilization purposes. NRCS can also provide technical assistance to watershed associations or groups to develop comprehensive plans for improving or protecting the watershed environment (water quality, flood reduction, wildlife habitat).

Mitigation Involvement:
The NRCS can provide technical assistance to conduct inventories, to complete watershed or site-specific plans, or to develop detail engineering and construction designs for conservation applications that will help reduce future damages from natural disasters. Some examples of past mitigation efforts include: floodplain management studies for towns, site assessments of stream flow impairments, stabilization designs to protect structures which could sustain severe damages

from another storm event, and small watershed plans addressing flooding problems. Some of these products can be provided through other conservation assistance efforts. However, the major jobs would require a reimbursable agreement with the state or towns to complete the work.

Mitigation Goals and Objectives:
With respect to hazard mitigation, the goal of the NRCS in New Hampshire is to meet the needs of the State and local governments by providing timely technical assistance to support recovery and restoration efforts. NRCS can contribute this technical assistance by interacting directly with NHHSEM at the state level and having our field staff working directly with Town Emergency Management officials at the local level. Short-term goals are to establish contacts with local officials and the conservation districts at the field office level to facilitate quicker response times. Intermediate and long-term objectives are to improve the cooperative efforts of working with NHHSEM and establish additional contacts for providing timely technical assistance at the local level.

Projects/Planning Desired:
NRCS would like to work with local watershed associations to develop comprehensive plans addressing resource and environmental needs and opportunities in the priority watersheds as identified in the Unified Watershed Assessment. These plans can provide the basis for targeting and requesting special funding to meet the needs of the local watershed association. Technical assistance for planning and designing along with public information dissemination are the typical activities our agency can provide in this effort.

NRCS Resources with respect to Hazard Mitigation

Personnel:
NRCS in New Hampshire has a workforce of 45 staff members along with 5 multi-state staff members. Approximately 22 staff members consisting of engineers, biologists, foresters, conservation planners, and technicians are available to provide some assistance in mitigation efforts. Support staff of a GIS specialist, computer specialist and public information specialist could assist in providing information for public outreach. This staff is available to provide limited assistance under our present program funding authorities. However, larger projects would require reimbursement for planning and design assistance.

Equipment, Physical Facilities and Other Capabilities:
All of our field offices and State office have computers and access to the internet. All of the field offices have survey equipment and all engineers have the use of CADD software. All field offices have access to small meeting rooms and access to the Federal Telecommunications System. Government vehicles are located at all field offices for use by government employees and could be made available in emergencies.

Northeast States Emergency Consortium (NESEC)

Contacts:

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Organization Description:
The Northeast States Emergency Consortium, Inc. (NESEC) is a 501(c)(3) not-for-profit natural disaster mitigation and emergency management organization, located in Wakefield, Massachusetts. NESEC is the only multi-hazard consortium of its kind in the country and is supported and funded by the Federal Emergency Management Agency (FEMA). The eight Northeast States of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont form the consortium. NESEC has a full-time Executive Director, and Assistant. It is governed by a Board of Directors. The Board is comprised of the Directors of the State Emergency Management Agencies from each of the six New England States and the States of New York and New Jersey.

Organization Mission:
NESEC works in partnership with government and private organizations to reduce losses of life and property from natural disasters in the Northeast United States. The Northeast States are vulnerable to most of the natural hazards, including hurricanes, earthquakes, coastal and inland flooding, tornadoes and micro-bursts, forest fires, drought, lightning, blizzards and other forms of severe weather. Our developed urban areas and the desire to build and live on waterfront property have increased our degree of risk from natural hazards.

Mitigation Programs:

HAZUS: NESEC assists FEMA PROJECT IMPACT Communities in the use of HAZUS as a planning platform for incorporating multi-hazard disaster prevention initiatives. NESEC can produce a HAZUS report using default data for each of the initial PROJECT IMPACT Communities. Priority is given to PROJECT IMPACT communities, however, assistance may be provided to other communities as resources allow. This report provides an excellent starting point for communities wishing to utilize HAZUS to identify potential hazards. The NESEC HAZUS Report is multi-hazard and usually contains information on earthquakes, tornadoes, flood, and wind.

There is no fee or charge for producing the default HAZUS Report and meeting with the community to discuss the results. All HAZUS support is arranged in cooperation with the New Hampshire Homeland Security and Emergency Management (NHHSEM). Communities interested in participating should contact NHHSEM.

Emergency Generators: NESEC assists communities to establish a partnership with their electric utilities and service companies. The partnership would conduct an energy efficiency audit of the community, recommend cost saving measures and implement a cost saving plan. Monthly savings could be used to fund emergency generator(s) for local critical facilities. The utility or energy service company could then lease, install and maintain generator(s) in a community.

The community would pay a monthly charge for the lease agreement. This charge would not exceed the savings derived through energy efficiency measures, so there would be no capital outlay or additional cost to the community. In fact, some communities may be able to reduce their monthly electric bills in an amount that exceeds the cost of the generator(s) lease agreement.

Monthly savings and utility participation will vary from state-to-state and community-to-community depending on present electric power usage and efficiency measures and deregulation. There is no fee or charge for assisting communities in establishing partnerships with electric utilities. NESEC assistance will be provided as resources allow. All emergency generator support is arranged in cooperation with the New Hampshire Homeland Security and Emergency Management (NHHSEM). Communities interested in participating should contact NHHSEM.

Federal Mitigation Grant Programs

I. Pre-Disaster Mitigation Grant Program

The Pre-Disaster Mitigation (PDM) program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.

Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds. http://www.fema.gov/government/grant/pdm/index.shtm

II. Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to

natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
http://www.fema.gov/government/grant/hmgp/index.shtm

III. Flood Mitigation Assistance (FMA) Program

The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).

FEMA provides FMA funds to assist States and communities to implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program. http://www.fema.gov/government/grant/fma/index.shtm

Appendix E. Formal Approval Letter

To be added following formal approval

Appendix F. Plan Review Tool

To be added following formal approval

Appendix G. Past and Potential Hazards Map

See following page [to be added to final version]

Appendix H. PROJECT STATUS SHEET

The following form can be used to keep track of projects identified in the hazard mitigation plan that are in progress or that have been completed.

PROJECT TITLE	PAGE # IN PLAN	DATE OF PROJECT COMPLETION	COMMENTS