TOWN OF DANBURY HAZARD MITIGATION PLAN

Update 2021

PREPARED BY THE TOWN OF DANBURY HAZARD MITIGATION COMMITTEE
Town of Danbury, NH

Contents

Chapter One: Introduction

Background

The Town's Hazard Mitigation Committee reformed in 2019 to develop an updated Hazard Mitigation Plan. The update incorporates the changes required by FEMA and also updates pertinent information about the Town of Danbury in regard to mitigation projects from the previous plan, new projects as identified by the Committee and resources available to the Town. Compared to 2014 planning process, the majority of this plan was developed by review of the previous plan and brainstorming the necessary changes.

Authority

This Hazard Mitigation Plan was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA) Section 322, Mitigation Planning. Accordingly, this Hazard Mitigation Plan will be referred to as the "Plan". The Plan was designed specifically for the Town of Danbury.

Funding Source

This Plan was funded by the New Hampshire Homeland Security and Emergency Management (HSEM) through Pre-Disaster Mitigation Grant funding with matching funding by the Town of Danbury.

Purpose

This Hazard Mitigation Plan is a planning tool to be used by the Town of Danbury, as well as other local, state and federal governments, in their effort to reduce the effects from natural and man-made hazards. Many of the ideas presented in this plan are incorporated into the Town of Danbury Master Plan developed by the Danbury Planning Board in 2011.

Introduction

On October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000). The ultimate purpose of DMA 2000 is to:

- Establish a national disaster hazard mitigation program that will reduce loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from disasters, and
- Provide a source of pre-disaster hazard mitigation funding that will assist State and local governments in accomplishing that purpose.

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322 – Mitigation Planning. This places new emphasis on local mitigation planning. It requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) mitigation project grants. Local governments must review and if necessary, update the mitigation plan annually to continue program eligibility.

Why Develop a Mitigation Plan?

The full cost of the damage resulting from natural hazards – personal suffering, loss of lives, disruption of the economy, and loss of tax base – is difficult to measure.

Our State is subject to many types of natural hazards: floods, hurricanes, severe winter weather, earthquakes, tornadoes, downbursts, and wildfires, all of which can have significant economic and social impacts. Some, such as hurricanes, are seasonal and strike in predictable locations. Others, such as floods, can occur anytime of the year and almost anywhere in the State.

Scope of the Plan

The scope of this Plan includes the identification of natural, technological, and human caused hazards affecting the Town, as identified by the Hazard Mitigation Planning Committee through brainstorming and review of the previous plan. The hazards reviewed under the scope of this plan include those that are outlined in the State of New Hampshire's Hazard Mitigation Plan:

- Dam Failure
- Drought
- Earthquake
- Extreme Temperatures
- Flooding
- High Wind Events
- Tropical and Post Tropical Cyclones
- Infectious Diseases
- Lightning
- Severe Winter Weather
- Wildfire

The Committee determined through review of natural disasters occurring within the last five years that the Town of Danbury is particularly susceptible to flooding and severe winter weather. The State of New Hampshire has also been in a drought which will continue to be an emerging threat. Infectious Diseases has been added to the hazards list. In the beginning of 2020, a novel coronavirus (SARS-COV-2) affected the entire nation and was soon declared a worldwide pandemic. COVID-19 had a profound affect on the United States, the State of New Hampshire, and the Town of Danbury.

Methodology

Using the Local Mitigation Planning Handbook by FEMA (2013), the Danbury Hazard Mitigation Committee, developed the content of the Danbury Hazard Mitigation Plan by tailoring the nine-task process set forth in the guidebook appropriate for the Town of Danbury. Many FEMA resources and multiple State and Federal websites were also used as well.

The Committee held a total of two posted meetings in 2019 and 2021. The first meeting was posted in on the Town's website and the Fire Department Facebook page inviting the general public.

Though notices invited the general public to participate, no public attended the meetings. Invitations to attend the public meetings were sent to all abutting municipalities. Major employers Ragged Mountain Ski Area and the Danbury Country Store were also invited to attend, as well as local churches. Although no employers or churches attended, the Grafton Fire Chief attended the first meeting and all members of the Board of Selectmen attended as well. Meeting documentation is provided in Appendix B.

The Committee will hold a final meeting and the Board of Selectmen will hold a public hearing and formally adopt the Plan once it has been approved by FEMA.

The following hazard mitigation meetings were vital to the development of this Plan:
December 16, 2019 (in-person meeting)
June 8, 2021 (virtual meeting)

Additionally, several informal in-person meetings with the Danbury Fire Chief and Danbury Road Agent provided input into the plan.

In December 2019, the Danbury Hazard Mitigation Committee (Committee) was formed to update the Hazard Mitigation Plan. The update committee consisted of representatives from various local agencies, including Danbury Fire, Danbury Police, Danbury Highway, and Danbury Board of Selectmen. The committee developed this Plan as a result of the above meetings and the following planning process.

Task 1: Determine the Planning Area and Resource (December 2019)

Danbury is a small town and chose to continue their planning as process as a single municipality. The Town decided to work on the plan without hiring a contractor to do so.

Task 2: Build the Planning Team (December 2019)

Members of the Committee included all relevant personnel as well as any interested neighboring communities. This included department heads and the Board of Selectmen to represent municipal organizations with general and land use planning authority. Additionally, NH Homeland Security and Emergency Management personnel attended meetings to provide input to the process and assist with guiding the committee.

Task 3: Create an Outreach Strategy (November - December 2019)

The Committee chose to provide public notices to the public to encourage participation at the public meetings. They also put a notice on the town website. Notices were also sent to each of the neighboring towns to invite them to participate in the meetings, send comments, or request a final plan. The final plan will also be available for public review prior to adoption. Meeting documentation is provided in Appendix B.

Task 4: Review Community Capabilities (December 2019)

Committee members identified facilities that were considered to be of value to Danbury for emergency management purposes, for provision of utilities and services, and for historic, cultural and social value. A map was prepared to show critical facilities identified by the Danbury Hazard Mitigation Committee. A summary listing of “Critical Facilities” is presented in Chapter 4. Costs were determined for

losses for each type of hazard. Using information and activities in the handbook, the Committee and identified existing mitigation strategies which are already implemented in the Town related to relevant hazards. A summary chart and the results of this activity are presented in Chapter 4.

Task 5: Conduct a Risk Assessment (June 2021):

The Committee determined natural, technological and human-made hazards affecting the Town and updated a description, location, and extent of those previous and potential hazards. Existing and future assets were updated to determine vulnerability to potential hazard events. Critical facilities needed during an emergency were identified and given values based on tax data. It was also determined if these facilities are in a hazard zone or not. Other facilities identified are those needed to continue the daily operation of the municipality or valued historical structures and vulnerable natural areas.

Task 6: Develop a Mitigation Strategy (June 2021):

The Committee evaluated the goals in the previous plan and determined they were still appropriate, although minor revisions were made to make the goals easier to read. They then determined actions that they could take to meet those goals to reduce their risk to hazard events. They discussed existing regulations, ordinances, and the Master Plan and how they could continue to incorporate hazard mitigation strategies into these documents to include hazard mitigation in land use planning. Committee members agreed to pursue this integration with appropriate municipal boards.

Task 7: Keep the Plan Current: (annually):

The plan will be reviewed after every major event to evaluate the effectiveness of the plan and annually. It will also be updated at least every five years as required.

Task 8: Review and Adopt the Plan:

The Committee will incorporate any feedback from Committee members, municipal officials, residents, businesses and institutions, and neighboring communities. The plan will be assessed by using FEMA's Local Mitigation Plan Review Tool prior to sending to NH Homeland Security and Emergency Management for preliminary review. If HSEM considers the plan to meet the requirements, they will forward the draft plan to FEMA for their review. Once FEMA determines the plan meets requirements, the municipality will hold a public meeting to obtain further comments and review the final draft. If there are no major suggested changes, the municipal government will adopt the plan and the adoption form will be sent to HSEM and then to FEMA to receive a final approval of the plan.

Task 9: Create a Safe and Resilient Community:

The Town of Danbury will implement the plan by committing to task accomplishment as indicated in the plan. The Town will take advantage of available funding opportunities such as FEMA's mitigation grant programs. The process for monitoring and updating the Plan can be found in Chapter 7.

Hazard Mitigation Goals

The Committee reviewed the Hazard Mitigation Goals from the previous plan and found no changes to the goals were needed. The overall goals of the Town of Danbury with respect to Hazard Mitigation are as follows:

1. To improve upon the protection of the general population, the citizens of the Town of Danbury and guests, from natural and man-made hazards.
2. To reduce the potential impact of natural and man-made disasters on the Town of Danbury's:
    a. Emergency Response Capability
    b. Critical Facilities
    c. Infrastructure
    d. Private property
    e. Economy
    f. Natural environment
    g. Historic treasures
3. To improve the Town of Danbury's:
    a. Emergency preparedness and communication network.
    b. Disaster response and recovery capability.
4. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's Goals and Objectives.
5. To reduce the Town of Danbury's potential liability with respect to natural and man-made hazards.
6. The Town of Danbury will work in conjunction and cooperation with the State of New Hampshire's Hazard Mitigation Goals.

Hazard Mitigation Planning Committee

- Kyle Levesque, Deputy Fire Chief and Emergency Management Director
- Todd Gordon, Danbury Fire Department member
- Jeremy Cornell, Danbury Road Agent and Danbury Firefighter
- James Phelps, Danbury Board of Selectmen
- Karen Padgett, Administrative Assistant for Danbury Board of Selectmen
- David Suckling, Danbury Police Chief and Danbury EMT
- John Babiarz, Grafton Fire Chief
- Alexx Monastiero, NH HSEM
- Jeremy Martin, Danbury Fire Chief
- Jessica Hatch, Danbury Board of Selectmen
- Richard Swift, Danbury Planning Board
- Kayla Henderson, NH HSEM

The Hazard Mitigation Committee was composed of local officials and state officials. Neighboring communities were invited by e-mail to participate. The general public was invited to attend meetings by public postings on the Town of Danbury website. No citizens inquired about the update process or attended any of the meetings. No comments were made by neighboring towns. Meeting documentation is provided in Appendix B. Historical information, relevant data and potential future mitigation strategies were contributed by all parties involved in the planning process. For a record of all meeting topics see Appendix B: Meeting Documentation.

Chapter Two: Community Profile

Community Contact	Danbury Board of Selectmen
	Jessica Hatch, Chair 23 High Street Danbury, NH 03230
Telephone	(603) 768-3313
Fax	(603) 768-3313
E-mail	danbury_selectmen@comcast.net
Web Site	www.townofdanburynh.com
County	Merrimack
Labor Market Area	New London, NH LMA
Tourism Region	Dartmouth-Lake Sunapee
Planning Commission	Lakes Region
Regional Development	Capital Regional Development Council
Election Districts	
US Congress	District 2
Executive Council	District 1
State Senate	District 2
State Representative	Merrimack County Districts 1, 25

Incorporated: 1795

Origin: This town was not an original colonial grant but was formed from part of Alexandria to the north. In 1794, a group of Alexandria residents petitioned the state legislature to separate Alexandria into two towns due to the inconvenience of having a mountain divide the town, making it difficult for all residents to gather in a single place. The petition was granted in 1795, and the lower piece was incorporated as Danbury in that year. The name was suggested by a settler from Danbury, Connecticut; Connecticut's Danbury was named in 1687 after Danbury, England, the site of an eleventh-century Danish camp.

Villages and Place Names: Elmwood, Fords Crossing, Fords Mill, South Danbury, Converse Station
Population, Year of the First Census Taken: 165 residents in 1800.

Population Trends: Population change for Danbury totaled 737 over 49 years, from 489 in 1970 to 1,226 in 2019. The largest decennial percent change was a 39 percent increase between 1970 and 1980, followed by a 30 percent increase over the next decade. The 2019 Census estimate for Danbury was 1,226 residents, which ranked 176th among New Hampshire's incorporated cities and towns.

Population Density and Land Area, 2019 (US Census Bureau): 32.5 persons per square mile of land area. Danbury contains 37.8 square miles of land area and 0.3 square miles of inland water area.

Municipal Services

Type of Government	Selectmen
Budget: Municipal Appropriations, 2019	$1,230,180
Budget: School Appropriations, 2018-2019	$1,541,047
Zoning Ordinance	2002/19
Master Plan	2011
Capital Improvement Plan	Yes
Industrial Plans Reviewed by	Planning Board
Boards and Commissions	
Elected:	Selectmen; Planning; Trust Funds; Checklist; ZBA; Library; Recreation; Auditor

Emergency Services

Police Department	Part-time	
Fire Department	Volunteer	
Emergency Medical Service	Full Time (Bristol Fire Department); Volunteer (Danbury Fire Department)	
Nearest Hospital(s)	Distance	Staffed Beds
New London Hospital, New London	16 miles	25

Utilities

Electric Supplier	Eversource Energy; NH Electric Coop
Natural Gas Supplier	None
Water Supplier	Private wells
Sanitation	Private septic
Municipal Wastewater Treatment Plant	No
Solid Waste Disposal	
Curbside Trash Pickup	None
Pay-As-You-Throw Program	No
Recycling Program	Voluntary
Telephone Company	Consolidated Communications
Cellular Telephone Access	Yes
Cable Television Access	Limited
Public Access Television Station	No
High Speed Internet Service:	
Business	Fiber Optic High Speed
Residential	Fiber Optic High Speed

Housing

Total Housing Units	614
Single-Family Units, Detached or Attached	556
Units in Multiple-Family Structures:	
Two to Four Units in Structure	7
Five or More Units in Structure	0
Mobile Homes and Other Housing Units	51

Largest Businesses	Product/Service	Employees	Established
Ragged Mountain Resort	Ski area	20	1964
William Wallace Prefab	Manufactured house panels	32	2002
Danbury Country Store	Country store	11	2013

Changes in Development

There have been no developments in hazard prone areas since the last plan. Since there have been no new development in hazard prone areas, the Town of Danbury remains the same amount of vulnerability to hazards.

Chapter Three: Hazard Identification

The Danbury Hazard Mitigation Planning Committee reviewed incidents since the last Hazard Mitigation Plan as well as reviewing the NH State Hazard Mitigation Plan and brainstorming to identify weather related threats that could impact the Town. During the planning process, the committee identified the following hazards from the previous plan and included them in this plan: winter weather, lightning, flooding, hurricanes, earthquakes, drought, wildfires, and dam failures as possible threats to the Town. New hazards identified and included to this plan that were not in the previous plan include: infectious diseases, high wind events, and extreme temperatures (changed from extreme heat in previous plan).

Although listed in the State of New Hampshire Hazard Mitigation Plan Update 2018, the hazards "Landslide", "Avalanche", and "Solar Storm and Space Weather" were omitted from this plan. The Town of Danbury Hazard Mitigation Planning Committee did not feel that those hazards were worth considering in this plan since there have been no instances of these hazards in Town historically. These hazards may be considered in the next Hazard Mitigation Plan update.

