

# Town of Effingham, New Hampshire Hazard Mitigation Plan Update, 2019

*Prepared by the:*

**Effingham Hazard Mitigation Update Committee**



*Lord's Hill Historic District - Effingham NH*

**August 2019**

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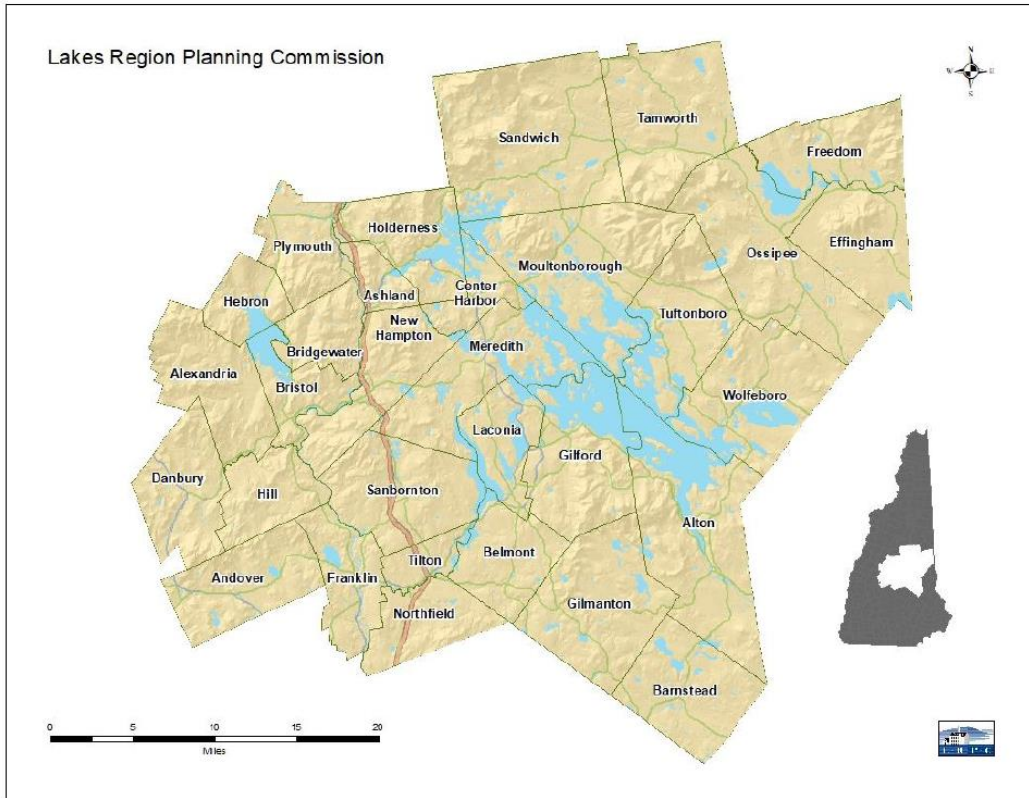
# Town of Effingham, New Hampshire Hazard Mitigation Plan Update

August 2019

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### Acronyms and Abbreviations

C3PH	Carroll County Coalition for Public Health
CEO	Code Enforcement Officer
CRS	Community Rating System
DES	New Hampshire Department of Environmental Services
DOT	New Hampshire Department of Transportation
EMD	Emergency Management Director
EMPG	Emergency Management Performance Grant
EOC	Emergency Operations Center
FD	Fire Department
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
HazMat	Hazardous Materials
HD	Highway Department
HMGP	Hazard Mitigation Grant Program
HSEM	New Hampshire Homeland Security and Emergency Management
ISO	Insurance Service Office - A fire protection rating scale
LEOP	Local Emergency Operations Plan
LRPC	Lakes Region Planning Commission
Mag	Magnitude
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
PB	Planning Board
PD	Police Department
PSU	Plymouth State University
RSA	Revised Statute Annotated (New Hampshire's state laws)
USACE	United States Army Corps of Engineers

## EXECUTIVE SUMMARY

The *Effingham Hazard Mitigation Plan* (the Plan) serves to reduce future losses from natural hazard events before they occur. The Plan was developed by the Effingham Hazard Mitigation Planning Committee (Committee) with assistance from the Lakes Region Planning Commission and contains statements of policy adopted by the Board of Selectmen in Chapter VI.

The Committee determined the high and moderate priority natural and human hazards in Effingham based on a ranking system detailed in Chapter III and shown below:

<b>Hazards identified in the Effingham Hazard Mitigation Plan (2019)</b>
<b><i>High to Moderate Risk</i></b>
High Wind Events
Wildfires
Extreme Temperatures
Severe Winter Weather
Drought
Inland Flooding
Lightning
Dam Failure
Solar Storms & Space Weather
Tropical & Post-Tropical Cyclones

There have been a few minor changes to the list of Critical Facilities. The Committee identified existing programs related to hazard mitigation including the following:

<b>Existing Plans, Regulations and Practices Supporting Hazard Mitigation</b>	
Hazard Mitigation Plan 2013	Subdivision Regulations (2016)
Master Plan 2014	Site Plan Review Regulations (2016)
Zoning Ordinance (2017)	Capital Improvements Program (under development)
Floodplain Ordinance (2013)	Water Resources Plan for Rural Fire Protection (2004)
Mutual Aid Agreements	Local Emergency Operations Plan (2018)

Eight of the 25 Actions from the 2013 Plan have either been completed or are no longer pertinent. In its effort to further reduce the vulnerability of the town to future hazards, The Effingham Hazard Mitigation Planning Committee developed a list of 34 mitigation actions; eight for all hazards and 25 hazard-specific actions. These actions were prioritized based on local criteria including the cost of these actions. Discussions were held regarding how implementation might occur. The results of these discussions are summarized in Table 4: Implementation Schedule for Mitigation Actions (pages 50-56).