List of Major Disaster Declarations

Date Declared	Event Type	Counties Declared
April 16, 1987	Severe Storms/ Flooding	Cheshire, Carroll, Grafton, Hillsborough, Merrimack, Rockingham & Sullivan
August 29, 1990	Severe Storms/Winds	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan
September 9, 1991	Hurricane	Statewide
March 16, 1993	Heavy Snow	Statewide
January 3, 1996	Storms/Floods	Carroll, Cheshire, Grafton, Merrimack & Sullivan
October 29, 1996	Severe Storms/ Flooding	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan
January 15, 1998	Ice Storm	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Strafford, Sullivan
July 2, 1998	Severe Storms	Belknap, Carroll, Grafton, Merrimack, Rockingham & Sullivan
March 2001	Snow Emergency	Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, and Strafford
February 17-18, 2003	Snow Emergency	Cheshire, Hillsborough, Merrimack, Rockingham & Strafford

January 15, 2004	Snow Emergency	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan
October 8 - 10, 2005	Severe Storms/Flooding	Belknap, Cheshire, Hillsborough, Merrimack, & Sullivan
May 12 – 23, 2006	Flooding	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, and Strafford
April 15, 2007	Nor'easter flooding	Belknap, Carroll, Cheshire, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, Sullivan, and Coos
July 24, 2008	Tornado	Belknap, Carroll, and Rockingham
July 24 – Aug 14, 2008	Flooding	Belknap, Coos, and Grafton
September 6-7, 2008	Flooding	Hillsborough County
December 11-23, 2008	Ice Storm	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
February 23- March 3 2010	Wind/Rainstorm	Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
March 14-31 2010	Flooding	Hillsborough and Rockingham
May 26-30 2011	Flooding	Grafton and Coos
August 26 – September 6 2011	Tropical Storm Irene	Coos, Grafton, Belknap, Carroll, Strafford, Sullivan, Merrimack
October 29th, 2011 – October 30th 2011	Severe Storm and Snowstorm	Hillsborough and Rockingham
May 2012	Severe Storm	Hillsborough
October 26 – November 8 2012	Hurricane Sandy	Belknap, Carroll, Coos, Grafton, and Sullivan
February 8-10, 2013	Severe Winter Storm and Snowstorm	Belknap, Cheshire, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan

Disaster Declarations since 2014 Update

Date Declared	**Event Type**	**Counties Declared**
03/25/2015	Severe Winter Storm and Snowstorm	Hillsborough, Rockingham, Strafford (No impact to Danbury)
06/01/2017	Severe Winter Storm	Belknap and Carroll (No impact to Danbury)
08/09/2017	Severe Storms and Flooding	Grafton (No impact to Danbury)

Incident Period: October 29, 2017 - November 1, 2017 Major Disaster Declaration declared on January 2, 2018	New Hampshire SEVERE STORM AND FLOODING (DR-4355-NH)	Belknap, Carroll, Coos, Grafton, Sullivan, Merrimack (No impact to the Town of Danbury)
06/08/2018	Severe Storms and Flooding	Rockingham (No impact to Danbury)
06/08/2018	Severe Winter Storm and Snowstorm	Carroll, Strafford, and Rockingham (No impact to Danbury)
08/15/2019	Severe Storm and Flooding	Grafton (No impact to Danbury)
04/03/2020	COVID 19 Pandemic	Statewide

Description of Hazards

Dam Failures

Definition: Dam Failure is defined as the sudden, rapid, and uncontrolled release of impounded water.

Locations: Areas at risk include Lower Bog which as a man-made mill dam. If the dam gave way, it might impact the culvert on Rt. 104. Upper Bog dam and Ragged Mt. Dams could cause some damage to roads.

Extent: Dams in New Hampshire are classified by the New Hampshire Department of Environmental Services Dams Bureau. The four dam hazard classifications (High, Significant, Low, and Non-Menace) are based on the potential losses associated with a dam failure. High (H) and Significant (S) Hazard dams have the highest potential for damage; this could include damage to state or municipal roadways. Danbury has one Significant Hazard Dam.

NH DES assigns a hazard designation to each dam in the state depending upon the potential damage it would cause if the dam failed:

- A “high hazard potential” is indicated if the dam is in a location and of a size that failure or mis-operation of the dam would result in the following: major economic loss to structures or property; structural damage to roads; major environmental; or public health losses; and probable loss of human life.
- A “significant hazard potential” would mean the dam is in a location and of a size that failure or mis-operation of the dam would result in any of the following: major economic loss to structures or property; structural damage to roads; major environmental or public health losses.
- A “low” hazard dam failure could cause some structural damage to buildings and roads.
- A “non-menace” dam failure would not cause any significant damage.

“High” and Significant” hazard potential dam owners must provide NH DES with maps of the potential inundation area if the dam were to fail. It should be noted that there are some exemptions from this requirement such as lagoons.

Significant Hazard structure means a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:

- No probable loss of lives.

- Major economic loss to structures or property.
- Structural damage to a Class I or Class II Road that could render the road impassable or otherwise interrupt public safety services.
- Major environmental or public health losses, including one or more of the following:
    - Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair.
    - The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more.
    - Damage to an environmentally sensitive site that does not meet the definition of reversible environmental losses.

Impact: The only dam in Danbury has the potential to impact a bridge located on route 104. Additionally, should the dam fail there are two homes located nearby. Should those homes flood or collapse, the damage of those structures combined with damage to the bridge could result in $500,000 to $1 million of damage. Historically, the dam has been well maintained and there is little risk of this happening.

Previous Occurrence: None

Probability: Remote

The Hazard Mitigation Committee reviewed this hazard and agreed that there is still a remote hazard of dam failure. There has been no increase of risk of dam failure.

Drought

Definition: Drought is a complex phenomenon that is difficult to monitor and define. A drought is essentially the absence of water in a region that occurs slowly due to below-average precipitation over an extended period, resulting in low stream flows, low surface water, and low groundwater levels. According to NOAA, the climatological community has defined four types of droughts to address their cause(s), timeframe, and effects:

- Meteorological Drought: Occurs when dry weather patterns dominate an area, resulting in a lack of precipitation
- Hydrological Drought: Occurs when low water supply becomes evident, especially in streams, reservoirs, and groundwater levels—usually after many months of meteorological drought
- Agricultural Drought: Occurs when crops become affected by drought conditions
- Socioeconomic Drought: Effects of supply and demand of commodities affected by drought conditions

Drought is defined as an abnormal lack of moisture relative to long term climatic averages (30 years or longer) for any given region. Conditions that define a drought for one climate zone cannot be applied universally to others. Likewise, drought conditions should not be confused with aridity, which describes a permanent feature of climate, rather than a temporary deviation from normal climate behavior.

Location: Droughts are difficult to define geographically. Due to their widespread nature a drought would affect the entire Town of Danbury. “A drought occurs when a region experiences below-average precipitation over an extended period, resulting in low stream flows and low surface water and

groundwater levels. Because New Hampshire appears water rich in comparison to many other regions of the United States, people mistakenly think the occurrence of drought is a rare event. In actuality, New Hampshire experiences drought quite frequently. For example, between the years 2000 and 2020, drought conditions occurred within 11 of those 20 years." (NHDES)

Extent: Droughts are not as damaging to the Town as floods or winter weather. However, a severe drought can affect fire suppression capability, increase the probability of fires, and impede fire suppression. Those areas with minimal fire protection are at a higher risk because of a prolonged drought. New Hampshire breaks the State into five Drought Management Areas: one in the north; one across the central region; and three along the southern portion of the State. The National Oceanic and Atmospheric Administration (NOAA) and the US Government utilize the Palmer Drought Survey Index for conditions of the Nation. The Palmer Drought Management areas divide the State into two areas and utilize the Palmer Drought Severity Index, which is based on rainfall, temperature, and historic data. The New Hampshire Drought Management Team, whose efforts are coordinated by the NH DES Dam Bureau, utilizes these maps to help determine which areas are the hardest hit. There are four magnitudes of drought outlined in the New Hampshire State Drought Management Plan. The highest magnitude is Disaster, followed by Emergency, Warning and Alert. Each level has varying responses.

The severity of a drought is assessed using the US Drought Monitor's intensity scale.

			Ranges				
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: • short-term dryness slowing planting, growth of crops or pastures Coming out of drought: • some lingering water deficits • pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	• Some damage to crops, pastures • Streams, reservoirs, or wells low, some water shortages developing or imminent • Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	• Major crop/pasture losses • Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Impact: The biggest impact to the Town of Danbury regarding drought could be to any farming in the town. Crops in the town could be destroyed, as well as interruption to cattle grazing. There are two large farms and one winery in Danbury, as well as several smaller farms. Lost revenue from products that these

farms produce could be in the thousands of dollars depending on the length of the drought and the amount of produce affected. The ski industry in the Town of Danbury could also be affected. Ragged Mountain Ski Area is one of the largest employers in the Town and a drought could affect snow making capabilities. Additionally, a drought could result in increased risk for wildfires. The impact of wildfires is addressed in the wildfire section below.

Previous Occurrence: According to the NH State Hazard Mitigation Plan (2018), six droughts of significant extent and duration are evident in the 1900s: 1929-36, 1939-44, 1947-50, 1960-69, 2001-2002, and 2016-17. The 2016-2017 was the worst on record. This was the first time that an Extreme drought had been declared for New Hampshire since the National Drought Monitor became operational in 2000. All of these droughts were statewide in extent and had recurrence intervals ranging from 10 to more than 25 years. In the statewide drought of 2001/02 private wells dried up and agriculture was affected. The same was the case with the 2016-2017 drought, with multiple failed wells and dairy farms closing. Since the last plan update, it is not known if there was any impact to the Town of Danbury from droughts.

Probability: The committee reviewed data from the New Hampshire Hazard Mitigation Plan 2018 and reviewed historical data of droughts in the State. The findings were that there have been significant cases of drought in the State since the 2014 Hazard Mitigation Plan. Additionally, it was found that the entire state is at medium risk to drought according to the State of NH 2018 Hazard Mitigation Plan. Therefore, the committee decided to keep the rating of ‘probable’ for probability of a drought in Danbury.

Earthquake

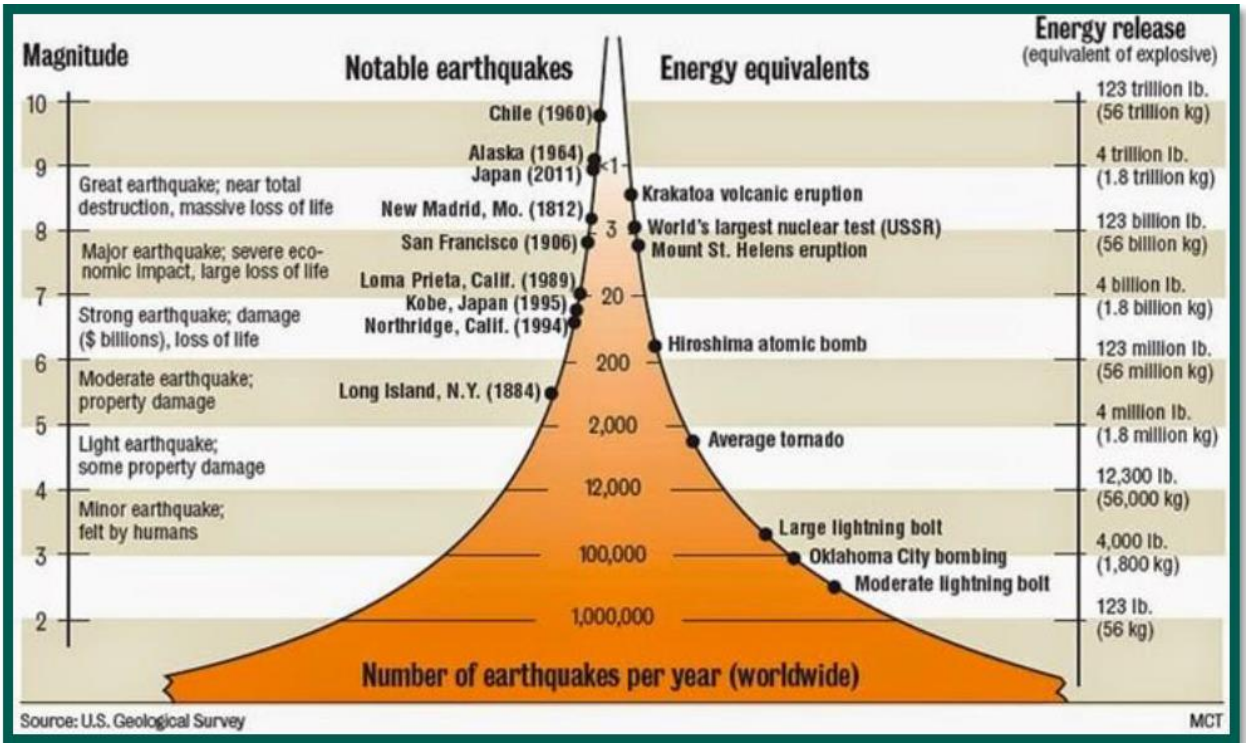
Definition: The United States Geological Survey (USGS) defines an earthquake as a sudden slip on a fault. Tectonic plates are always slowly moving but can get stuck on edges due to friction. When the stress on the plates overcomes the friction, there is an earthquake that releases an energy wave that travels through the earth’s crust.90 The earthquake hazard is anything associated with an earthquake that may affect the normal activities of people, such as, surface faulting, ground shaking, landslides, tsunamis, structural damage, etc. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. There are two primary ways in which earthquakes are measured, magnitude (the size of the earthquake) and intensity (measure of the shaking and damage, which can vary from location to location). Magnitude is measured in the Moment Magnitude scale (based off the obsolete Richter scale). The Modified Mercalli Intensity (MMI) classifies the perceived feeling of the earthquake.

Location: According to the NH State Hazard Mitigation Plan 2018, New Hampshire is considered to lie in an area of "Moderate" seismic activity with respect to other areas of the United States and is bordered to the North and Southwest by areas of "Major" activity. This means that the state could experience large (6.5-7.0 magnitude) earthquakes, but they are not likely to occur as frequently as in a high hazard area like California. The state typically experiences one or two earthquakes per year registering magnitude 2.0 to 3.5. There are no identified fault lines for the entire state, therefore an earthquake could occur and/or affect any location in the Town. The closest earthquake to Danbury in recent years was in Boscawen that reached 3.1 on the Richter scale.

Extent: It is assumed that all of the buildings in the Town have not been designed to withstand seismic activity. More specifically, the older historic buildings that are constructed of non-reinforced masonry are especially vulnerable to any moderate sized earthquake. Town owned buildings include the Danbury Town

Hall, Danbury Highway Garage, Danbury Fire Station, George Gamble Library, and the Danbury Community Center. In addition, utilities (water, gas, etc.) are susceptible to earthquake damage. Danbury has experienced the effect of small to moderate earthquakes that had minor to no effect on the town's infrastructure. However, if a large (6+ on the Richter Scale) occurred in or around the town, it is assumed that structural damage would be moderate to severe. According to the NH Division of Homeland Security and Emergency Management and the U.S. Geological Survey, the overall earthquake risk to the state is high. This is because of the built environment of New Hampshire. That is, many structures in the state (e.g., buildings, homes, bridges, and highways) are old or not built to modern earthquake standards. Hence, they are unable to withstand quakes. Additionally, due to the unique geology of New Hampshire, earthquake propagation waves travel up to 40 times further than they do in the western United States. This means the area of damage could be larger.

The extent of earthquakes is expressed in terms of the magnitude (the size of the earthquake) and the intensity (measure of the shaking and damage, which can vary from location to location). One of the first scales developed to express the extent of earthquakes was the Modified Mercalli Intensity Scale. This scale was a subjective intensity measurement of how an earthquake felt to people but could not provide a scientific comparison between earthquakes (based upon historical documents that information was able to be converted to MMI measurements). In the mid-1930s the Richter Scale, which measures earthquake magnitude, was developed and adopted as a logarithmic scale based on the amplitude of the seismic waves as measured on a seismograph at a standard distance. In the 1970s the Richter Scale was replaced by the Moment Magnitude Scale which captures all different seismic waves from an earthquake which allows for more precise measurement. An increase of 1 on the magnitude scale represents an earthquake that has 10x the energy than an earthquake of the previous magnitude.



Modified Mercalli Intensity Scale		
Magnitude	Value	Description
1.0-3.0	I	Not felt except by a very few under especially favorable conditions.
3.0-3.9	II	Felt only by a few persons at rest, especially on upper floors of buildings.
3.0-3.9	III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4.0-4.9	IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
4.0-4.9	V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0-5.9	VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
5.0-5.9	VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0 and higher	VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
6.0 and higher	IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.0 and higher	X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
7.0 and higher	XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
7.0 and higher	XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Impact: Historically, the town of Danbury has not seen damage from earthquakes. However, most structures in Danbury are not earthquake resistant, and are therefore susceptible to damage should an earthquake of significant strength hit Danbury. With average home values around $171,149 and average residential units around 600, damage to structures could result in $100 million worth of damage. Additional damage would be done to infrastructure such as roads and power lines, bringing the total amount of damage to the Town to roughly $105 - $110 million should the entire town be hit by a devastating earthquake.

Previous Occurrence:

New England Location	Date	Magnitude
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH/Quebec Border	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5
Boscawen, NH	September, 2010	3.1

Hollis Center, ME October 16, 2012 4.0

None of these events resulted in damage to any buildings or infrastructure in Danbury, NH.

Probability: The Hazard Mitigation Committee reviewed data from the State of New Hampshire Hazard Mitigation Plan 2018 and incidents of earthquakes over the years since the Hazard Mitigation Plan of 2014. Using the Earthquake Probability Mapping tool from the US Geological Survey website, there exists almost no probability of an earthquake greater than 5.0 magnitudes occurring near Danbury in the next five years. Additionally, the New Hampshire Hazard Mitigation Plan 2018 shows that the entire state is at medium risk for earthquakes. Due to historical data trends, the committee decided that the chances of an earthquake for Danbury are remote.

Extreme Temperatures

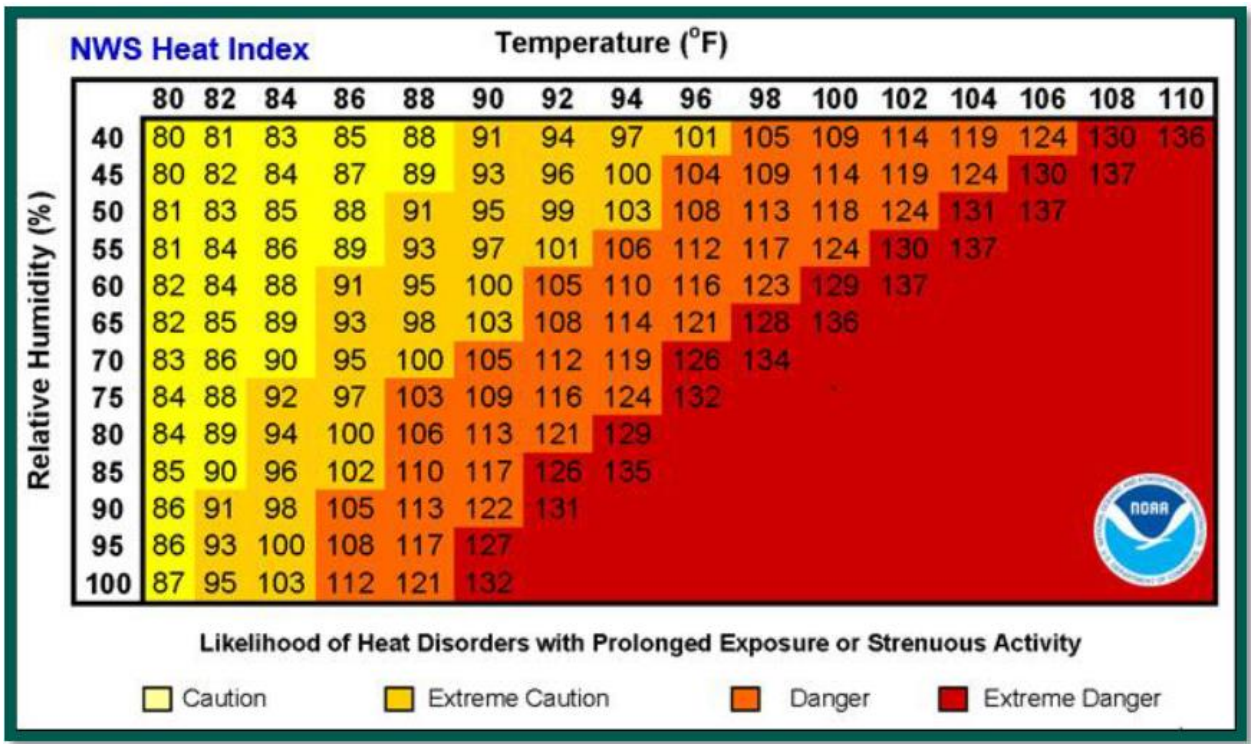
Definition: Extreme temperatures are a period of prolonged and/or excessive hot or cold that presents a danger to human health and life.

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. 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 emergency. Extreme heat can also damage or kill crops and animals (wild, farm, or domesticated), potentially presenting a risk to the economy.

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 are most common in 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.

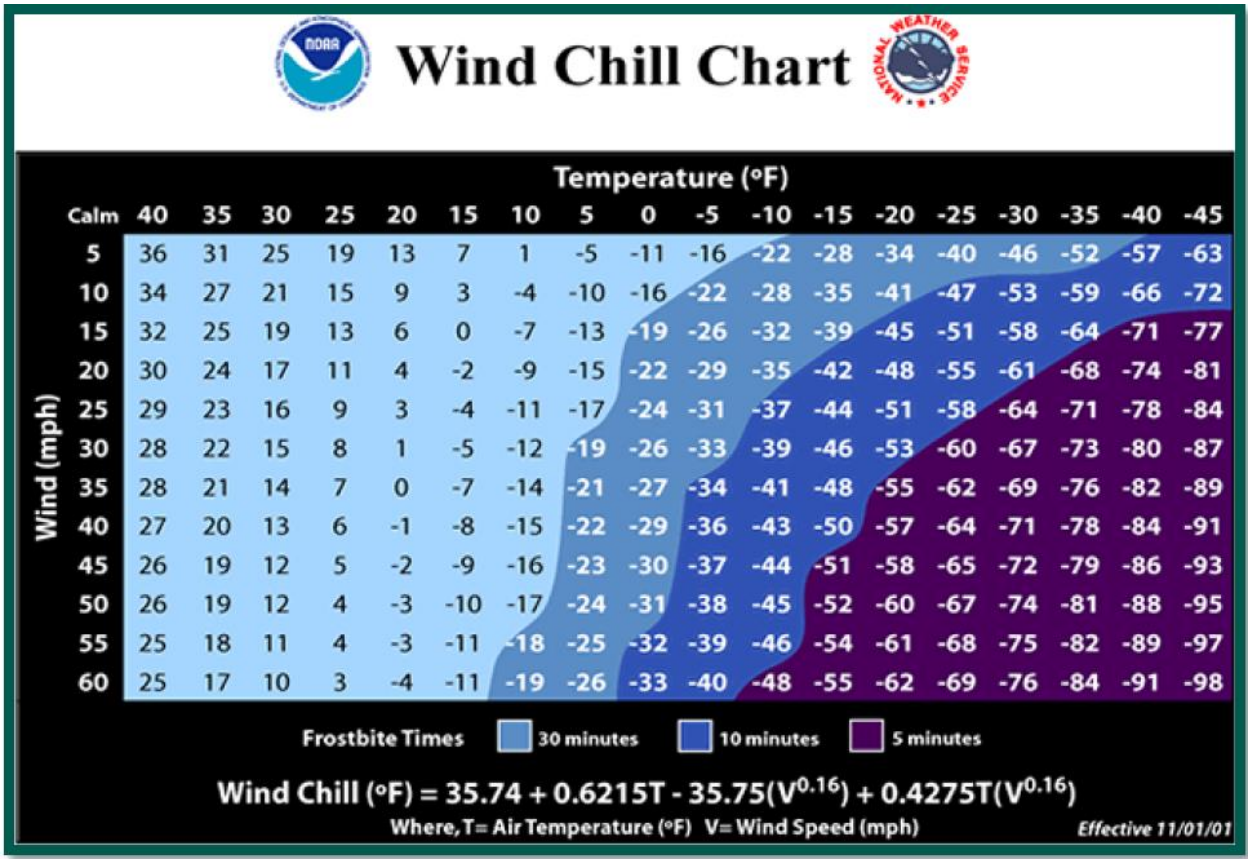
Location: The entire Town of Danbury is at risk for extreme temperatures. The hazard is very season dependent: summer months present the greatest hazard for extreme heat events, while winter months present the greatest threat of extreme cold.

Extent: Conditions of extreme heat are defined as summertime temperatures that are substantially hotter and/or more humid than average for location at that time of year. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Extremely dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is an extremely dangerous situation. Extreme heat conditions may impact the health of residents and visitors. Facilities without generators and air-conditioners that house the elderly and disabled are very susceptible to human health issues. Roads, bridges, railroads etc. may be damaged due to extreme heat. Utilities are also vulnerable as the demand for air-condition rises. Prolonged high temperature has also been associated with civil unrest. During extremely hot and humid weather the body's ability to cool itself is affected. When the body heats too rapidly to cool itself properly, or when too much fluid or salt is lost through dehydration or sweating, body temperature rises, and heat-related illnesses may develop. Heat-related illnesses can range from heat cramps to heat exhaustion to more serious heat stroke. Heat stroke can result in death and requires immediate medical attention. NOAA's heat alert procedures are based mainly on Heat Index Values. The Heat Index, sometimes referred to as the apparent temperature is given in degrees Fahrenheit. The Heat Index is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature. To find the Heat Index temperature, look at the Heat Index chart. As an example, if the air temperature is 96°F and the relative humidity is 65%, the heat index--how hot it feels--is 121°F. The National Weather Service will initiate alert procedures when the Heat Index is expected to exceed 105°-110°F (depending on local climate) for at least 2 consecutive days. NWS also offers a Heat Index chart for area with high heat but low relative humidity.



Extreme Cold (excerpted from the National Weather Service) Note: Some of these values are specific to the Northeastern Forecast Region—New Hampshire is in this area.

- Wind Chill Watch: NWS issues a wind chill watch when dangerously cold wind chill values are possible. As with a warning, adjust your plans to avoid being outside during the coldest parts of the day. Make sure your car has at least a half a tank of gas and update your winter survival kit.
- Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values are expected or occurring. Be sure you and your loved one's dress appropriately and cover exposed skin when venturing outdoors. 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.



Impact: While difficult to estimate, the impacts from extreme heat could result in lost productivity due to workers succumbing to heat related illnesses. This problem is compounded by lost revenue from work hours, as well as any related medical bills that could result from an illness or injury resulting from working in extreme heat conditions. Additionally, the cost of energy consumption could be directly related to extreme heat, as homes and businesses will use air conditioning at a much higher rate than on days when the temperature is tolerable. Lost revenue, medical bills, and energy consumption could result in thousands of dollars in impacts. The impacts from extreme cold are similar, with lost productivity due to workers succumbing to cold related illnesses. The cost of heating could be related to extreme cold temperatures, as well as any repairs needed due to a heating system failure. This could include frozen pipe repair.

Previous Occurrence: According the NH Hazard Mitigation Plan 2018, extreme temperatures are difficult to track. However, below is a table excerpt from the plan that details certain reports of extreme temperatures.

Event Date	Event Description	Impacts	Location	Additional Information
July 1911	Heat Wave	Record high temperatures set in Concord, New Hampshire	Statewide	Extreme heat was recorded from July 3rd through July 5th, with high temperatures ranging from 101-102°F in Concord on these days.[116] These three days account for three of the top 10 hottest days on record for Concord, New Hampshire.
March 2012	Heat Wave	Record high temperatures set in Concord, New Hampshire	Statewide	High temperature records in Concord, New Hampshire were broken for 5 consecutive days, with the hottest day being 84°F.
September 2017	Heat Wave	High temperature records set across New Hampshire	Statewide	Mount Washington set record a daily high temperatures for four consecutive days. Manchester, Concord, and other areas across the State and New England also saw daily temperature records broken.[117]
December 2017	Cold Wave	Record low temperatures set across New Hampshire	Statewide	Record low temperatures were set across the State as a result of a cold wave. Portsmouth saw a low of -1°F and Mount Washington saw a low of -33°F (with a wind chill of -51°). Wind Chill Advisories were posted in central and southern New Hampshire, and Wind Chill Warnings were posted for northern New Hampshire.
February 2018	One Day Winter Heat Wave	High temperature records set across New Hampshire	Statewide	Exceptionally strong high pressure ridge in place across the Eastern Seaboard. Record high temperatures were broken across the State.[118]

It can be assumed that although the data does not track heat or cold waves, NH experiences at least one or more heat or cold waves annually. The Town of Danbury is impacted annually from heat waves and cold snaps. While the extent of the impacts is unknown, it can be ascertained that during periods of heat waves the Town is impacted by increased power usage to maintain air conditioning. It can also be ascertained that the Town was impacted by cold waves, including increased use of heating materials (oil, propane, wood, etc.)

Probability: The Hazard Mitigation Committee reviewed data from the National Weather Service about recent years of heat waves and cold waves in New Hampshire. There were frequent occurrences of this. Additionally, according to the New Hampshire Climate Action Plan, even with lower emissions standards, New Hampshire could be facing average temperature increases from an average of ten days over 90 degrees Fahrenheit per year to 15 days average of days over 90 degrees Fahrenheit over the next 20-30 years. Because of this, the committee decided that the probability of an extreme heat event is frequent.

Flooding

Definition: Inland flooding is generally defined as a high flow, overflow, or inundation by water, which causes or threatens damage. 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, particularly outside of the coastal plain, flash floods also lead to river bank and bed erosion. Extreme precipitation events in recent years, such as Tropical Storm Irene, have led to buildings on the edges of streambanks becoming at risk to river erosion, or culvert failures.
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. A flood is defined by the NFIP 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:
    - Overflow of inland or tidal waters
    - Unusual and rapid accumulation or runoff of surface waters from any source
    - Mudflow
- 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.

Location: Flooding in Danbury may occur anywhere, especially in the 100 year floodplain as designated on the FEMA Flood Insurance Rate Map. These areas primarily include the Smith River and other minor tributaries. The potential is moderate but the impact historically is minimal. Most of the flooding events result in damage to culverts and roads in the following areas: Forbes Mt. Rd, Dean Rd, Speare Rd due to heavy rain/erosion, Bridge over Wild Meadow Brook, Jack Wells Road.

Extent: The extent of damage caused by any flood depends on the depth and duration of flooding, the topography of the area flooded, and velocity of flow, rate of rise, and the amount and form of development in the floodplain. The terrain of the Town of Danbury is mostly mountainous, causing flooding in the valleys created by the mountains. Primarily flooding impacts the roads and culvert infrastructure more than residential and non-residential buildings. Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries or even fatalities. A flash flood is caused by heavy or excessive rainfall in a short period of time, generally less than six hours. Flash floods are usually characterized by raging torrents after heavy rains that rip through river beds, urban streets, or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam. Inland flooding occurs when moderate precipitation accumulates over several days, intense precipitation falls over a short period, or a river overflows because of an ice or debris jam or dam or levee failure. A river flood occurs when water levels rise over the top of river banks due to excessive rain from tropical systems making landfall, persistent thunderstorms over the same area for extended periods of time, combined rainfall and snowmelt, or an ice jam.

Where river gauges are present, the magnitude of flooding is ranked and area specific forecasts are created using a flood scale that ranges from the Action Stage to Major Flood Stage. The National Weather Service characterizes flood severity to communicate the impact of flooding more effectively as follows:

- Action Stage – Water source is rising and actions must be taken in preparation of potential signification hydrologic activity. There are no impacts at this stage.
- Minor Flood Stage – 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.

Areas that are not monitored by river gauges are not forecasted or measured using a specific scale; therefore, the best way to describe the extent of the hazard of flooding is its speed of onset (how quickly the floodwaters rise) and its duration (how long the area remains inundated with flood waters). Floods can happen slowly over time during a long duration event or they can happen very rapidly (flash flooding). The speed of onset and duration of an inland flooding event is influenced by the size of the channel and contributing watershed area, terrain of the contributing watershed area, intensity and duration of the rainfall or snowmelt, recent rainfall history, and other factors.

Flash flooding can be caused by heavy rain, ice jams, or levee or dam failure. These floods exhibit a rapid rise of water in stream channels that quickly overtops their banks. In some cases, flooding may occur far away from where the heavy rain initially fell. There are many reasons that flash floods occur, but one of the most common causes in New Hampshire results from the copious amounts of rainfall from thunderstorms. This can also occur when slow-moving or multiple thunderstorms (training thunderstorms) move over the same area. These sudden downpours can rapidly change the water levels in a stream and turn small waterways into violent, raging rivers. Urban areas are also at risk for flash flooding due to the amount of impervious surfaces.

The Federal Insurance and Mitigation Administration (FIMA) has oversight over the National Flood Insurance Program (NFIP). As part of the NFIP, Digital Flood Insurance Rate Maps (DFIRMs) have been developed to show Special Flood Hazard Areas (SFHAs), on rivers that have been so mapped, which are areas that are at risk for inundation, based on the delineation of the 1% annual chance and 0.2% annual chance (500-year) floodplain extents. The SFHA is where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. These zones delineate that extent of the 1% annual chance flood event. A 1% annual chance flood event does not mean that a flood will occur once in a 100-year period. In the 1960s, the 1-percent annual exceedance probability (AEP) flood was selected as the basis for the NFIP. The 1% AEP was thought be a fair balance between public safety and overly stringent regulations. As a 1% AEP flood has a 1 in 100 probability of being equaled or exceeded in any 1 year – it earned the nickname "100-year" flood as extrapolated the AEP has an average recurrence interval of 100 years, but again does not mean that a flood of the AEP magnitude will only occur once every 100 years. Larger events, such as the "500-year" flood corresponds with a 0.2% AEP. (1 in 500 chance).