## **CHAPTER I: PLANNING PROCESS**

### **A. BACKGROUND**

Communities are required to have an approved hazard mitigation plan as a condition of receiving hazard mitigation assistance funding as well as some other federal funding programs. Such plans are locally developed and adopted and approved by the Federal Emergency Management Agency (FEMA). Funds from these grants are to be used for hazard mitigation projects and actions that will ultimately reduce and mitigate future losses from natural or human hazard events. The NH Department of Safety's Division of Homeland Security and Emergency Management (HSEM) makes funding available to assist communities with plan development and update. Communities are provided the opportunity to select a contractor. The plan development process generally followed the steps outlined in FEMA's *Local Mitigation Planning Handbook (2013)*.

### **B. AUTHORITY**

The town of Effingham Hazard Mitigation Plan was prepared pursuant to Section 322, Mitigation Planning of the Robert T. Stafford Disaster Relief and Emergency Assistance Act and Section 104 of the Disaster Mitigation Act (DMA) of 2000. Section 322 of DMA 2000 emphasizes the need for State, local and tribal entities to closely coordinate mitigation planning and implementation efforts.

### **C. FUNDING SOURCE**

The New Hampshire Department of Safety's Homeland Security and Emergency Management (NH HSEM) funded the Plan through a Pre-Disaster Mitigation grant with matching funds from the Lakes Region Planning Commission.

### **D. PURPOSE**

The Effingham Hazard Mitigation Plan is a planning tool to be used by the town of Effingham, as well as other local, state, and federal government entities, in their efforts to reduce the negative effects from natural and human-related hazards. The Plan contains statements of policy as outlined in the Implementation Schedule for Mitigation Actions and in Chapter VI: Plan Adoption and Monitoring. All other sections of this plan are support and documentation for informational purposes only and are not included as a statement of policy.

### **E. SCOPE OF PLAN**

The scope of this Plan includes the identification of natural hazards affecting the town of Effingham, as identified by the Committee. The Committee also chose to include man-made hazards in this update.

### **F. METHODOLOGY**

The Lakes Region Planning Commission (LRPC) corresponded with the Effingham Emergency Management Director (EMD) in winter 2019 to initiate the hazard mitigation update process in the town of Effingham. The EMD established the Effingham Hazard Mitigation Planning Update



Committee in spring 2019 for the purpose of updating a long-range plan for hazard mitigation. The Committee consisted of representatives from the Police and Fire departments, the town's Board of Selectmen, the Planning Board, and CIP Committee, Zoning Enforcement Officer, as well as several interested residents. The meetings were open to the public.

Using FEMA's *Local Mitigation Plan Review Guide (2011)*, *Mitigation Planning Workshop materials (2012)*, and *the Local Mitigation Planning Handbook (2013)* as guidance, the Committee reviewed and updated various elements of the town's 2013 Hazard Mitigation Plan. The planner and the committee reviewed and referenced a variety of plans, studies, reports, and technical information during the development of this Plan Update; a list of these resources can be found in Appendix I. Data on property valuation was gathered from the Effingham MS-1 Report to the NH Department of Revenue Administration.

The Committee held meetings from March 2019 through July 2019 with a review of the draft plan by committee members and the public in July 2019. The following timeline shows the dates and corresponding Committee actions. The committee reviewed each section of the plan and LRPC provided updated information on hazards in New Hampshire. Each section of the existing plan was revised and, in some cases, reformatted in order to develop a more comprehensive document. Meeting agendas were posted in the Municipal Office Building and at the LRPC web page and examples are included in Appendix D.

### **Committee Meetings**

**March 25, 2019:** *Committee Meeting: - Effingham Municipal Offices*

- Overview of update process and objectives
- Discussion of Development Trends since 2013
- Review of Capabilities
- Identify Hazard Events since 2012

**April 8, 2019:** *Committee Meeting: - Effingham Municipal Offices*

- Update of critical facilities and hazards on map
- Status of 2013 Mitigation Projects
- Risk Assessment

**May 23, 2019: Committee Meeting: - Effingham Municipal Offices** (rescheduled from May 6)

- Risk Assessment (continued)
- Gaps
- Potential Mitigation Actions

**June 20, 2019:** *Committee Meeting: - Effingham Municipal Offices*

- Costs
- Prioritization of Mitigation Actions

**July 3, 2019:** *Committee Meeting: - Effingham Municipal Offices*

- Implementation of Mitigation Actions

**July 17, 2019:** *Committee Meeting: - Effingham Municipal Offices*

- Review of final draft

Adopt & Monitor the Plan

## Public Involvement

The Effingham EMD invited a variety of Hazard Mitigation Planning stakeholders to join the Hazard Mitigation Planning Committee. The Committee was well represented by municipal officials. Specific opportunities for public input occurred at each meeting. Local businesses and members of the public were encouraged to attend meetings through press releases and postings on the town and LRPC websites.

The Committee held a public comment period in order to obtain additional feedback on the draft document. The Plan (including comment instructions) was available for public review at the Effingham Municipal Office. The neighboring towns and Emergency Management Directors were also notified of all meetings and the review period. This provided an opportunity for local and regional businesses, organizations, agencies, educational and health institutions in Effingham and surrounding communities to review and comment on the plan update. There was active participation and free engagement during the plan development process by a surprisingly large number of Effingham residents. Any and all public comments during the plan development process was included in relevant sections.