Flood Zones are areas that FEMA has defined according to varying levels of flood risk and are displayed on a DFIRM. Flood risk is based on the 1% annual chance total asset loss by census block. While FEMA-mapped FIRMs only consider historical flood extent, the 1.7 feet sea-level rise scenario map is mostly contained within the current 1% annual chance floodplain, with minor incursions into the 2% annual

chance floodplain and other low lying areas. Flooding expands beyond the 1% annual chance floodplain under higher sea-level rise scenarios. This means that if sea-level rise reaches higher projections, today's one-percent-annual chance floods could occur twice every day and the new one percent-annual-chance floods will likely reach further upland.

Impact: The majority of flooding impact on the town of Danbury will be on infrastructure, particularly roads. If a road were to be partially washed away from flooding, the cost could be in the range of $10,000-$50,000 depending on the severity and lengths of roads washed away. If the section of road is a paved section, the costs could grow >$100,000. There are no repetitive loss properties in Danbury due to flooding, so the impact from flooding on homes would be minimal. The primary risk for homes in Danbury from flooding could be from basement flooding, with damages ranging from $1,000-$5,000 per home depending on what is damaged for appliances and the number of homes affected. Historically this has not been a problem in Danbury.

Previous Occurrence:
March 11-21, 1936: Double flood; first due to rains and snowmelt; second, due to large rainfall.
September 21, 1938: Hurricane. Stream stages similar to those of March 1936 and exceeded 1936 stages in the Upper Contoocook River.
July 1986 – August 10, 1986: FEMA DR-771-NH: Severe summer storms with heavy rains, tornadoes; flash flood and severe winds.
April 16, 1987: Severe Storms & Flooding. FEMA DR-789-NH
August 7-11, 1990: FEMA DR-876-NH: A series of storm events from August 7-11, 1990 with moderate to heavy rains produced widespread flooding in New Hampshire.
August 19, 1991: FEMA DR-917-NH: Hurricane Bob struck New Hampshire causing extensive damage in Rockingham and Stafford counties, but the effects were felt statewide
January 3, 1996: FEMA DR-1077-NH – Storms and flooding
October 29, 1996: FEMA DR-1144-NH – Severe storms and flooding
July 2, 1998: FEMA DR-1231-NH – Severe storms and flooding
March 22, 2001: The coastal storm that brought heavy snow to northern and central New Hampshire dropped 2 to 5 inches of rain in the southern part of the state. Small rivers and streams overflowed their banks. Melting snow also contributed to the runoff problem. Storm drains were overburdened causing some sewer systems to back up. Many washouts were also reported as the water flowed down the shoulders of the roads due to the high snow banks.
October 8-10, 2001 The interaction between a cold frontal boundary and the remnants of Tropical Storm Tammy resulted in tremendous amount of rainfall throughout most of central and southern New Hampshire. Rainfall ranged from just under 2 inches in far northern new Hampshire to 9 inches at Gilford in Belknap County. There was a tremendous amount of damage to roads and bridges, and to the infrastructure in general due to flooding of small rivers and streams. Homes and businesses were damaged.
October 2005 DR 1610 Two heavy precipitation events affected New Hampshire. The first occurred from the afternoon of October 7 through the early morning hours of October 11, with a second storm beginning the morning hours of October 14 and lasted until the early morning hours of October 17, 2005 causing significant damage to public infrastructure and private property primarily in Cheshire County. The flooding washed away homes, bridges, and roads leaving people homeless or cut off from their communities. Seven known deaths were directly caused by the storm.
May 2006 DR 1643 Severe damage occurred across the state of New Hampshire due to heavy rains that caused widespread flooding and flash flooding which resulted in evacuations, power outages, stream and river erosion and extensive damage to state and local road infrastructure, recreational facilities and trails.

There were a number of dams that were beached and suffered minor to moderate damage. There were a number of primary homes that were destroyed or suffered major damage due to the flooding and flash flooding.
March 2010 DR 1913 A major storm system affected the northeastern U.S, slow moving area of surface moving area of surface low pressure combined with an upper level atmospheric system to bring wind, heavy rain, and flooding to the area.
May 2011 DR 4006 State of New Hampshire suffered severe damage caused by heavy raid, flooding and flash flooding due to severe weather events that affected Northern New Hampshire. Heavy rains and flooding resulted in extensive debris and damage to state and local road infrastructure, facilities, trails and individual homeowners.
May 2012 Heavy rain flooded and damaged some roads in southwest New Hampshire, and forced two elementary schools to close. Communities such as Keene, Alstead, Westmoreland, Sullivan and Gilsum closed some roads due to the storms. There were closures or blockages on New Hampshire routes 9, 10, 12A and 12. The Red Cross set up a shelter in Keene. No injuries or major evacuations were reported. Two tornado warnings were issued in Cheshire County in the Alstead area.

The following are updated events taken from the NH Hazard Mitigation Plan Update 2018:

Event Date	Recurrence Interval	Impacts	Location	Additional Information
06/26-07/03/2013	Unknown	$5,885,717.69 Public Assistance A culvert passing a brook under Slayton Hill Road at the top of the hill south of Route 4 was unable to pass flows created by heavy rain from a thunderstorm. Culvert overtopped, forcing flows to flow down Slayton Hill Road. Force of flow excavated the road and its adjacent terrain away, with all the excavated material depositing at the bottom of the hill at the intersection with Dulac Street. Merriam Brook channel completely filled in with boulders and cobbles, deposited from the heavy-rain induced flash flood event, eliminating the ability of the channel to convey water, and forcing the brook onto the back lawn of a residence on Joslin Road. Merriam Brook began the process of forming a new channel for itself on the back lawn of a residence on Joslin Road in Surry.	Cheshire, Grafton, and Sullivan Counties	DR-4139: Severe Storms, Flooding, and Landslides White Bridge Brook channel upstream of Route 12 was completely reconfigured, with extensive sediment deposition, forcing water and river sediment onto the lawn of a business, and then paralleling Route 12 before re-entering Mill Brook downstream.
03/31/2014	Unknown	In Winchester - 12 roads washed out or heavily damaged including 120' section of Old Westport Road – estimated more than $1m in damages. Area communities received 2.4-5.6" of rain. 96 homes affected, 26 homes stranded.[60] Portsmouth experienced localized flooding.	Monadnock and Seacoast Areas	

04/15-17/2014	Unknown	Mohawk River erosion caused a portion of the rock foundation under Howard's Restaurant to fail. High water closed state roads leading to and from Colebrook, isolating portions of town. Closure of Route 26 at Roaring Brook Road. Schoolhouse Brook flooded in the Spring of 2015 washing out part of Meriden Hill Road. Black Mountain Road flooded, and in Shelburne Brookfield Power had to pull boards on the Shelburne Hydro Dam to prevent it from going over Route 2 which caused flooding in town.	Colebrook, Columbia, Lincoln, Shelburne, Stratford	Rapid snowmelt and heavy rain combined with the effects of clear cutting (some locations) led to flooding of Old Mill Rd, Route 3, and Stratford Hollow in Stratford.
06/26/2014	Unknown	Route 112 closed from high water. Lost River overflowed and some of the Lost River Valley Campground was evacuated, with no injuries reported. On Moosilauke Brook, the channel had capacity reduced from sediment deposition over time, reducing flow capacity, with water and river cobbles/gravel traveling and depositing onto the property of one home in North Woodstock, which led to basement flooding.	Woodstock	
07/15-16/2014	Unknown	Road washouts, basements flooded, with residents at 26 homes stranded on Fosgate, Jantti, Old Swanzey, Purcell and Watson Roads . Runoff damage to Route 119 at the intersection of Gunn Mountain Road. Twelve (12) roads washed out or heavily damaged, with one 120-foot section of Old Westport Road washed out from culvert failure and attendant induced bank erosion on Ashuelot River, which parallels the road.	Winchester	
October 2014	Unknown	Berea Road flooded and washed out	Hebron	
2015	Unknown	Next to the Merrimack River, the state access road (New Hampshire Fish & Game) is being washed out. Road only leads to conservation land, but is being washed out by the river, and town could not respond to fire or ambulance calls in the area. Railroad tracks 20 feet from road and are in danger of being eroded.	Merrimack River in Canterbury	
08/15/2015	Unknown	Damaging winds, hail, torrential rainfall, lightning. Fallen tree into a home in Bristol.	Lakes Region, Central, and Southwestern New Hampshire	Keene experienced training thunderstorms which dropped more than 3" of rain.

10/21/2016	Unknown	Significant flooding in Manchester and Nashua closing streets. In Nashua, sewer main covers were popping off. Flooding at Brentwood PD Mast Rd. in Goffstown Closed[61] A teenager was killed when he was swept into a storm drain in Nashua.[62]	Southern New Hampshire	Numerous Fire and Rescue calls in Manchester and Nashua rescuing people from cars on flooded city streets. Nashua fire received more than 50 calls for service in the three-hour period of rain. According to the National Weather Service, the storm dumped 3.49 inches of rain on Manchester, the most in the state. Nashua got 2.79 inches. The town of Newton received 3.46 inches, while 3.39 inches of rain poured down on Stratham. Exeter received 3.29 inches and Londonderry received 3.14 inches.[63]
02/27/2017	Unknown	50 vehicles at Plymouth State University were flooded when an ice jam pushed water into the parking lot and then the water froze around the cars due to the low temperatures[64]	Plymouth	
07/01-02/2017	Unknown	Detours due to flooding, flood and wind damage. Route 117 in Sugar Hill Closed. Jellystone Campground in New Hampton had to evacuate nearly 200 people and four vehicles were flooded. Culvert blown out in Orford 4 people and a dog rescued in Campton[65]	Grafton county	DR-4329: Severe Storms and Flooding, 7 tornado warnings issued in New Hampshire and Western Maine on July 1st – usually NWS Gray issues no more than 6 in an entire year.

Probability: The Hazard Mitigation Committee review data about flooding from the years since the 2014 Hazard Mitigation Plan. The Committee found that there has been a decrease in the amount of incidents of flooding in the Town. Additionally, data from the State of New Hampshire 2018 Hazard Mitigation Plan indicate that Merrimack County, which Danbury is located in, has experienced 5-6 flood related disasters but none in the last five years. Due to the decrease amount of flood related incidents since the 2014 Hazard Mitigation Plan, the committee decided to change the probability of flooding from "Frequent" to "Probable".

High Wind Events

Definition: The Town of Danbury may experience two types of high wind events that may result from other severe storms and may occur at any time of the year:

- 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
    - 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.

Location: The entire town is at risk to high wind events.

Extent (verbiage taken from NH State Hazard Mitigation Plan 2018): Tornadoes are measured based on the 3 second gust wind speed of the rotational winds. The Fujita Scale was developed at the University of Chicago in 1971 by Tetsuya Theodore Fujita in coordination with what is now known as NOAA's Storm Prediction Center to categorize each tornado by its intensity and estimated wind speeds. This scale is based off of the Beaufort scale and Mach Numbers. The Fujita scale was updated in 1973 and continued to be used for several more decades. Over the years the following weaknesses were identified in the Fujita Scale:

- Subjective based solely on the damage caused by tornado
- No recognition of different [building] construction
- Difficult to apply with no damage indicators (if ¾ mile wide tornado does not hit a structure, what F-Scale should be assigned?)
- Subject to bias
- Based on worst damage (even if only one building)
- Overestimates wind speeds greater than F3

Based on these weaknesses, the scale was updated in 2007 to what is now known as the Enhanced Fujita Scale (EF-Scale). The EF-Scale is now the standard scale for measuring tornadoes in the United States and in Canada.

OPERATIONAL EF SCALE	
EF Number	**3 Second Gust (mph)**
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

Impact: All high wind events can result in significant damage to property and the environment as well as can represent a serious threat to personal safety as flying debris can cause serious bodily harm and/or death. Tornadoes, specifically, are assessed against 28 different damage indicators to classify the event.

Enhanced Fujita Scale Damage Indicators	
Number	Damage Indicator
1	Small barns, farm outbuildings
2	One- and two- family residences
3	Single-wide mobile homes
4	Double-wide mobile homes
5	Apt, condo, townhouse (3 stories or less)
6	Motel
7	Masonry apt or motel
8	Small retail building (fast food)
9	Small professional (doctor office, branch bank)
10	Strip mall
11	Large shopping mall
12	Large, isolated "big box" retail building
13	Automobile showroom
14	Automotive service building
15	School – 1 – story elementary (interior or exterior halls)
16	School – Jr. or Sr. high school
17	Low-rise building (1-4 story)
18	Med-rise building (5-20 stories)
19	High-rise building (over 20 stories)
20	Institutional building (hospital, government, or university)
21	Metal building system
22	Service station canopy
23	Warehouse (tilt-up walls or heavy timber)
24	Transmission line tower
25	Freestanding tower
26	Free standing pole (light, flag, luminary)
27	Tree – hardwood
28	Tree – softwood

Previous Occurrence: There are no previous occurrences of high wind events in the Town of Danbury. However, there are several that have occurred in the State of New Hampshire. The Hazard Mitigation Plan Committee feels that it is necessary to address the reality that there is a possibility this could occur in Town.

Probability: Given that the threat of a high wind event has never happened in Town, the Hazard Mitigation Committee chose to rate the probability as "remote".

Infectious Diseases

Definition: Infectious diseases are illnesses caused by organisms—such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They're 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 get better on their own without treatment, while some life-threatening infections may require hospitalization.

According to the United States Centers for Disease Control and Prevention (CDC), the number of people with a disease that is usually present in a community is referred to as the baseline or endemic level of the disease. This number of infections is not necessarily the desired level, which may in fact be zero, but rather is the typical or normal number of people infected. In the absence of intervention and if the number of infections is not high enough to deplete the pool of susceptible persons, 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., 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.

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

- A recent increase in amount or 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 may be caused by infectious diseases, which can be transmitted through food, water, the environment or person-to-person or animal-to-person, and noninfectious diseases, such as a chemical exposure, that causes increased rates of illness. Infectious diseases that may cause an epidemic can be broadly categorized into the following groups:

- Foodborne (Salmonellosis, E. Coli)
- Water (Cholera, Giardiasis)
- Vaccine Preventable (Measles, Mumps)
- Sexually Transmitted (HIV, Syphilis)
- Person-to-Person (TB, meningitis)
- Arthropod borne (Lyme, West Nile Virus)
- Zoonotic (Rabies, Psittacosis)
- Opportunistic fungal and fungal infections (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 supply. This food safety may be jeopardized because of a fire, flood, hurricane, earthquake, or other natural, technological or human-caused disaster.

Location: The entire town can be affected by an infectious disease.

Extent (taken from the NH State Hazard Mitigation Plan 2018): 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 – An increase, usually sudden, 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

Impact (taken from the NH State Hazard Mitigation Plan 2018): Public health incidents and infectious diseases may occur suddenly or with a slow onset. Incidents that occur suddenly may have extraordinary and/or overwhelming medical resource needs. Incidents may occur with a slow onset and/or with advance warning will allow for a more coordinated response. During sudden onset incidents, many victims may reach healthcare facilities on their own without the use of Emergency Medical Services (EMS), which means that victims may arrive to find unprepared or inadequate facilities. Incidents may be insidious or obvious, and both have unique impacts. Insidious incidents (such as diseases that have a longer incubation/onset period where infection can be spread without knowing) can result in a much higher infection rate, eventually overwhelming existing medical resources and resulting in higher morbidity and mortality. Incidents that are more obvious are more recognizable and can result in a more accurate healthcare response, but this may also result in much higher social complications such as fear, anxiety, unnecessary social distancing. For example, the average person may be more afraid of Ebola than influenza; however, the latter is much more likely to occur in the US. Having proper surveillance systems to recognize public health and infectious disease incidents is critical to be able to limit impacts. The duration of the incident can also cause unique impacts. In a short duration incident, there may be a medical surge at the beginning which tapers off as the incident goes on and may not result in significant disruption to everyday life. However, longer duration incidents may have significant impacts not only for the public health response, but also for business/industry and the economy. Terrorism also has unique impacts when compared to an endemic infectious disease, as there is a significantly higher fear factor that causes increased emotional stress and anxiety. There will be a significant surge on healthcare, even by those who were unaffected, because of fear. This is in addition to any morbidity or mortality that occurs directly or indirectly from the attack. This was the case with the 1995 Tokyo subway sarin attack.