## G. ACKNOWLEDGMENTS

Special thanks to the Effingham Hazard Mitigation Planning Committee for their time and effort in developing this Plan Update:

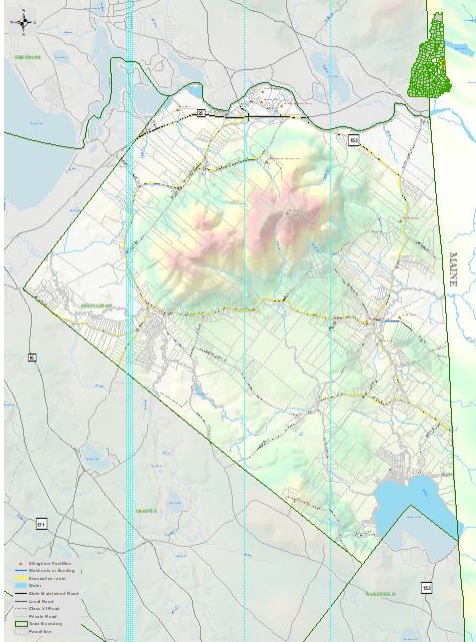
Randy Burbank	Effingham Fire Chief, EMD
John Meisner	Effingham Selectman
Chuck Fuller	Effingham Selectman
Michael Calhalane	Effingham Selectman
Grace Fuller	Effingham Planning Board
Rebecca Boyden	Effingham Zoning Officer
Patti Morrisey	Effingham Elementary School, Principal
Mark Riley	Green Mountain Treatment Center
Cheryl Feirick	Effingham Supervisor of Checklist
Jeff Jones	Public Health Emergency Preparedness C3PH
Eric Diaz	Effingham Police Department
Tom Trask	NH Div. of Forest and Lands
Brian Taylor	Effingham Fire & Rescue
Carol Pfister	Effingham Trustee of Trust Funds
Ian MacMillan	Effingham Police Department
Theresa Swanick	Effingham Planning Board
Kayla Henderson	NH HSEM Mitigation Planner
David Jeffers	LRPC Regional Planner

Additional information was provided by:

Jennifer Gilbert	Floodplain Management Coordinator, NH Office of Strategic Initiatives (OSI)
Kent Finemore	Assistant Chief Engineer, NHDES – Dam Bureau
Nancy Baillargeon	Program Information Officer, NHDES – Dam Bureau

## CHAPTER II: COMMUNITY PROFILE

### A. GEOGRAPHY



The town of Effingham, located in southern Carroll County is bordered by Freedom to the north, Ossipee to the west and south, Wakefield to the south, and Parsonsfield, Maine to the east.

Effingham has 38.9 square miles of land and 1.1 square miles of water.<sup>1</sup> The 2017 estimated population of Effingham population was 1,459 residents resulting in a population density of this rural community is 37.5 persons per square mile. The major physical feature in Effingham is Green Mountain rising 1,881 feet above sea level; this dominates the northern half of town. The lowest point is along the Ossipee River at 374 feet above sea level. This river separates Effingham and Freedom, Province Lake occupies the southern tip of the town, and several large wetlands and small streams are scattered throughout Effingham.

More than one-fifth of Effingham's land area is considered steep slopes, with 12% of the land having slopes of 15-25% and 10% of the land having very steep slopes of more than 25% grade.

The Municipal Office and Effingham Elementary School are located just north of NH Route 25, the Historic Districts, library, and fire stations are scattered along NH Route 153. Residences are scattered throughout town.

### B. WEATHER CONDITIONS

Like many New England towns, Effingham's temperatures and precipitation vary a great deal. January temperatures range from an average high of 30 degrees Fahrenheit to an average low of 7 degrees Fahrenheit. July temperatures range from an average high of 81 degrees Fahrenheit to an average low of 57 degrees Fahrenheit. The amount of precipitation is lowest in the winter months and highest in the spring and fall. Effingham averages about 75 inches of snow per year.<sup>2</sup>

Records indicate that this region has been experiencing more heavy precipitation events (>4" in 48 hours) over the past thirty years than prior to that.<sup>3</sup> New Hampshire is in a 160-mph wind zone; the majority of the southern half of the state (including southern Carroll County) is located in a hurricane-susceptible region.

<sup>1</sup> Effingham Community Profile. <https://www.nhes.nh.gov/elmi/products/cp/profiles-htm/effingham.htm>

<sup>2</sup> <http://www.usa.com/effingham-nh-weather.htm>

<sup>3</sup> <http://www.unh.edu/news/releases/2014/04/ds04climate.cfm> visited Sept. 6, 2014.

## C. PUBLIC SERVICES AND INFRASTRUCTURE

A three-member Board of Selectmen governs the town of Effingham. The Town has a volunteer Fire Chief and an all-volunteer crew of firefighters; the Fire Department is part of the Ossipee Valley Mutual Aid Association. The Police Chief has a full-time sergeant assisting him. The Fire Chief serves as Emergency Management Director (EMD). The Board of Selectmen serve as the Town Road Agent, contracting out maintenance and road work on the more than 40 miles of municipal roads to private companies. Huggins Hospital is in Wolfeboro, 24 miles southwest of Effingham; Memorial Hospital in North Conway is 26 miles to the north. Hospitals are also available in Dover, Rochester, Concord, and Portsmouth.

NH Route 25 runs east-to-west across the northern portion of Effingham from the Maine state line to Ossipee where it links to NH Route 16, running north-south. The lower volume NH Route 153 runs north-south along the eastern side of Effingham.

Aside from the individual systems serving individual public buildings, all water and sewage in Effingham is handled through privately owned and maintained wells and septic systems. EverSource, formerly Public Service of New Hampshire (PSNH), provides electric power to 1,300 customers in Effingham. NH Electric Cooperative supplies electric power to 135 customers in town.

Students K - 6 attend Effingham Elementary School, in 2019 there were 110 in the elementary school. Students in grades 7-12 attend Kingwood Regional Middle and High Schools located in Wolfeboro. The nearest Community College is Lakes Region Community College in Laconia, and the nearest college is the University of New Hampshire in Durham, NH. There are two registered childcare facilities in Effingham.

## D. LAND USE AND DEVELOPMENT TRENDS

### Population, Housing Stock, and Growth Patterns

The population of Effingham grew tremendously between 1960 and 2000, with the number of residents growing nearly four-fold (top).<sup>4</sup> While growth continued during the next decade, it was at a slower pace. The 2010 population was 1,465; it is estimated that population in 2017 was 1,481. Growth is projected to continue for the next decades, but the pace is expected to slow further (bottom).<sup>5</sup>

20% of the population in Effingham is 65 years of age or older, this reflects an increase since the last HMP. (ACS 5-Year Estimate 2013 – 2017) Effingham’s median age is 49.5 years. Carroll County is among the oldest counties in both the state and the country.

Census	Population	Change from Prior Census
1960	329	---
1970	360	9.4%
1980	599	66.4%
1990	941	57.2%
2000	1273	35.3%
2010	1465	15.1%
Date	Population Projection	Change from Prior Decade
2020	1510	3.1%
2030	1581	4.7%
2040	1594	0.8%

According to the 2010 Census, the percentage of seasonal housing units in Effingham (29% - 280 units) was nearly three times the statewide average (10.3%) but lower than Carroll County (42%).

<sup>4</sup> US Census, 1960-2010.

<sup>5</sup> NH Office of Strategic Initiatives Data Center <https://www.nh.gov/osi/data-center/index.htm>

The 2010 Census reported 963 Total Housing Units in Effingham. Since then fewer than 30 permits have been granted<sup>6</sup>.

These development trends indicate the possibility of several challenges for local mitigation efforts. The number of seasonal residential units is indicative of people from varying origins spending a portion of their time in the community. The first major challenge this presents is that the sheer number of people in town, especially in the summer, is far greater than the number of year-round residents. The second challenge is in providing adequate information to all community members regarding the town's rules and procedures, which can vary from those in seasonal residents' towns of origin. For example, fire safety information for the influx of summer residents can be of great value, not only for the high instances of campfires, but also for the general fire safety guidelines for residences in wooded areas.

Year	Housing Units Permitted
2010	3
2011	9
2012	2
2013	1
2014	2
2015	2
2016	4
2017	4
<b>Total (2017)</b>	<b>990</b>

Another possible challenge in dealing with hazardous events is the potential for increased special needs populations. Those typically most at risk from severe weather events are the elderly and young children. Given the increasing age of the population, the likelihood of having additional residents with special medical needs is high.

To monitor traffic patterns, the NH Department of Transportation collects traffic volume data across the state and conducts transportation modelling. There are six sites in Effingham where data is collected regularly, mainly on state roads. Most locations have experienced steady growth in traffic volumes since 2008. The table below indicates the Average Annual Daily Traffic counts, measured in vehicles per day. As this is a projected average over the entire year, there are certainly many summer days and during special events when the volume of traffic on any one of these roads far exceeds these figures.

### Effingham Traffic Counts

Location ID	Location	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
62141050	NH 25 at Ossipee TL (EB-WB) (61141010-61141011)	4300*	*	*	4600*	*	*	4400	4497	4627	5282	5361
82141051	NH 153 SOUTH OF NH 25 (SB-NB) (81141012-81141013)	680*	*	*	700*	*	*	640	654	673	814	826
82141052	NH 153 SOUTH OF HOBBS RD (SB-NB) (81141014-81141015)	*	600*	*	*	670*	*	*	630	648	660	905
82141053	ELM ST OVER PINE RIVER	*	1200*	*	*	980*	*	*	1300	1338	1363	1271
82141054	NH 153 OVER OSSIPPEE RIVER AT FREEDOM TL (SB-NB) (81141016-81141017)	*	3400*	*	*	3300*	*	*	2800	2881	2936	2766
82141056	SNOW RD OVER SOUTH RIVER	*	70*	*	*	*	90*	*	80	82	84	181
82141057	NH 153 OVER SOUTH RIVER (SB-NB) (81141020-81141021)	*	660*	*	*	670*	*	*	730	751	765	691

Effingham's largest employer is Green Mountain Treatment Center, a facility that provides residential and outpatient substance abuse treatment.

While there has been little new development in Effingham during the past five years, there has been some. It was noted that updating of roads and drainage are concerns for emergency access around town. Overall, the community's vulnerability to hazards has remained about the same.

<sup>6</sup> *Development Activity in the Lakes Region: 2016 Annual Report*, Lakes Region Planning Commission, 2016.

Note: 2017 data is the most up to date currently.

## CHAPTER III: RISK ASSESSMENT

### A. IDENTIFYING HAZARDS

The Committee considered the various hazards identified in the 2013 Effingham Hazard Mitigation Plan. This plan identified the hazards events in the table to the right as the greatest threats to the town at that time.

In 2018 the New Hampshire Department of Safety’s Division of Homeland Security and Emergency Management updated the *State of New Hampshire Multi-Hazard Mitigation Plan*.<sup>7</sup> Through this process a couple of natural hazard names were modified or combined, several hazards were added to the list and one was dropped to better reflect conditions in New Hampshire. After this was explained to the committee, including discussion with the State Hazard Mitigation Planner from HSEM, the group decided to utilize the natural hazard terms utilized in the state plan.

<b>Hazards identified in the Effingham Hazard Mitigation Plan (2013)</b>
<b><i>High to Moderate Risk</i></b>
Severe Winter Storm
Flooding (local and riverine)
Tornado (downburst)
Wildfire/Structure Fire
Thunder & Lightning Storms
Hurricane
Flooding (dam failure)

<b>Hazards identified in the Effingham Hazard Mitigation Plan (2019)</b>
<b><i>High to Moderate Risk</i></b>
High Wind Events
Wildfires
Extreme Temperatures
Severe Winter Weather
Drought
Inland Flooding
Lightning
Dam Failure
Solar Storms & Space Weather
Tropical & Post-Tropical Cyclones

The Committee also reviewed historical information from local and internet sources about past hazard events in and near Effingham since 2013. Through this review of state-wide hazards, past regional and local events, and with discussion, the committee identified the hazards in the table on the left as the most significant hazards to the town of Effingham.

Due to geography and climate, landslide and avalanche were not seen as hazards that apply to Effingham.

It was pointed out to the committee that there is a distinction between natural and man-made/technological hazards. To meet FEMA plan development requirements, only natural hazards need to be addressed; however, the committee chose to include some information on these topics in Appendix Z: Supplemental Hazard Information.