The COVID 19 Pandemic had a unique impact on the United States and the globe. COVID 19 interrupted social gatherings, how students attended school, and how the labor force had to adapt to the unique position the virus put everyone in. This included changing the number of seats available in restaurants or moving to take out services, virtual meetings instead of in person meetings, unavailability of a labor force due to quarantine of workers and having to close altogether if the business was not essential. This has caused a shortage of workers for many industries, shortage of available goods for many industries, and increase in pricing for consumers. The long-term effects of the virus are yet to be seen, but undoubtedly there will be impacts to how businesses must quickly adapt to meet the needs of consumers and keep employees and customers safe. Government services, including emergency services and routine business operations, must consider continuity of operations plans.

Previous Occurrence: The following table was taken from the NH State Hazard Mitigation Plan 2018.

Event Date	Event Description	Impacts	Location	Additional Information
2005	Hepatitis A	82 cases	Statewide	82 cases were reported; 30% higher than previous four years.
2009	H1N1 Influenza	754 Hospitalizations and 10 Deaths	Statewide	WHO Level 1 Pandemic "swine flu" Division of Public Health Services processed 4,192 specimens and 786 cases.
2009	Anthrax	Individual infected with gastrointestinal anthrax	Durham	A woman was sickened by a naturally occurring strain of anthrax that was on an African drum she was playing in a community drumming circle.[129]
2012	Hepatitis C	32 patients infected with Hepatitis C virus, thousands tested and interviewed	Exeter Hospital	Patients became infected with Hepatitis C virus when a healthcare worker diverted injectable narcotics intended for patients.
August 2013	Hepatitis A	2 hepatitis A virus-infected foodservice workers, ~ 1,200 exposed people vaccinated	Contoocook	A part-time bartender at the American Legion and Covered Bridge Restaurant in Contoocook was diagnosed with Hepatitis A resulting in the potential exposure of patrons of those establishments resulting in two points of dispensing (PODs) being activated: the first in Hopkinton and the second, due to the occurrence of the Hopkinton Fair, was held in neighboring Bow.
Fall 2014	Enterovirus D-68	>40 ill children in New Hampshire, some with paralysis	Statewide	A rare strain of enterovirus resulted in debilitating infections in children nationwide
Fall 2014-Feb 2016	Ebola virus disease	>100 people in New Hampshire monitored for potential Ebola virus symptoms	Statewide	New Hampshire residents were monitored for symptoms of Ebola virus disease after travelling to West Africa during the unprecedented outbreak of Ebola virus. No actual cases of Ebola virus occurred in New Hampshire.
2016	Gonorrhea	465 people infected	Statewide	465 cases reported; 250% higher than previous years
2017-2018	Seasonal Influenza Outbreak	As of April 2018, 63 adult influenza related deaths had been identified in New Hampshire	Statewide	A particularly virulent flu season impacted the region. The overall effectiveness of the flu vaccine during this flu season was estimated at 36%.[130]
Annually	Foodborne outbreaks	Ill individuals associated with outbreaks	Statewide	5-10 outbreaks per year
Annually	Influenza and other respiratory virus outbreaks	Ill individuals associated with outbreaks	Statewide	25-50 outbreaks per year primarily occurring in long-term care facilities and schools
Annually	Norovirus and other gastrointestinal virus outbreaks	Ill individuals associated with outbreaks	Statewide	60-80 outbreaks per year primarily occurring in long-term care facilities and schools

To add to this list:

New Hampshire COVID-19 PANDEMIC (DR-4516-NH)
Incident Period: January 20, 2020 and continuing
Major Disaster Declaration declared on April 3, 2020

Event Date	Event Description	Impacts	Location	Additional Information
2019 – Present Day	COVID 19 Pandemic	33+ cases in the US, 600,000+ deaths in the US; 100,000 cases in NH, 1300+ deaths in NH	Worldwide	Identified in 2019, SARS-COV- 2 (COVID-19), was a novel coronavirus that quickly spread worldwide into a pandemic. A major disaster

				declaration was made in NH in March 2020. Since then, NH has begun recovering by rolling out the COVID 19 vaccines approved by the FDA using emergency authorization.

The Town of Danbury experienced 56 total cases from COVID 19 with one death attributed to the virus as of July 2021.

Since the last plan update, there were no known cases of H1N1 or Lyme disease in the Town of Danbury.

Probability: The Hazard Mitigation Plan Committee determined that although the COVID 19 pandemic just recently occurred, there was a low likelihood that a worldwide pandemic would occur again soon. Additionally, there are multiple smaller outbreaks of diseases annually. The probability rating for infectious diseases was given a "Probable".

Tropical and Post Tropical Cyclones

Definition: 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. There are several stages throughout the life cycle of a tropical cyclone:

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

Location: When cyclone events occur in Danbury, they affect the entire Town. Certainly, the heavy rainfall associated with hurricanes will impact the entire town, with attention particularly to the 100-year floodplain but the high winds can have an impact on the whole Town.

Extent: New Hampshire's exposure to direct and indirect impacts from cyclones is real, but modest, as compared to other states in the region. The probability of hurricanes and cyclones occurring in Danbury is possible. Hurricanes and cyclones typically lose strength as they make landfall in New Hampshire, however they can cause widespread damage. The largest impact is on the floodplain areas due to heavy rains. High winds cause trees to fall thereby causing power outages, structural damage to buildings, road closures and debris management issues.

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating 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, however, 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.
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.

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
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.

Impact: Historically, the Town of Danbury has not seen great damage from hurricanes. However, strong winds could bring down trees onto buildings, resulting in damage to both residential and commercial structures. The range of damage could include complete collapse of the home, with the average value of a home in Danbury being $171,149, to roof repair which would be less than that amount. If a hurricane with catastrophic winds hit the town, the damage could exceed millions of dollars, as many structures are not hurricane resistant and could collapse from the high winds. Residential units in Danbury exceed 550, with a value averaging $171,149, could result in almost $100 million worth of damage should each structure collapse. Additionally, power lines and other infrastructure damage could bring that total to an additional $1.5 million.

Previous Occurrence:
September 21, 1938 - The Great New England Hurricane: Statewide there were 13 Deaths, 1,363 families received assistance. Disruption of electric and telephone services for weeks. 2 Billion feet of marketable lumber blown down. Flooding occurred throughout the State, in some cases equaling and surpassing the Flood of 1936.
Total Direct Losses - $12,337,643
August 31, 1954 - Hurricane Carol: Extensive amount of trees blown down and property damage.
September 12, 1960 - Hurricane Donna: Heavy flooding in Massachusetts and Southern NH.
October 7, 1962 - Tropical Storm Daisy: Heavy ocean swells, and flooding Coastal New Hampshire.
August 28, 1971 - Tropical Storm Doria: Doria's center passed over New Hampshire resulting in heavy rain and damaging winds.
September 16-18, 1999 - Tropical Storm Floyd: This was originally a Hurricane that heavily impacted North Carolina and dumped heavy rains on New England resulting in a Presidential Declaration of Disaster in NH; FEMA DR-1305-NH in Belknap, Grafton and Cheshire Counties.
August 26- September 6 2011 DR 4026 Tropical Storm Irene. New Hampshire suffered severe damage caused by high winds, heavy rain, inland and coastal flooding due to Hurricane/Tropical Storm Irene that affected the eastern U.S. Heavy rains, flooding and high winds from this system caused extensive debris and damage to state and local road infrastructure, facilities, recreational faculties and trails, individuals, and homeowners. There was one fatality and over 200 storm related injuries.
October 26, 2012 – November 8, 2012 DR-4095 Hurricane Sandy. Gov. John Lynch declared a state of emergency, urging motorists off the roads. He also directed non-essential state workers to be released early from work. The governor placed 100 New Hampshire Guard soldiers on active duty. Similar to the rest of New England, Sandy produced widespread gusty winds across New Hampshire, with most areas reporting winds of 40 to 70 mph (64 to 110 km/h). The highest gust measured in state and the country

was 140 mph (230 km/h) on Mount Washington. These winds caused widespread damage to trees and power lines, leaving approximately 200,000 residents without power. Across New Hampshire, one person was killed, and damage amounted to $1.8 million.

Probability: The Hazard Mitigation Committee reviewed data of incidents of hurricanes over the last years since the 2014 Hazard Mitigation Plan. Data from the New Hampshire 2018 Hazard Mitigation Plan indicates that Danbury is at a medium risk for hurricanes. Additionally, there have been no significant incidents of hurricanes in the Town of Danbury since the plan was last updated. Due to this data, the committee decided that hurricanes were no longer frequent, but instead probable.

Lightning

Definition: 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.

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 lighting 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.

Location: The entire Town is at moderate risk to lightning hazard. The higher elevation areas have an increased probability, such as the areas with cell towers, however lightning strikes can occur anywhere in the Town.

Extent: 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. We are fortunate in Northern New England to have less lightning than most other areas of the country. On average, much of New Hampshire and Maine have less than 2 cloud-to-ground lightning strikes per square mile per year Often, many people are outside enjoying the variety of recreational activities that attract people to New England during the summer when the vulnerability to lightning strike is highest. More likely to be affected are structures and utilities, often resulting in structure fires and power outages. Positive lightning is often considered more dangerous because its electrical field is stronger (forming at the top of the storm), the flash duration is typically longer, and its peak charge can be much greater than a negative strike. Plus, positively charged lightning can occur near the edge of a cloud or strike more than 10 miles away – when people are not aware of the danger. Energy from lightning heats the air anywhere from 18,000 degrees Fahrenheit to up to 60,000 degrees Fahrenheit. Lightning can have 100 million to 1 billion volts and contains billions of watts. Cloud-to- ground lightning can kill or injure people by direct or indirect means. The lightning current can branch off to a person from a tree, fence, pole, or other tall object. It is not known if all people are killed who are directly struck by the flash itself. In addition, flashes may conduct their current through the ground to a person after the flash strikes a

nearby tree, antenna, or another tall object. The current also may travel through power or telephone lines or plumbing pipes to a person who is in contact with an electric appliance, telephone, or plumbing fixture. Similarly, objects can be directly struck, and this impact may result in an explosion, burn, or destruction. Or the damage may be indirect when the current passes through or near it. Sometimes, current may enter a building and transfer through wires or plumbing and damage everything in its path. Similarly, in urban areas, it may strike a pole or tree and the current then travels to several nearby houses and other structures and enter them through wiring or plumbing.

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. There is also 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, 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. That said, there appears to be a general increase in the frequency of lightning as a thunderstorm becomes more intense (i.e., 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. Based on information from the National Weather Service that is used in fire weather forecasts, the severity of lightning storms can be measured 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 Activity Level (LAL)	Description
1	No Thunderstorms
2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Impact: Due to the entire town being susceptible to lightning, the impact would be whatever structures that lightning strike. Historically, lightning strikes may also cause a structure fire, which could multiply the amount of damage done. Each structure impacted could result in $15,000-$20,000 of damage and could be higher depending on secondary damages such as fires.

Previous Occurrence:

June 9, 2004 According to the National Climactic Data Center, at 5:00pm lightning struck the chimney of an inn in Danbury causing an estimated $15,000-$20,000 in damage. One of the cinder block chimneys was blown apart in the incident. Numerous electronic devices were damaged in the strike, and flying debris caused damage to skylights and furniture, and the force of the strike shattered windows.

August 18th, 2019 According to a lightning strike report by Verisk Climate, 24 lightning strikes were recorded within 1 mile of Ragged Mountain. The Danbury Fire Department was called to Ragged Mountain for a fire alarm activation. On arrival, a fire was discovered in one of the buildings. Damage to two upstairs offices resulted from the fire.

Probability: The Hazard Mitigation Committee reviewed data since the last update and found that there has been an incident of lightning as a hazard in the Town since the 2014 Plan. Data from the State of New Hampshire 2018 Hazard Mitigation Plan indicate that Danbury is at moderate risk for lightning. Therefore, the committee upgraded from “probable” to “frequent”.

Wildfire

Definition: 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.

Location: The outer edge of the Town and the surrounding communities of Danbury are heavily forested and are therefore vulnerable to this hazard, particularly during periods of drought. However, a wildfire may occur anywhere in the Town of Danbury.

Extent: Fires in New Hampshire are predominantly human-caused, and roughly half of the total fire activity is in the most populous three southern counties. The proximity of many populated areas to the forested lands exposes these areas and their populations to the potential impact of wildfire. In addition, the potential for wildfires increases during a prolonged drought. Finally, it can be implied that the minimum acre building lots “promote” structures to be surrounded by acres of forest and trees which increases the risk to those structures. Large wildland fires are typically associated with the western states, although they are possible in New Hampshire. Historically, New Hampshire’s large wildfires run in 50-year cycles. With some of the state’s largest wildfires occurring in the late 1940’s many people believe we are overdue for the next bad fire season. Local fire departments and the state Division of Forests and Lands post fire dangers levels during the fire season. The threat is greatest during dry periods and in spring when the land has begun to dry out after winter snow has melted, but new leaves have not grown out. Permits are required in New Hampshire for outdoor burning at any time that the ground is not covered with snow. Property owners should check with local forest fire wardens about local restrictions. Even though the southern tier of the state experiences the highest number of fires, fires in the northern regions where the population is minimal are complicated by poor access and rugged terrain, which greatly hinders efficient and safe response by firefighters. Wildfires are generally measured in terms of acres burned. An acre is a measure of land area. An acre is 43,560 square feet and there are 640 acres in a square mile.

Federal researchers have been working on a system to measure and predict the destructiveness of wildfires — similar to the way officials use the magnitude scale for earthquakes and other tools to rate and evaluate tornadoes and hurricanes.

The National Institute of Standards and Technology hopes its Wildland Urban Interface Hazard Scale will tell residents the likely intensity of a wildfire burning into their neighborhood. The scale would allow city planners to assign better building codes for the millions of people who live in fire-prone areas in the West and would also measure how those homes could contribute to the spread of a fire. The proposed scale would range from E1 to E4 — with E4 being a location's highest exposure to fire, be it from grasslands to a forest in a remote mountain canyon. Building codes and buffer zones between homes and forest could then be set accordingly.

Generally, fire personnel most commonly use the acreage of the fire and the number of alarms to describe the magnitude of the wildfire, as these descriptions are relatable to the size of the fire and number of resources required to extinguish. While this is not an exact science, these two factors alone are easily understood and allow a straightforward comparison of the magnitude of wildfire events. Some wildfire events that may not easily be described using the severity metrics listed above may include:

- Significant acreage fires that are isolated to a large, flat field which require few resources to extinguish (greater area covered, less alarms needed)
- Small acreage fires that occur in a remote, difficult landscape burning deep into the ground, which often requires a more diversified and coordinated response

The National Wildfire Coordinating Group (NWCG) has developed a fire size classification chart to describe a wildfire by the areal extent in acres:

Size Class of Fire	Size of Fire in Acres
Class A	One-fourth acre or less
Class B	More 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

Impact: The impact from wildfires will be dependent on the area burning. Historically, wildfires have never caused structural damage to homes in Danbury. However, there are secondary costs to wildfires such a fire suppression costs and damage to crops in the wildfire is on farmland. Combined fire suppression, crop destruction, and structural damage from wildfires could range from $1,000- $200,000 depending on area and size of the fire.

Previous Occurrence: Historically, the largest fire is 5 acres in Danbury. There have been no significant cases of wildfire in the town of Danbury since the 2014 Hazard Mitigation Plan. Merrimack County, where Danbury is located, has the highest occurrence of wildland fires compared to any other county in the State.

Probability: The Hazard Mitigation Committee reviewed information from the NH Hazard Mitigation Plan 2018 and reviewed call volume from the Danbury Fire Department from previous years. Records indicate that there has been an increase in the number of wildland fire responses. Additionally, due to the recent

weather events such as hurricanes and ice storms, there are many downed tree limbs that have increased the fire load. The committee chose to keep the probability of wildfire as "occasional".

Winter Weather

Location: There is a town-wide vulnerability to severe winter weather. Nor'easters (wind), Ice Storms, Heavy Snow Accumulations and Severe Cold can occur at any place within the Town and generally affect the entire Town when it happens. The higher elevations are more likely to experience snow or ice before the lower terrain.