A few hazards were considered lower risk (Earthquakes and Infectious Diseases) but are still noted in this plan as they could occur in Effingham, they have some potential for impact to the town, and the committee recognized that there are some steps that can be taken to mitigate the potential impact to the town.

<sup>7</sup> [https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018\\_FINAL.pdf](https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf)

## B. PROFILING HAZARD EVENTS

The committee reviewed the various hazards that might occur in Effingham and assessed the probability of such an event occurring in Effingham. This process began by taking the risk rating matrix from the previous plan, reviewing the hazards, past occurrences, specific areas of concern, and utilizing the Probability of Occurrence rating using the categories below. Note that the committee felt that it was important to look at a 25-year time span.

- Unlikely: Less than 10% probability of occurrence in the next year
- Occasional: 10 to 25 percent probability of occurrence in the next year
- Likely: 25 to 80 percent probability of occurrence in the next year
- Highly Likely: 80 to 100 percent probability of occurrence in the next year

### Probability of Occurrence

Highly Likely	Likely	Occasional	Unlikely
High Wind Event	Wildfire	Dam Failure	Avalanche
	Extreme Temperatures	Solar Storms & Space Weather	Landslide
	Severe Winter Weather	Tropical & Post-Tropical Cyclones	
	Drought	Earthquake	
	Inland Flooding	Infectious Diseases	
	Lightning		

The resulting summary indicates that of the natural hazard events anticipated to occur in Effingham, high wind events are seen as highly likely. Natural hazards seen as likely occurrences include wildfire, extreme temperature, severe winter weather, drought, inland flooding, and lightning. Those hazards considered by the Committee as unlikely are either not addressed or are described in Appendix G.

Each of the hazards that the Committee identified as likely or highly likely to occur in Effingham is profiled below along with some hazards that occur less frequently but due to their potential impact, the committee felt warranted a full discussion in the body of this plan. It describes the likely **location** of each hazard, the **extent** of the hazard, recent **history** of events, and the **probability** of an occurrence in Effingham. Note: For more complete history of events, see Appendix E.

The **extent** is a description of “how bad the hazard could get”, considering three factors – magnitude, onset, and duration. *Magnitude* is size of the hazard, such as depth of floodwaters or wind speed. *Onset* is how quickly the hazard approaches. Depending on geography as well as the nature of the rainstorm, floodwaters might rise over a period of days, or it might take just a few hours to build up a concentrated flow. *Duration* is a matter of how long the hazard is present. A downburst or tornado exists for minutes or hours, while a hurricane or tropical depression is usually around for days.

### **HIGH WIND EVENTS**

**Location:** On average, six tornadoes touch down somewhere in New England each year. There is no way of knowing where or when the next damaging tornado will strike as they are among the most unpredictable weather phenomena. Downbursts are 10 times more likely to occur than tornadoes. All areas of town are susceptible to damage from high winds.

**Extent:** Moderate

Thunderstorms occur mainly in the summertime; some can be anticipated and detected well in advance while others are “pop-up” storms that are limited in size and duration. Most thunderstorms do not last long in any one location but move through quickly. Tornadoes are violent rotating storms that extend to the ground with winds that can reach 300 miles per hour. They are produced from thunderstorms and can uproot trees and buildings. Tornadoes are classified using the Enhanced Fujita (EF) Scale, based on wind estimates based on damage (below).<sup>8</sup>

#### **Operational Enhanced Fujita (EF) Scale**

<b>Enhanced Fujita Scale</b>						
<b>EF Number</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>3-Second Gust (mph)</b>	<b>65-85</b>	<b>86-110</b>	<b>111-135</b>	<b>136-165</b>	<b>166-200</b>	<b>Over 200</b>
<b>Damage Indicator</b>		<b>Small barns, Farm Outbuildings</b>	<b>One-or two-family residences</b>	<b>Single-Wide Mobile Home</b>	<b>Double-Wide Mobile Homes</b>	<b>Apt, Condo, Townhouse (3 Stories or less)</b>

According to the National Oceanic and Atmospheric Administration (NOAA) a downburst is a strong downdraft, rotational in nature, which causes damaging winds on or near the ground. Winds can exceed 130 mph.<sup>9</sup> Downbursts fall into two categories based on their size:

- microbursts, which cover an area less than 2.5 miles in diameter, and
- macrobursts, covering an area at least 2.5 miles in diameter.

#### **History:**

<b>Hazard</b>	<b>Date</b>	<b>Location</b>	<b>Remarks/Description</b>	<b>Source</b>
Tornado	7/24/2008	Belknap, Carroll, Merrimack, Strafford, & Rockingham Co.	EF2 tornado. In Effingham, trees down, roads closed (Route 153, Town House & Wilkinson Swamp Roads); shed flipped, heavy timber damage; power failure for a week; also impacted Ossipee and Freedom <b>DR-1782</b>	NOAA & HMP Committee
Tornado	7/4/2014	Gilford, Center Harbor	A waterspout touched down on Lake Winnepesaukee briefly. No damage was reported.	NOAA
Tornado	7/30/2015	Warner	An EF0 touched down briefly in Warner. It snapped about 25 trees and tore a roof off a large storage building.	NOAA
Tornado	7/18/2016	Pittsburg	A tornado touched down with winds of about 75 mph and a maximum path width of about 200 yards. 100s of trees were snapped and wires down in multiple locations.	NOAA

<sup>8</sup> For more details go to the NOAA FAQ sheet <http://www.spc.noaa.gov/faq/tornado/ef-scale.html>.

<sup>9</sup> *Weather Glossary*. National Oceanic and Atmospheric Administration, <http://www.weather.gov/glossary/index.php?letter=d>, visited March 8, 2011.



NOAA four reports of tornados in New Hampshire since 2013; no injuries or deaths were reported. In this same time period, there were more than 60 reports of thunderstorm/high wind (>40 mph) events in Carroll County with no deaths or injuries and \$1,000 in damages recorded. Five of these thunderstorm/high wind event reports came from Effingham (7/17/13, 7/2/14, 8/3/15, 7/18/16, & 8/2/17), downing trees and some power lines but no injuries or structural damages were reported.