Extent: Heavy snow accumulations (generally considered one that deposits four or more inches of snow in a 12-hour period) especially those associated with nor'easters can have a significant effect on the Town, including extended power outages, road closures, collapsed roofs and increased snow removal costs. During ice storms, ice forms on cold surfaces, such as trees and power lines, and may continue to form until the ice is quite deep, as much as several inches thick. Ice damage results in power outages, road closures and forest damage. Ice on the roads can be the most difficult for a rapid emergency response. Private roads are difficult for emergency response vehicles due to the restricted access to roads during winter. The region typically receives greater than 66" of snow annually. New Hampshire generally experiences at least one or two nor'easters each year with varying degrees of severity. A nor'easter is defined as a large anticyclone weather system that resides near the New England region. These storms have the potential to inflict more damage than many hurricanes because high winds can last from twelve hours to three days, while the duration of hurricanes ranges from six to twelve hours. A nor'easter also has the potential to sustain hurricane force winds, produce torrential rain, and create blizzard conditions in winter months. In the winter months, the state may experience the additional coincidence of blizzard conditions with many of these events. A blizzard is characterized by sustained winds or frequent gusts to 35 miles per hour or greater and considerable amounts of falling or blowing snow that last for a duration of three hours or longer. The combination of winds and snow reduce visibility to less than a quarter mile. Blizzards, which may dump 12" – 36" or more of snow in a one- to three-day period are not as common as regular snowstorms but can have a serious impact on structures, utilities, and services.

Heavy Snow

The severity of a heavy snow storm is directly dependent on how much snow is falling and how fast it is falling. This is usually expressed by the National Weather Service in the amount of inches that an affected area of the State will receive and the amount of time that they are expected to receive that snowfall in. Also, the amount of snow that falls in an hour is a unit of measurement of severity for a heavy snowstorm. Storms that produce 2 inches of snowfall in an hour or more begin to tax the ability of snowplows to keep the roadways clear, can produce blizzard like conditions when combined with wind, and can quickly lead to treacherous road conditions. The 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 –or
- a combination of snow, ice, and/or wind that produces life threatening impacts is expected.

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	Approximate % of Storms
0	0-1	N/A	54%
1	1-3	Notable	25%
2	3-6	Significant	13%
3	6-10	Major	5%
4	10-18	Crippling	2%
5	18+	Extreme	1%

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

Blizzard
As a blizzard has specific scientific conditions that are either met or not met for a storm, the RSI scale referenced above could assist in the severity rating of a blizzard.

Nor'easter
The severity of a Nor'easter is directly dependent on the time of year and the type of weather that the Nor'easter brings. Nor'easters during the winter can cause heavy snowfall, blizzard conditions, ice, and strong winds. Occasionally these strong coastal low pressure systems will occur during the summer and can produce significant rainfall, cause flooding, and generate tornadoes or straight-line wind events (micro/macrobursts). The severity of Nor'easters along coastal areas can also be measured by using storm tide and storm surge amounts as described in the coastal flooding section.

Ice Storm
The Ice Storm Warning criteria for The State of New Hampshire is an accumulation of ½" of ice or greater. Although there is currently not a widely adopted scale for measuring ice storms, based on information from the US Forest Service following the 1998 Ice Storm, the severity of ice storms can be viewed in terms of the amount of ice accumulation, the duration of that accumulation, and the resulting damage. The number of variables that need to be taken into consideration to accurately measure the intensity of an ice storm make the process difficult. Some resources, such as weather stations, are not able to measure ice accumulations; therefore, observers must report accumulations to the weather service to get an accurate depiction of the severity of an icing event. Furthermore, ice accumulation can vary drastically over topography and over short distances, making interpolation of reported values less accurate.

In 2008, Sid Sperry (official with the Oklahoma Association of Electric Cooperatives) and Steve Piltz (meteorologist in charge of the Tulsa NWS office) worked to develop a scale and method for measuring the severity of an ice storm. The Sperry-Piltz Ice Accumulation Index (SPIA Index) was developed to take into consideration ice thickness, wind speed and direction, and temperatures for the storm period to develop a severity index score across five levels.

Although not widely adopted, National Weather Service offices across the country that receive ice are testing this scale for its viability at being the next Saffir-Simpson style scale for measuring ice storms.

The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) *Revised-October, 2011	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 - 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	> 15	
2	0.10 – 0.25	25 - 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 - 25	
	0.50 – 0.75	< 15	
3	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 - 35	
	0.50 – 0.75	15 - 25	
	0.75 – 1.00	< 15	
4	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 - 35	
	0.75 – 1.00	15 - 25	
	1.00 – 1.50	< 15	
5	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Impact: Due to heavy snow accumulating on roofs, there is a potential for a roof/structural collapse on smaller homes in Danbury. There has been no history of this occurring in the town; however there is a possibility of this happening. The average value of a home in Danbury is $171,149, and there are roughly 600 + housing units in Danbury. All structures are susceptible to this kind of hazard; however commercial structures are normally more robust and able to handle a heavier snow load. Residential structures that are well maintained also have less chance of a roof collapse. The impact of a winter related event on residential would be average home value multiplied by the number of structures that fail. Additionally, there are several miles of utility poles owned by NH Electric COOP and Eversource, valued at $300,000 + and $1.5 million respectively. Winter weather has the possibility of affecting any of these utility poles. The impact would be dependent on the number of utility poles destroyed.

Previous Occurrence:
January of 1923: 4 storms within a week left over 30 inches of snow.
February 8-10, 1969 Event Accumulations up to 27" in southeastern New Hampshire and up to 42" in northeastern New Hampshire.
February 22-28, 1969 Events Accumulations to 98" in Western Central New Hampshire, 34" in coastal areas and 2 to 3' across New Hampshire generally. The storm produced excessive amounts of snow across New England with accumulations of greater than 75 cm across large sections of eastern Massachusetts, New Hampshire, and Maine.
January 20, 1978: 20 inch snowstorm leaving 20' high snowdrifts.
February 5-7, 1978 Region-wide Blizzard affecting southern New England. Events accumulations to 28" in

northeast New Hampshire, 25” in west central New Hampshire and 33” along coastal New Hampshire. Hurricane-force winds and record-breaking snowfall made this storm one of the more intense to occur this century across parts of the northeastern United States.

January 7-9, 1998 Ice Storm Disaster: A severe Ice Storm hit sections of New Hampshire from January 7 through January 9 1998. The hardest hit areas in northern and central New Hampshire were generally between about 1000 and 2000 ft above sea level. While many cities and towns at lower elevations received only rain, towns at higher elevations, such as New London, where the temperatures were slightly cooler had freezing rain. Ice accreted several inches thick on trees, power lines, and other exposed surfaces causing many people in those areas to lose electrical service. Statewide, the storm knocked out power to about 55,000 customers, an estimated 125,000 people. During the time without power, residents and those involved with the restoration efforts had to contend with snow, additional freezing rain, rain, slippery roads, falling ice and other debris, subzero temperatures, strong winds, and dangerous wind chills. For many homes, the lack of electrical power also meant no heat, no running water, and no means for cooking food. The storm caused an estimated 30 million dollars in damages. Debris cleanup from the storm was expected to last into the summer. Within the state, there were no deaths directly attributed to the storm, although one utility worker was partially paralyzed when struck by a falling tree while making repairs to a line. Carbon monoxide poisoning was a problem and many residents were treated at area hospitals. Long-term effects from the ice storm are expected to persist for many years. The debris from tree damage will create an increase in the forest fire danger over the next several years and has blocked many fire access roads and trails. Additionally, many, many tree limbs were left dangling by the ice storm and many trees were left partially fallen. These "widow makers" will pose a significant threat to anyone who works, walks, or drives through wooded areas over the next several years.

March 2001 Snow Emergency: A presidential declaration covered 7 counties with record and near-record snowfall from the late winter storm that occurred March 5-7.

February 2003 Snow Emergency: A presidential declaration covered 5 counties with record and near-record snowfall from the snowstorm that occurred February 17-18.

December 2008 DR -1812 A series of major winter storms brought a mixture of snow, sleet, and freezing rain to NH. The greatest impact in the state was in southern and central NH where a significant ice storm occurred.

February 23rd – March 2nd 2010 DR-1892 A major storm system brought high winds, heavy raid, inland and coastal flooding and coast erosion to the area.

March 2010 DR-1913. A slow-moving area of surface low pressure combined with an upper level of atmospheric system to brought wind, heavy rain, and flooding to the area.

October 29th 2011- October 30th 2011 DR 4049.

February 8-10, 2013 DR- 4105. A major disaster declaration in eight New Hampshire counties as a result of the blizzard that occurred Feb. 8-10. The total cost of the storm to the state, municipalities and eligible non-profit organizations was estimated at nearly $5 million. Carroll County received 30.5 inches of snow during the storm. That was an increase of 160 percent over the previous record of 19 inches. Hillsborough County received 25.5 inches and Rockingham County received 24.1 inches of snow.

01/02-03/2014 Heavy Snow. The storm brought 6 to 14 inches of snow across the much of the state south of Coos County.

2/5/2014 Six to twelve inches of snow fell across eastern Hillsborough County. Eight to thirteen inches of snow fell across western and central Hillsborough County. Six to 9 inches of snow fell across Cheshire County.

01/26-29/2015 Snowfall amounts ranged from 10 to more than 30 inches across much of the southeastern part of the state. Elsewhere, amounts were generally 6 to 14 inches with some lower amounts in the Connecticut River Valley. This storm resulted in DR-4209.

2/14/2015 Heavy now. Snowfall amounts ranged from 6 to 12 inches across much of the area with up to 17 inches along the coast.
12/29/2016 Much of New Hampshire received between 6 and 16 inches of snow with lesser amounts along the Connecticut River Valley. Along the Seacoast, most of the precipitation fell as rain with only an inch or two of snowfall accumulation. Inland from the coast and across southern areas, the rain changed to a heavy, wet snow which clung to trees and wires which resulted in scattered power outages. More than 11,000 homes and businesses saw outages due to the storm.
2/9/2017 Heavy snow. Snowfall amounts generally ranged from several inches in Coos County to more than 15 inches in interior Rockingham County.
3/14/2017 High winds and/or heavy wet snow downed trees and created numerous power outages across southeastern portions of the State. Snowfall amounts across New Hampshire ranged from about 12 to 20 inches. In the Seacoast area, the strong winds combined with heavy wet snow to cause numerous power outages. Farther inland, across Belknap and Carrol Counties, the strong winds downed trees onto roads and wires leading to blocked roads and power outages. Particularly hard hit was a section of Route 109 in the Town of Tuftonboro where downed trees snapped utility poles and brought down wires. This storm resulted in DR-4316.
1/4/2018 Heavy snow. The storm brought 10 to 15 inches of snow to much of New Hampshire, with lesser amounts along the Connecticut River Valley.
3/1-9/2018 Back to back coastal storms produced high winds, a large storm surge, and large battering waves along the New Hampshire coast. This storm resulted in DR-4370.
3/13/2018 Snowfall totals ranged from about 15 to 29 inches across the State. In addition, blizzard to near blizzard conditions were reported in coastal Rockingham County from mid-morning through midafternoon. This storm resulted in DR4371.
Dec 16th-17th, 2020. 48" of snow fell in 24 hours in Danbury, resulting in a record for 2nd highest total snowfall in a 24-hour period ever recorded in New Hampshire.

Probability: The Hazard Mitigation Committee reviewed data from the previous years of occurrence and determined that, the Town will experience a snowstorm during any winter season. Additionally, data from the State of New Hampshire 2018 Hazard Mitigation Plan indicates that the Town of Danbury falls into a high-risk category for Severe Winter Weather. Therefore, the committee decided that there it is a "frequent" probability the Town would experience a Winter Weather Storm.

Definitions

Frequent: Incidents that will habitually occur. Frequent incidents happen at short intervals and are often repeated or occurring. These incidents happen at least once a year normally.

Probable: Incidents that are supported by enough evidence that they can be presumed or likely to happen. These happen more regularly than occasional incidents but are less certain than frequent incidents. These incidents may happen once every five years.

Occasional: Incidents that are encountered at irregular or infrequent intervals. These happen more so than remote incidents, but still do not happen at regular anticipated intervals. These incidents may happen once every ten years.

Remote: Incidents that are separated by an interval of occurrence greater than the usual. These incidents happen far between each other, more so than other incidents. These incidents may happen once every ten to twenty-five years, or not at all.

Repetitive Loss Properties

The Town of Danbury has been a part of NFIP since January 1st, 2003. As of June 2021, Danbury has had no repetitive loss properties. This is determined by any repetitive damage claims on those properties that hold flood insurance through the NFIP. A major objective to floodplain management is to continue participation in the NFIP. Communities that agree to manage Special Flood hazard Areas shown on NFIP maps participate in the NFIP by adopting minimum standards. The minimum requirements are the adoption of the floodplain Ordinances and Subdivision/Site Plan Review requirements for land designated as Special Flood hazard Areas. Under Federal Law, any structure located in the floodplain is required to have flood insurance. Federally subsidized flood insurance is available to any property owner located in a community participating in the NFIP. Communities that fail to comply with the NFIP will be put on probation and/or suspended. Probation is a first warning where all policy holders receive a letter notifying them of a $50 increase in their insurance. In the event of suspension, the policyholders lose their NFIP insurance and are left to purchase insurance in the private sector, which is of significantly higher cost. If a community is having difficulty complying with NFIP policies, FEMA is available to meet with staff and volunteers to work through the difficulties and clear up any confusion before placing the community on probation or suspension.

Potential Administrative Techniques to Minimize Flood Losses in Danbury

The Town of Danbury actively participates in the National Flood Insurance Program through the administration of its floodplain ordinance. Article 15 of the Danbury Land Use and Zoning Ordinance addresses floodplain development, Section 10 of the Danbury Subdivision Regulations and Section 9 of the Danbury Site Plan Review Regulations address Special Flood Hazard Areas. These were adopted by the Danbury Planning Board on September 26th, 2000. They were updated as part of the Danbury Master Plan in 2011. By actively maintaining up-to-date floodplain ordinance property owners are able to purchase flood insurance through the FEMA program. Danbury initially had a Flood Hazard Boundary Map (FHBM) in 1977. The Digital Flood Insurance Rate Maps (DFIRMs) for Merrimack County were developed in 2010 and are available at the Danbury Town Hall. Also, in 2010 a Flood Insurance Study (FIS) was conducted by FEMA.

Danbury continues to consistently enforce NFIP compliant policies to continue its participation in this program and has effectively worked within the provisions of NFIP. Below is a list of actions Danbury should consider, or continue to perform, in order to comply with NFIP:

- Identify and become knowledgeable of non-compliant structures in the community.
- Inspect foundations at time of completion before framing to determine if lowest floor is at or above Base Flood Elevation (BFE), if they are in the floodplain;
- Require the use of elevation certificates;
- Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM;
- Work with elected officials, the state and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education.

- Prepare, distribute or make available NFIP insurance and building codes explanatory pamphlets or booklets;
- Revise/adopt subdivision regulations, erosion control regulations, board of health regulations to improve floodplain management in the community;
- Address NFIP monitoring and compliance activities;
- Establish Mutual Aid Agreements with neighboring communities to address administering the NFIP following a major storm event;
- Participate in NFIP training offered by the State and/or FEMA (or in other training) that addresses flood hazard planning and management.

Chapter Four: Critical Facilities

Introduction

The Critical Facilities List for the Town of Danbury has been identified by the Danbury Hazard Mitigation Planning Committee. The list is divided into three sections: Facilities needed for Emergency Response (Category 1), Facilities Not Necessary for Emergency response (Category 2), and Populations and facilities to protect in the event of a disaster (Category 3). In addition, the Inventory of Critical Facilities table assesses the value of these structures.