**Probability of Occurrence:** Highly Likely

**WILDFIRE**

**Location:** Sections of Effingham are heavily wooded; a fire could occur anywhere; however, the steep and relatively remote sides of Green Mountain are susceptible to wildfires. Access could be limited as there are very few roads in this area.

During committee discussions, the representative from NH Div. of Forest & Lands noted that there has been a steep increase in ATV activity in the Pine River Forest, which could lead to more forest fire incidents.

**Extent:** Moderate

A wildfire is defined as a fire in wooded, potentially remote areas that may endanger lives.

The National Wildfire Coordinating Group (NWCG) has defined seven classes of wildfire based on size:

- 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.

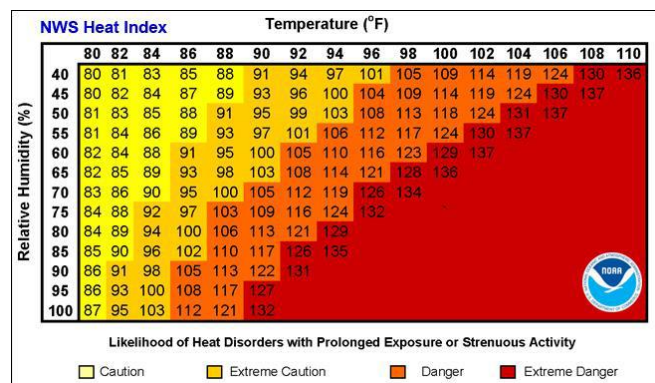
**History:** Between 2014 and 2018 there were 724 wildfires in New Hampshire, burning 2,007 acres, averaging just under 3 acres per fire. The number of fires per year ranged from 53 (2018) to 351 (2016). Carroll County had 11 wildfires in 2018.<sup>10</sup> Effingham reports no fires of significance in the since 2013.

**Probability of Occurrence:** Likely

**EXTREME TEMPERATURES**

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

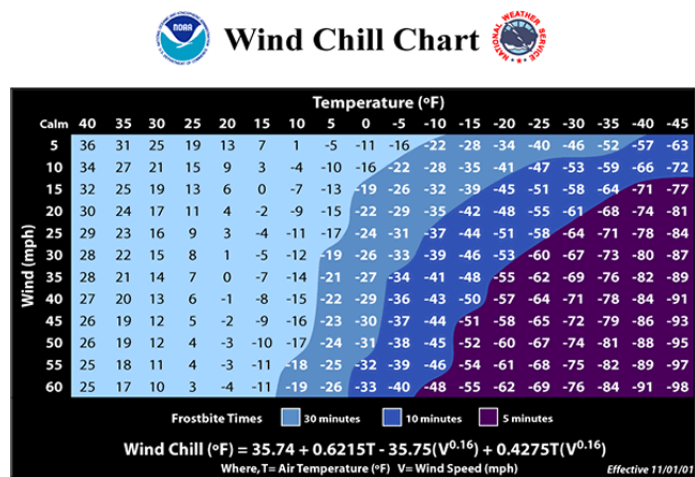


<sup>10</sup> NH Division of Forests and Lands <https://www.nh.gov/nhdfl/documents/2018-forest-fire-town-report.pdf>

of heat disorders with prolonged exposure or strenuous activity. Heat related disorders include heat cramps, heat exhaustion, and heat stroke. High heat and humidity can also adversely affect air quality, leading to respiratory problems. Extreme heat can also damage or kill crops and animals (wild, farm, or domesticated), potentially presenting a risk to the economy.

Extreme Cold events are caused by the southern transport of arctic airmasses into the Northeast. 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 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:**

Extreme temperatures can occur anywhere throughout the town of Effingham. Exposure to the combination of cold and wind could be enhanced at higher, more exposed elevations.

**Extent:** Moderate

- Heat Advisory—Two or more consecutive hours of Heat Index values of 95-99 °F for two or more days OR any duration of Heat Index values of 100-104 °F. A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Warning—Two or more hours with Heat Index values of 105 °F or greater. An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Watches—Heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.
- Excessive Heat Outlooks—Issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event.

- 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 ones 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.<sup>11</sup>

### History:

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 3 <sup>rd</sup> through July 5 <sup>th</sup> , with high temperatures ranging from 101-102°F in Concord on these days. <sup>116</sup> 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. <sup>117</sup>
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. <sup>118</sup>

Effingham has experienced regular extreme hot and cold temperatures annually since the last plan update.

**Probability of Occurrence:** Likely

### **SEVERE WINTER WEATHER**

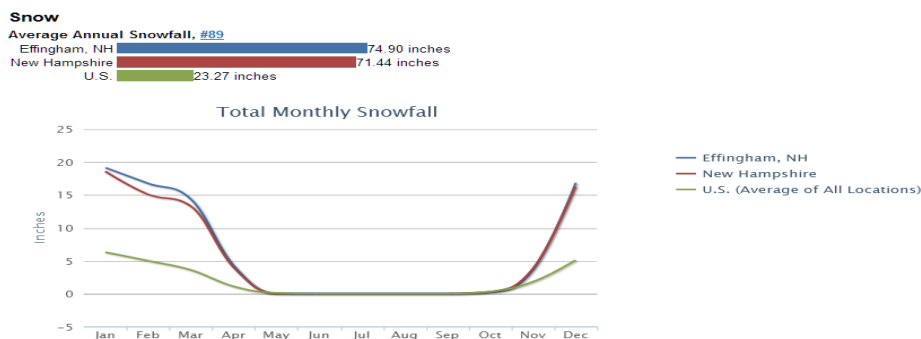
**Location:** Snow and ice storms can affect the entire town. Severe winter weather occurs frequently in the northeast and the possibility exists for residents to have to withstand several days without power. No one area of the town and region is at greater risk than another. These weather events can vary greatly based on slight differences in temperature, humidity, and elevation. Some events will produce a combination of winter weather types. There are segments of the population that are more at risk. These include the elderly, people that need regular medical care, and young children.