CATEGORY 1 (Facilities needed for Emergency Response)

- Fire
- Emergency Medical Services (EMS)
- Police
- Shelter
- Town Hall
- Emergency Operations Center (EOC)
- Public Works
- Emergency Fuel

CATEGORY 2 (Facilities NOT necessary during an emergency event)

- Public Utilities
- Communications
- Transportation
- Evacuation Routes

CATEGORY 3 (Populations & Places to Protect)

- Schools
- Daycares
- High Concentration Populations
- Recreation areas
- Historic Resources

Category 1

Facility	**Name/Location**	**Owner**	**Assessed Value**	**Hazard Vulnerability**
Town Hall/Police Station	23 High Street	Municipal	$104,550	All Hazards
Fire Station/EOC	10 North Road	Municipal	$115,000	All Hazards
Shelters	Danbury Community Center, 15 High Street	Municipal	$349,120	All Hazards
Highway Garage	488 US Route 4	Municipal	$155,120	All Hazards

Category 2

Facility	Name/Location	Owner	Assessed Value	Hazard Vulnerability
Public Utilities	Power Lines	Eversource	$2.7 million	Winter Weather, High Wind Events
Public Utilities	Power Lines	NH Electric COOP	$300,000	Winter Weather, High Wind Events
Public Utilities	Substation/Lines	Consolidated Communications	$60,000	Winter Weather, High Wind Events
Evacuation Routes	US Route 4 and NH Route 104	State of NH	-	Winter Weather, Flooding, High Wind Events, Hurricanes, Dam Failure, Earthquake

Category 3

Facility	Name/Location	Owner	Assessed Value	Hazard Vulnerability
School	Danbury Elementary School, Daffodil Lane	SAU #4	$408,000	All Hazards
High Population Area	Ragged Mountain Ski Area	Private	$1.5 million	All Hazards
Recreation Area	Independence Park	Municipal	-	Flooding
Historical Resources	North Road School House, North Road	Private Nonprofit	$20,000	Earthquake, Severe Wind
Other	George Gamble Library	Municipal	$49,800	Earthquake, Severe Wind

Chapter Five: Capability Assessment

The following is a list of current policies and regulations adopted by the Town of Danbury that protect people and property from natural and man-made hazards. This includes a description of the policy, the responsible agent, and recommended changes to improve mitigation efforts. The committee has reviewed the existing protection matrix and has determined which of the items on this list have been completed, in process, or deferred.

Emergency Operations Plan

Responsible Agent: Emergency Management Director

Description: The Town has plans to update the current EOP to meet the recommendations of NH Homeland Security and Emergency Management. The current EOP identifies the response procedures and capabilities of the Town of Danbury in the event of a natural or man-made disaster and is in the ESF format. This program was found to be effective.

Changes or improvements since the 2014 plan: The EOP was updated to meet the ESF format.

Suggested changes: Update the EOP on the five-year cycle to meet NH HSEM guidelines. Review the plan annually and update as needed.

Zoning Ordinance

Responsible Agent: Planning Board

Description: Danbury has enacted a zoning ordinance and map to protect the health, safety, and welfare of the residents of the town from the effects of ill-considered and indiscriminate use of land. This program has been found to be effective.

Changes or improvements since the 2014 plan: No changes were made to the Zoning Ordinance regarding Hazard Mitigation.

Suggested changes: Review zoning ordinances to ensure they meet health, safety, and welfare standards.

Building Code

Responsible Agent: Board of Selectmen

Description: The town struggles to comply with the State of New Hampshire Building Code which incorporates the IBC, IPC and NFPA. This program has been somewhat effective, but not entirely effective. This program has not met expectations.

Changes since the 2014 plan: The State of New Hampshire adopted new and updated building codes.

Suggested changes: 1. Implement enforcement of building codes. 2. Recommend appointing a building inspector (possibly shared with other towns). 3. Include enforcement regulations in local codes (fines & compliance).

Floodplain Ordinance

Responsible Agent: Board of Selectmen and Zoning Board of Adjustment

Description: The minimum National Flood Insurance Program (NFIP) requirements have been adopted as part of the Town's Zoning Ordinance. This regulates all new and substantially improved structures located in the 100-year floodplain identified on FEMA Flood Maps. This has been found to be effective.

Changes since the 2014 plan: No changes since the 2014 plan.

Suggested changes: Update floodplain maps.

Elevation Certificates Maintained

Responsible Agent: Board of Selectmen

Description: Elevation certificates are maintained for new and substantially built structures in the 100-year floodplain. Elevation certificates are now required. This project is effective for flood mitigation efforts.

Changes since the 2014 plan: None

Suggested changes: None.

Community Rating System

Responsible Agent: Board of Selectmen

Description: The town is currently not participating in the CRS. The CRS provides Flood Insurance Premium reductions based on the reduced flood risk resulting from community activities. The Board of Selectmen researched this and decided against joining. This project was found to not be effective due to a lack of benefit to the Town of Danbury.

Changes since the 2014 plan: None

Suggested changes: None

Emergency Warning System

Responsible Agent: Emergency Management Director

Description: The Town has an official public warning/alert protocol outlined in the EOP. The State of NH has now entered into an agreement with a vendor to provide Reverse 911 capabilities that the Town has access to use. This program has not yet been evaluated to see if it is effective yet.

Changes since the 2014 plan: Ability to use a Reverse 911 system

Suggested changes: Fully implement the ability for the Town to use the Reverse 911 features for an Emergency Warning System

Subdivision Regulations

Responsible Agent: Planning Board

Description: The purpose of Danbury's subdivision regulations is to provide for the orderly present and future development of the town by promoting the public health, safety, convenience, and welfare of the town's residents. This program is effective.

Changes since the 2014 plan: None

Suggested changes: None

Road Design Standards

Responsible Agent: Road Agent

Description: Danbury Subdivision and Site Plan Regulations include road design standards that control the amount and retention of storm water runoff. Road design standards have been adopted. This project is found to be effective.

Changes since the 2014 plan: None

Suggested changes: None

Bridge Maintenance Program

Responsible Agent: Road Agent / State DOT

Description: Inspection and clean-up occur annually. The state inspects all bridges and maintains State bridges. The Bridge Maintenance Program is on-going by the State of NH. Additionally, the town should keep a file of bridges that are passable to emergency vehicles and which to watch during severe flooding. This project is not completed and is therefore not found to be effective yet.

Changes since the 2014 plan: Funding in the Highway Department budget has been approved for updating the bridges in Town.

Suggested changes: Additional funding of bridge repair is needed. Research into at risk bridges in Town should be completed.

Storm Drain and Culvert Maintenance

Responsible Agent: Road Agent

Description: The Danbury Road Agent and the State DOT clean the drainage basins once a year and after major flooding events. Culverts are repaired as needed. Storm drain and culvert maintenance is an on-going project by the Danbury Highway Department and the State of NH DOT. This project has been found to be effective.

Changes since the 2014 plan: Many culverts have been replaced or upgraded.

Suggested changes: Update culverts shown on Hazard Map.

State Dam Program

Responsible Agent: NH Department of Environmental Services

Description: The Department of Environmental Services has an excellent Dam Maintenance and Safety Inspection program. This program is effective.

Changes since the 2014 plan: None

Suggested changes: None

Wetlands Protection

Responsible Agent: NH Department of Environmental Services

Description: Wetlands regulated by Department of Environmental Services. No changes are needed, program is effective.

Changes since the 2014 plan: None

Suggested changes: None

Shoreland Protection Program

Responsible Agent: NH Department of Environmental Services

Description: Establishes minimum standards for future subdivision, use, and development of shore lands within 250’ of the state's public waters (4th Order or higher). No changes, the state program is effective.

Changes since the 2014 plan: None

Suggested changes: None

Hazardous Materials Plan / Team

Responsible Agent: Fire Chief

Description: There are no substantial Hazardous Material facilities that warrant a Hazardous Material Plan. The Central NH Haz-Mat team through Lakes Region Mutual Fire Aid serves the town. Providing Hazardous Materials training to the Danbury Fire Department is an on-going process. This project has been found to be effective.

Changes since the 2014 plan: None

Suggested changes: Continue annual training for Hazardous Materials Response to fire department personnel.

Public Education Programs

Responsible Agent: Fire Chief & Police Chief

Description: The Fire & Police Departments annually conduct Fire Prevention Week and Awareness which includes all the schools and community center. Fire Department provides fire safety to elderly. Public education programs are completed annually by the Danbury Fire Department. This project has been found to be effective.

Changes since the 2014 plan: None

Suggested changes: Increase opportunities for public education and engagement.

Master Plan

Responsible Agent: Planning Board

Description: The Master Plan serves as the guiding document for future development in Danbury. It also serves as the guiding document to assist the Planning Board as it updates the Town Zoning Ordinance, Subdivision and Site Plan Review Regulations and other regulations that fall under its jurisdiction. The Master Plan is neutrally effective. Although the Master Plan mentions the Land Use and Zoning Ordinance, there isn't anything in the Master Plan in regard to Hazard Mitigation.

Changes since the 2014 plan: None

Suggested changes: Update the Master Plan and include suggested changes in regard to planning for hazard mitigation efforts in the Town of Danbury.

Capital Improvement Plan

Responsible Agent: Planning Board and Board of Selectmen

Description: A decision making tool used to plan and schedule town improvements over at least a six-year period. The CIP provides a suggested timeline for budgeting and implementing needed capital improvements. This program is effective.

Changes since the 2014 plan: None

Suggested changes: Better implementation is needed.

Integration of Mitigation Priorities into Planning and Regulatory Tools

Many of the existing regulations as noted above should be regularly reviewed. This review process can lead to revisions that will incorporate mechanisms to assist in the implementation of the hazard mitigation priorities as defined in this *Plan.* This review will continue to be a priority of the Danbury Emergency Management Director and will likely include yearly requests in the annual budget process. Moreover, as suggested in the onset of this document, this *Plan* is a planning tool to be used by the Town of Danbury, as well as other local, state, and federal governments, in the effort to reduce future losses from natural and/or man-made hazardous events before they occur. Under the Prioritized Mitigation Projects *Action Plan* (found in Chapter 6), all parties listed under the Responsibility/Oversight category shall also review this listing annually and consider the listed (and updated) mitigation projects within their annual budget requests. Local planning mechanisms that Hazard Mitigation were incorporated into include the Zoning Ordinance, the Floodplain Management Ordinance, the elevation certificate requirement, subdivision regulations, and road design standards. The Capital Improvement Plan will also use data from the Hazard Mitigation Plan to begin planning out funding to accomplish each of the projects.

Chapter Six: Mitigation Projects

The following describes the process undertaken by the Committee to identify and prioritize mitigation projects.

Hazard Identification

The Committee reviewed the previous plan and brainstormed to identify potential hazards, the historical occurrence, locations, assets at risk and the probability of each hazard.

Goals Identified

The Committee identified goals based on the hazards identified, as well as the Mitigation Goals identified in the NH Hazard Mitigation Plan 2018 Update.

Project Identification

Upon review of the 2014 Hazard Mitigation Plan, the committee determined which of the projects from the 2014 Hazard Mitigation Plan were completed, deleted, or deferred. The committee also divided the projects as to whether the projects were mitigation actions or preparation actions.

After reviewing the projects from the 2014 Hazard Mitigation Plan, the committee brainstormed new projects for the 2021 Hazard Mitigation Plan and listed those as well. Many ideas were taken from FEMA's document "Mitigation Ideas for Natural Hazards Region 1, Boston, MA June 2017" and the NH Hazard Mitigation Plan Update 2018.

Prioritized Mitigation Projects

Each committee member reviewed the projects. The prioritized projects are identified in the Mitigation Action Plan. The committee did identify new mitigation projects for this plan.

Mitigation Action Plan

All projects were compiled in the Mitigation Action Plan which identifies Responsibility, Funding, Time frame, Hazards Addressed and the Priority for each mitigation project.

Projects from 2014 Hazard Mitigation Plan

The following projects are from the 2014 Hazard Mitigation Plan for Danbury that were identified as Preparedness Actions and not Mitigation Actions:

- Update the Emergency Operations Plan to include Emergency Support Function (ESF) format
- Purchase Traffic Control Devices (barriers/cones/signs) to reroute traffic from flooded roads.
- Create a list of special populations that need assistance during emergency and determine who will contact them.

- Develop SOPs for Highway Department and Fire Department responding to collapsed building rescue (and other emergency events) for liability coverage.
- Establish a shelter plan (list of contacts, MOU's, SOP's)
- Conduct a security assessment of School and Police Department, Fire Department & Highway Department.
- Work with Resource Conservation & Development (RC&D) to conduct a rural water resource survey to ensure fire suppression capability (i.e. cisterns, sprinklers, etc).
- Update Hazardous Materials SOP's
- Research hiring a part-time building inspector.
- Display Flood Insurance information at town hall.
- Emergency Preparedness Brochures at Town Hall
- Continue annual training with Ragged and Fire Department for ski lift malfunctions.
- Purchase supplies for shelter (cots, blankets)
- Continue hazardous material training to fire department personnel
- Maintain the contact list to obtain the State's MCI trailer.
- Upgrade culverts on Roy Ford Road, Waukeena Lake Road, Forbes Mt. Road and Poverty Pond Road.

The table below describes that status of these preparedness actions.

Preparation Actions from the 2014 Hazard Mitigation Plan

Mitigation Action Plan					
Project	Responsibility/ Oversight	Funding/Support	Previous Timeframe	Hazards Addressed	2021 Plan Priority (High/Medium/Low)
Update the Emergency Operations Plan to include Emergency Support Function (ESF) format	Emergency Management Director	EMPG	2014-2019	All hazards	High
Status: Completed. This will now be an ongoing preparation project for the Town of Danbury. It will not be included as a project into the 2021 Hazard Mitigation Plan Update.					
Purchase Traffic Control Devices (barriers/cones/signs) to reroute traffic from flooded roads.	Road Agent	Emergency Management Budget	2014-2015	Flooding	Medium
Status: Completed. This will now be an ongoing preparation project for the Town of Danbury. It is not included as a project in the 2021 Hazard Mitigation Plan Update.					
Create a list of special populations that need assistance during emergency and determine who will contact them.	Fire Chief	Fire Dept budget / Staff Time	2014-2019	All Hazards	Medium
Status: Deferred into the Hazard Mitigation Plan Update 2021. This project was not completed during the last cycle of planning. This will be completed annually during the next five-year cycle. This was not completed due to other departmental priorities and lack of adequate staffing.					
Develop SOPs for Highway Department and Fire Department responding to collapsed building rescue (and other emergency events) for liability coverage.	Fire Chief	Fire Dept Budget / Local Government Center	2014-2015	Winter Weather, Earthquake, High Winds	High
Status: Deferred into the Hazard Mitigation Plan Update 2021. New timeframe for completion is 2021-2025. This was not completed due to lack of adequate staffing.					
Establish a shelter plan (list of contacts, MOU's, SOP's)	Emergency Management Director	Staff Time	2014-2015	All Hazards	High
Status: Deferred into the Hazard Mitigation Plan Update 2021. This project was not completed in the timeframe due to lack of adequate staffing. New timeframe for completion is 2021-2025.					

Conduct a security assessment of School and Police Department, Fire Department & Highway Department.	Police Chief	Staff Time	2014-2019	Human Caused Hazards	Medium
Status: Deferred into the Hazard Mitigation Plan Update 2021. This project was not completed due to lack of adequate staffing. New timeframe for completion is 2021-2025.					
Work with Resource Conservation & Development (RC&D) to conduct a rural water resource survey to ensure fire suppression capability (i.e. cisterns, sprinklers, etc).	Fire Chief	Staff Time	2014-2019	Wildfire	Medium
Status: Deferred into the Hazard Mitigation Plan Update 2021. This was not completed due to lack of adequate staffing. New timeframe for completion is 2021-2025.					
Update Hazardous Materials SOP's	Fire Chief	Staff Time Fire Department Budget	2014-2019	Human Caused Hazards	Medium
Status: Deferred into Hazard Mitigation Plan Update 2021. New timeframe for completion 2021-2025. Not completed due to lack of adequate staffing.					
Research hiring a part-time building inspector.	Board of Selectmen	Municipal Budget	2014-2019	All hazards	Medium
Status: Deferred into Hazard Mitigation Plan Update 2021. The need for a part time building inspector has been discussed. As of 2021, the need has not been great enough to warrant this option. However, there are other opportunities, such as a part time fire inspector, that will be discussed in the next five-year cycle. New timeframe for completion 2021-2025.					
Display Flood Insurance information at town hall.	Board of Selectmen	Municipal Budget	2014-2015	Flood	Low
Status: Deferred into Hazard Mitigation Plan update 2021. Not completed in the last five-year cycle due to lack of adequate staffing. Will be completed in the next five-year cycle. New timeframe for completion 2021-2025.					
Hazard Mitigation Brochures at Town Hall	Emergency Management Director	American Red Cross /FEMA	2014-2015	All hazards	Low
Status: Deferred into the Hazard Mitigation Plan Update 2021. Not completed in the last five-year cycle due to lack of adequate staffing. Will be completed in the next five-year cycle timeframe 2021-2025.					
Continue annual training with Ragged and Fire Department for ski lift malfunctions.	Fire Chief	Staff Time	2014-2019	High Wind Event	Low

Status: Deleted. The fire department determined that ski lift malfunctions were best left to the "experts" at Ragged Mountain who routinely perform these functions. While the fire department may be called to assist, the training and equipment needed to properly perform this function are not beneficial.					
Continue hazardous material training to fire department personnel	Fire Chief	Staff Time	2014-2019	Human Caused Hazards	Low
Status: Deferred into the Hazard Mitigation Plan Update 2021. This has been continued from the 2014 Hazard Mitigation Plan. It will be continued through the next cycle as well. New timeframe for completion 2021-2025. Not completed due to lack of adequate staffing.					
Purchase supplies for shelter (cots, blankets)	Board of Selectmen	Grants	2014-2015	All hazards	Low
Status: Deferred into Hazard Mitigation Plan Update 2021. This will require more research to find out what resources can be obtained from the American Red Cross instead of the Town of Danbury. This will be completed in the next five-year cycle. New timeframe for completion 2021-2025.					
Maintain the contact list to obtain the State's MCI trailer. (Lakes Region Dispatch 524-2386)	Fire Chief	Staff Time	2014-2019	All hazards	Low
Status: Deferred into the Hazard Mitigation Plan Update 2021. This will be completed in the next five-year cycle, new timeframe 2021-2025. This will also be changed to integrate into the Local Emergency Operations Plan.					
Upgrade culverts on Roy Ford Road, Waukeena Lake Road, Forbes Mt. Road and Poverty Pond Road.	Road Agent	Hazard Mitigation Grant / Town Match	2014-2019	Flooding	Medium
Status: Deferred into the Hazard Mitigation Plan Update 2021. Some of these culverts have been upgraded as well as others that are not on this list. Funding will come primarily from the town municipal budget. New timeframe 2021-2025.					
END OF LIST					

Deferred Mitigation Action Plan Projects from the 2014 Hazard Mitigation Plan Update

The table below represents Mitigation projects that were identified in the 2014 Hazard Mitigation Plan update. All projects were reprioritized and reviewed. It was decided that these projects should all be deferred into the 2021 Hazard Mitigation Plan Update. Many of the projects were not completed in the last 5 year timeframe due to lack of adequate staffing.

Mitigation Action Plan					
Project	Responsibility/ Oversight	Funding/Support	New Timeframe	Hazards Addressed	2021 Plan Priority (High/Medium/Low)
Educate Property Owners About Flood Mitigation Techniques	Emergency Management Director	Staff Time	2-5 years	Flooding	Medium
Increase Awareness of Flood Risk and Safety	Emergency Management Director	Emergency Management Budget	2-5 years	Flooding	Medium
Educate Residents on water saving techniques	Emergency Management Director	In-kind staff time	1-2 years	Drought	Low
Map and Assess Community Vulnerability to Seismic Hazards	Emergency Management Director	In-kind staff time	1-5 years	Earthquake	Low
Increase Awareness of Extreme Temperature Risk and Safety	Emergency Management Director	Staff Time	1-2 years	Extreme Temperatures	High
Creating a database to track those individuals at high risk of death, such as the elderly, homeless, etc.	Emergency Management Director	Staff Time	1-2 years	Multiple Hazards	Medium
Organizing outreach to vulnerable populations, including establishing and promoting accessible or cooling centers in the community.	Emergency Management Director	Staff Time	1-2 years	Extreme Temperatures	Medium
Educate Property Owners About Freezing Pipes	Emergency Management Director	Staff Time	1-2 years	Extreme Temperatures / Severe Winter Weather	Medium
Require that all critical facilities including emergency operations centers (EOC), police stations, and fire department facilities are located outside of flood prone areas.	Emergency Management Director/	Municipal Budget	1-5 years	Flooding	Medium

	Board of Selectmen/ Planning Board				
Incorporating Ice Jam Prevention techniques as appropriate	Emergency Management Director/ Highway Department	Municipal Budget	1-5 years	Flooding	Low
Continued compliance and participation with NFIP	Emergency Management Director/ Board of Selectmen/ Planning Board	Staff time	1-5 years	Flooding	Low
Incorporate procedures for tracking high water marks following a flood into emergency response plans	Emergency Management Director/Police Chief/Road Agent	Staff Time	1-5 years	Flooding	Low
Complete a storm water drainage study for known problem areas	Emergency Management Director	Staff Time	1-5 years	Flooding	Medium
Install and maintain surge protection on critical electronic equipment	All departments	Municipal budget	3 years	Lightning	Medium
Establish standards for all utilities regarding tree pruning around lines	Board of Selectmen/ Planning Board/ Emergency Management Director	Staff time	3 years	Multiple hazards	High
Plan for and maintain adequate road and debris clearing capabilities	Board of Selectmen/	Capital Improvement Plan	1-5 years	Multiple hazards	High

	Road Agent				
Produce and distribute family and traveler emergency preparedness information about severe winter weather hazards.	Emergency Management Director	Municipal Budget	1-5 years	Severe winter weather	Medium
Identifying specific at-risk populations that may be exceptionally vulnerable in the event of long-term power outages.	Emergency Management Director	Staff Time	3 years	Multiple hazards	Medium
Organizing outreach to vulnerable populations, including establishing and promoting accessible heating centers in the community.	Emergency Management Director	Staff Time	3 years	Severe Winter Weather	Medium
Conduct Tornado Awareness Activities	Emergency Management Director	Staff Time	1-5 years	High Wind Events	Low
Create a wildfire scenario to estimate potential loss of life and injuries, the types of potential damage, and existing vulnerabilities within a community to develop wildfire mitigation priorities.	Emergency Management Director, Fire Chief	Staff Time	4 years	Wildfire	Medium
Educate Property Owners about Wildfire Mitigation Techniques	Emergency Management Director, Fire Chief, Fire Warden	Staff Time	4 years	Wildfire	Medium
Retrofitting fire and police stations to become hazard resistant.	Emergency Management Director	Hazard Mitigation grants / Town Match	1-5 years	Multiple hazards	Medium
Identifying and strengthening facilities to function as public shelters.	Emergency Management Director	Staff Time	1-5 years	All hazards	Medium
Providing information on all types of hazards, preparedness and mitigation measures, and responses during hazard events.	Emergency Management Director	Staff Time	1-5 years	All hazards	Medium

END OF LIST

Town of Danbury Hazard Mitigation Plan 2021 Update New Mitigation Actions

The table below represents new mitigation actions that are being implemented into the 2021 Hazard Mitigation Plan Update.

Mitigation Action Plan					
Project	Responsibility/ Oversight	Funding/Support	Timeframe	Hazards Addressed	Priority (High/Medium/Low)
Maintain access to the statewide Reverse 911 system for the dissemination of hazardous situations and emergency events.	Emergency Management Director	In kind	1-2 years	All hazards	High
Educating homeowners of the importance of installing carbon monoxide monitors and alarms.	Fire Chief	In-kind	1-2 years	Severe Winter Weather	Medium
Educating citizens that all fuel burning equipment should be vented to the outside.	Fire Chief	Fire Dept budget / Staff Time	1-2 years	Severe Winter Weather	Medium
END OF LIST					

Benefit Cost Review

The Benefit-Cost Review is an important element of the community's hazard mitigation plan. The intention of DMA 2000 is for the hazard mitigation plan to be useful and unique for each community; therefore, an impartial review and ranking of the mitigation actions is key. It is not so important which method is used, but rather that the method chosen is logical and clearly documented.
The process for the benefit cost review was a simple qualitative method. For each action, there was a list of benefits and a list of costs. The qualitative method described helps the committee judge the priorities of actions based on perceived pros and cons (i.e., benefits and costs). The method is best used when it is not possible, or appropriate, to identify a quantitative measure of benefits and costs. Each action can have a unique advantage or disadvantage that can subsequently be used for prioritization. Using this method ensures that special emphasis is given to Benefit-Cost Review by categorizing prioritization criteria (e.g., ease of implementation, technical effectiveness) as either benefits or costs.

Priority Designation

During the prioritization process, the Benefit Cost review was emphasized. Each mitigation project was assigned a priority designation based upon the importance of the project being completed to the overall preparedness of the town and its ability to mitigate disasters. It also designates which projects will receive attention the soonest and which projects the town will begin working on as time and resources become available. Additionally, the committee considered the cost and benefits of these projects and assigned priority based on which projects could hold the highest benefits with the lowest costs. The committee decided priority designations based upon brainstorming and cost benefit review during meetings. The designations are as follows:

High: This project will receive attention and resources before medium or low priority projects. A high priority project means the committee felt that this project had many benefits with few costs.

Medium: This project will receive attention and resources before low priority projects but after high priority projects. A medium priority project means the committee felt this project had not as many benefits as a high priority project but more than a low priority project.

Low: This project will receive attention and resources after all high and medium priority projects have been addressed. A low priority project means the committee felt this project did not have as many benefits to the amount of costs attached to it as compared to high or medium priority projects.

The method used for this plan was adopted from How-To Guide (FEMA 386-5): Using Benefit-Cost Review in Mitigation Planning May 2007.

Chapter Seven: Adoption, Implementation, and Monitoring

Adoption

The Danbury Selectmen by majority vote will officially adopted the 2021 Danbury Hazard Mitigation Plan Update upon receipt of the conditional letter of approval from FEMA.

Implementation

There were several mitigation projects that were prioritized by the Committee. For each project the Committee identified who, when and how they would be implemented. Please refer to the "Action Plan" in Chapter 6 for a description of the timeframe and persons or departments responsible for implementation of the Prioritized Projects. It will be the future responsibility of the Emergency Management Director to ensure implementation of these Prioritized Projects.

Monitoring & Updates

The Danbury Hazard Mitigation Plan must be reviewed, evaluated and updated at least once every five years. The Emergency Management Director is responsible for initiating this review and needs to consult with members of the Danbury Emergency Management Committee, in order to track progress and update the Prioritized List in Chapter 6. The EMD will ensure the following:

- The Hazard Analysis will be evaluated for accuracy.
- Projects completed will be evaluated to determine if they met their objective.
- Projects not completed since the last update will be reviewed to determine feasibility of future implementation.
- Lastly, new projects will be identified and included in future updates as needed.
- The public, members of the Committee and State and non-profit agencies, will continue to be invited and involved during this process.
- In keeping with the process of adopting the 2021 Danbury Hazard Mitigation Plan, a public hearing to receive public comment will be held. This will require the posting of two public notices, and where appropriate by posting a notice on the town's Web Site.
- Updates to the Plan may be adopted after a public meeting or hearing by the Danbury Board of Selectmen.
- Once every five years, the EMD will submit an updated plan to FEMA for approval.

Appendices

Appendix A: Hazard Mitigation Resources

Mitigation Planning Webliography		
FEMA Region I Mitigation Planning Contacts	Brigitte Ndikum-Nyada, Community Planner, CT, MA	(617) 956-7614 brigitte.ndikum-nyada@fema.dhs.gov
	David Mendelsohn, Community Planner	(617) 832-4713 david.mendelsohn@fema.dhs.gov
	Denise Lavallee, FEMA Region I/Mitigation	(617) 956-7525 Denise.Lavallee@fema.dhs.gov
	Jay Neiderbach, Community Planner, ME, NH	(617) 832-4926 josiah.neiderbach.fema.dhs.gov
	Marilyn Hilliard, Branch Chief, Region 1 Tribes	(617) 956-7559 Marilyn.Hilliard@fema.dhs.gov
	Melissa Surette, Senior Planner, All States	(617) 956-7559 Melissa.Surette@fema.dhs.gov
	Nan Johnson, Community Planner, RI, VT	(617) 956-7672 nan.johnson@fema.dhs.gov
Regulatory Information	Disaster Mitigation Act of 2000 (DMA 2K)	http://www.fema.gov/library/viewRecord.do?id=1935
	Final Rule, 44 CFR 201.6	http://www.fema.gov/pdf/help/fr02-4321.pdf
Flood Related Hazards	FEMA Coastal Flood Hazard Analysis & Mapping	https://www.fema.gov/coastal-flood-hazard-analysis-and-mapping
	Floodsmart	http://www.floodsmart.gov/floodsmart/
	National Flood Insurance Program (NFIP)	http://www.fema.gov/nfip
	National Flood Hazard Layer	https://msc.fema.gov/portal
	Flood Map Modernization	http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization
	Reducing Damage from Localized Flooding: A Guide for Communities, 2005 FEMA 511	http://www.fema.gov/library/viewRecord.do?id=1448
	So, You Live Behind a Levee!	http://ascelibrary.org/doi/book/10.1061/9780784410837
	Firewise	http://www.firewise.org
	NOAA Fire Event Satellite Photos	http://www.ospo.noaa.gov/Organization/History/osei/

Fire Related Hazards	U.S. Forest Service, USDA	*http://www.fs.fed.us/*
	Wildfire Hazards - A National Threat	*http://pubs.usgs.gov/fs/2006/3015/2006-3015.pdf*

Appendix B: Documentation of Planning Process

December 16th 2019

Agenda: Introduction to new plan, review capabilities of the Town

Present:

- Kyle Levesque, Deputy Fire Chief and Emergency Management Director
- Todd Gordon, Danbury Fire Department member
- Jeremy Cornell, Danbury Road Agent and Danbury Firefighter
- James Phelps, Danbury Board of Selectmen
- Karen Padgett, Administrative Assistant for Danbury Board of Selectmen
- David Suckling, Danbury Police Chief and Danbury EMT
- John Babiarz, Grafton Fire Chief
- Alexx Monastiero, NH HSEM
- Jeremy Martin, Danbury Fire Chief
- Jessica Hatch, Danbury Board of Selectmen
- Richard Swift, Danbury Planning Board
- Kayla Henderson, NH HSEM

June 8th 2021

Agenda: Review previous plans mitigation actions, review last plans hazards. Brainstorm new hazards and decide on new mitigation actions.

- Kyle Levesque, Deputy Fire Chief and Emergency Management Director
- Todd Gordon, Danbury Fire Department member
- Jeremy Cornell, Danbury Road Agent and Danbury Firefighter
- Karen Padgett, Administrative Assistant for Danbury Board of Selectmen
- Jeremy Martin, Danbury Fire Chief
- Jessica Hatch, Danbury Board of Selectmen

Informal conversations with individual members: Jeremy Cornell and Jeremy Martin to determine department needs for hazard mitigation.

Appendix C: Approval letter from FEMA

Appendix D: Hazard Severity Index Scales

Hazard	Subcategory	Scientific Scale	Link
FEMA Region 1 – "Good Practice"	Description of type, location, and EXTENT of all natural hazards that can effect each jurisdiction	A document with a summary of several natural hazards links and narrative	http://www.mass.gov/eopss/docs/mema/resources/mitigation/good-practice-guide-requirement-b1.pdf
Dam Failure		National Dam Safety Program hazard classifications	http://www.damsafety.org/media/Documents/PDF/fema-333.pdf
Drought		U.S. Drought Monitor Scale	https://www.ncdc.noaa.gov/monitoring-references/dyk/drought-legend
		Palmer Drought Severity Index	http://www.cpc.ncep.noaa.gov/products/monitoring_and_data/drought.shtml
		Standardized Precipitation Index	https://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/spi.html
Earthquake		Modified Mercalli Intensity Scale	http://earthquake.usgs.gov/learn/topics/mercalli.php
		Richter Scale	https://earthquake.usgs.gov/learn/topics/measure.php
		Shakemap	http://earthquake.usgs.gov/data/shakemap/
Erosion	Coastal Erosion	Erosion rate (feet/year)	https://www.fema.gov/pdf/library/erosion.pdf
	Sea-Level Rise	National Assessment of Coastal Vulnerability to Sea Level Rise	http://woodshole.er.usgs.gov/project-pages/cvi/
Extreme Temperatures		Wind Chill Index	http://www.nws.noaa.gov/om/winter/windchill.shtml
		Heat Index	http://www.nws.noaa.gov/om/heat/heat_index.shtml
Flood		100-year floodplain definition and location	https://msc.fema.gov/portal
		Depth grids	https://www.fema.gov/media-library-data/1406747117357-744b6bd203c18ada4806ad4e90c18b81/Flood_Depth_and_Analysis_Grids_Guidance_May_2014.pdf
Hurricane		Saffir-Simpson Hurricane Wind Scale	http://www.nhc.noaa.gov/aboutsshws.php
Landslide		Landslide incidence	http://landslides.usgs.gov/hazards/nationalmap/
		Acreage of events	

Radon		Picocuries Per Liter pCi/L	https://sosradon.org/node/130
Severe Weather	Nor'easter	Beaufort Wind Scale	http://www.spc.noaa.gov/faq/tornado/beaufort.html
		Regional Snowfall Index	https://www.ncdc.noaa.gov/snow-and-ice/rsi/
	Continued on next page…		