**Extent:** Moderate

A heavy snowstorm can be defined as one which deposits four or more inches of snow in a twelve-hour period. Records indicate that eight or more inches have fallen in a single day on most dates from

<sup>11</sup> Adapted from *State of NH Multi-Hazard Mitigation Plan Update 2018* [https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018\\_FINAL.pdf](https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf).

late November through mid-March and that there is at least an inch of snow on the ground most days from January through March. The record also shows that deposits of more than ten inches have happened in each of these months and on several days in February the area has seen more than fifteen and even twenty inches of snow in one day.<sup>12,13</sup>



In the winter months, the region may experience blizzard conditions. 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.<sup>14</sup> Note: The scale below is for the Regional Snowfall Index, which incorporates not only snowfall values but also the spatial extent of the storm and the population impacted<sup>15</sup>.

#### Snowfall Categories

CATEGORY	RSI VALUE	DESCRIPTION
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme

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.

An ice storm coats trees, power lines, streets, vehicles, and roofs with a very slick and heavy coating of ice. In the winter of 1998, a major ice storm crippled much of New Hampshire, coating everything with as much as three inches of ice. The U.S. Army Corps of Engineers, Cold Regions Research and

<sup>12</sup> <http://www.usa.com/effingham-nh-weather.htm>

<sup>13</sup> <https://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KLCI&SafeCityName=Effingham&StateCode=NH&Units=none&IATA=LCL>

<sup>14</sup> "Winter storm terms," [http://www.fema.gov/hazard/winter/wi\\_terms.shtm](http://www.fema.gov/hazard/winter/wi_terms.shtm), visited February 8, 2011.

<sup>15</sup> NOAA <https://www.ncdc.noaa.gov/snow-and-ice/rsi/>

Engineering Laboratory estimates a 40 – 90-year return period for an event with a uniform ice thickness of between 0.75 and 1.25 inches. Ten years later (2008), however, New Hampshire was struck again by another severe ice storm.

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

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) <small>*Revised October, 2011</small>	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.)

The Sperry-Piltz Ice Accumulation (SPIA) Index is being used to forecast and classify ice storms based on a combination of the average thickness of ice coating (referencing expected temperature and precipitation levels) and wind speed; ratings range from 0 to 5.<sup>16</sup> The SPIA Index was first used in the United States in 2009 and is now beginning to be utilized by the National Weather Service.

**History:**

Hazard	Date	Location	Remarks/Description	Source
Snowstorm	2/8-/10/2013	Statewide	Total Public Assistance Grants Dollars obligated was \$6,153,471.49. Snowfall amounts were generally 18”. Declared Disaster, DR-4105.	FEMA
Snowstorm	1/26-1/28/2015	Statewide	Snowfall across the state ranged from 10 to 30 inches. Blizzard conditions led to coastal flooding and splash over. Total Public Assistance Grants Dollars obligated was \$4,939,214.76. Declared Disaster, DR 4209.	FEMA
Snowstorm	3/14-3/15/2017	Statewide	Primary impact was damage to utilities. Two counties received public assistance totaling \$1,687,439.45. Declared Disaster, DR-4316.	FEMA
Blizzard	3/13-3/14/2018	Statewide	Up to 20” of snow with up to 80 mph winds. More than 140,000 households without power and 200 poles down. Especially impacted were Moultonborough, Tuftonboro, Wolfeboro, Alton, Belmont, and Center Harbor. Declared Disaster, DR-4371	HSEM

NOAA lists an additional 34 heavy snowstorms in Southern Carroll County since 2013 with nearly two dozen of them depositing a foot or more of snow. While these events did impact Effingham, no specific measurements related to Effingham were noted, nor were there deaths, injuries, or structural damages noted. The blizzard of March 13-14 2018 did occur on the same night that there was a structural fire in neighboring Parsonsfield, ME. The high winds and downed wires made it more difficult to assist in fighting the fire.

**Probability of Occurrence:** Likely

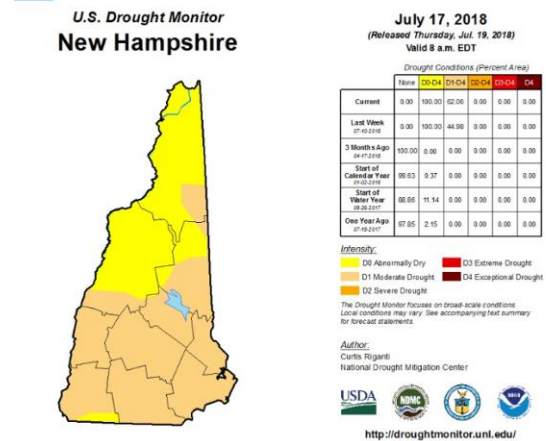
<sup>16</sup> SPIA Northeast webpage, <http://www.spia-index.com/neIce.php>.

**DROUGHT**

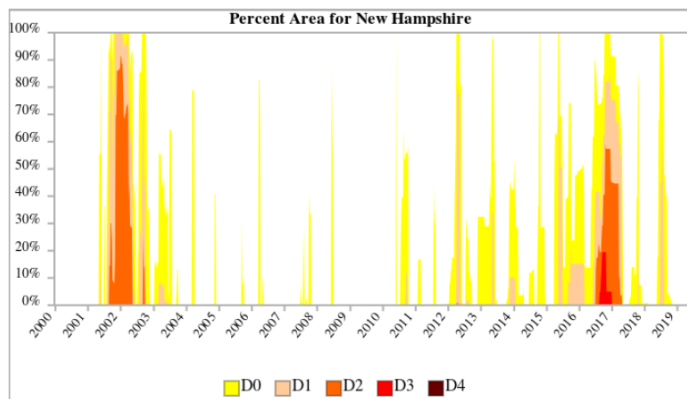
**Location:** Drought is a regional hazard, affecting broad sections of the state at any given time. The effects of a drought are felt locally based on local water resources and individual water uses.

**Extent:** Moderate

Drought occurs when less than the normal amount of water is available for extended periods of time. Effects may include decreased soil moisture, groundwater levels, streamflow, and lake, pond, and well levels may drop. Factors that may contribute to drought include reduced rain/snowfall, increased rates of evaporation, and increased water usage. New Hampshire generally receives adequate rainfall; it is rare that the state experiences extended periods of below normal water supplies.



Since 1990 New Hampshire has had a state Drought Emergency Plan, which identifies four levels of action indicating the severity of the drought: Alert, Warning, Severe, and Emergency. The US Drought Monitor<sup>17</sup> uses a five-level drought intensity scale ranging from Abnormally Dry to Exceptional Drought.



**History:** There have been six extended droughts in New Hampshire in the past century: 1929 – 1936, 1939 – 1944, 1947 – 1950, 1960 – 1969, and 2001 – 2002.<sup>18</sup> Southern New Hampshire received about half of its normal precipitation during 2016. Moderate drought conditions existed in New Hampshire during parts of 2015 and 2016. This continued for nearly a year, ending in April 2017.<sup>19</sup> Effingham has experienced these moderate drought

conditions since the last update but the impacts have been minimal.

**Probability of Occurrence:** Likely

**INLAND FLOODING AND DAM FAILURE**

**Location:** The Effingham Flood Insurance Rate Maps (2013) show the flood boundaries in the event of a 100-year flood, defined as a having a one percent chance of flooding each year. This identifies areas backing up to the Ossipee River, Heath Pond Bog (Pine River), and South River, also near parts of Drake Road, Huntress Bridge Road, Granite Road, and the south end of NH Route 153. Based on their size and classification by NH DES Dam Bureau, failure of any of the dams in town would likely just impact the properties in the 100-year floodplain.

<sup>17</sup> US Drought Monitor <http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?NH>.

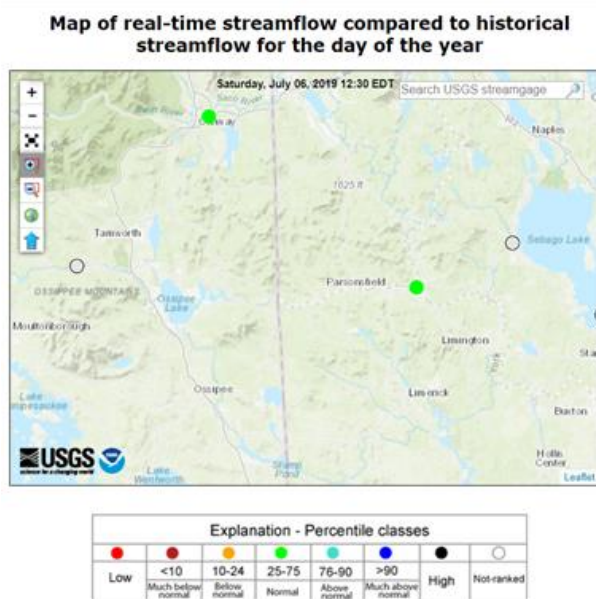
<sup>18</sup> <http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf>.

<sup>19</sup> <https://www.drought.gov/drought/states/new-hampshire>

**Extent:** Moderate

Flooding is defined as a temporary overflow of water onto lands that are not normally covered by water. It results from the overflow of rivers and tributaries or inadequate drainage. Flooding is most commonly associated with structures and properties located within the 1% annual (or 100-year) floodplain. Areas in this floodplain have been identified as having a one percent chance of flooding any given year. This means that flooding in this area is projected to have an average recurrence interval of 100-years; however, that does not mean that a flood in this area will only occur once every hundred years.

There are no US Geological Survey (USGS) stream gauges in Effingham or any of the waterbodies entering the town. The nearest gauges are on the Bearcamp River, in Tamworth and on the Saco River in Conway, NH and in Cornish, ME <sup>20</sup>.



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 (see Appendix G for a detailed description). High (H) and Significant (S) Hazard dams have the highest potential for damage; this could include damage to state or municipal roadways as well as structures. There are five active dams in Effingham, two Low Hazard dams and three Non-Menace dams. (see table below). Due to their size, there are no Emergency Action Plans for any of the dams in Effingham.

**Dams in Effingham**

HAZCL	NAME	RIVER	STATUS	TYPE	USE	CLASSOW	IMPOUND	HEIGHT	DRAIN_AREA	OWNER
L	OSSIPEE LAKE DAM	OSSIPEE RIVER	ACTIVE	CONCRETE	R	S	4095	12	357	NH WATER RESOURCES COUNCIL
L	HUCKINS MILL POND DAM	WILKINSON BROOK	ACTIVE	CONCRETE	R	P	14	10	10	NOT THE OWNER MR PHILLIP WINN
NM	FLANDERS BROOK DAM	CHANDLER BROOK	ACTIVE	EARTH	R	P	1	13	1	MR A L VARRIEUR
NM	RECREATION POND	TR SOUTH RIVER	ACTIVE	EARTH	R	P	0.5	4.5	0.14	MS KELLY
NM	PROVINCE LAKE DAM	PROVINCE LAKE	ACTIVE	CONCRETE	R	P	968	3	7.32	PROVINCE LAKE ASSOC
	YAKUTIS FARM POND DAM	TR SHEPHARD BROOK	EXEMPT	EARTH	C	P	0.6	2	0.18	MR ANTHONY YAKUTIS
	SOUTH RIVER I DAM	SOUTH RIVER	RUINS		R	P	0.5	0	13.4	MR RAYMOND VAN TASSEL
	CHASES MILL DAM	SOUTH RIVER	RUINS		M	P	0	0	11.5	MR JOHN CHASE
	DOWNS DAM	TR SOUTH RIVER	RUINS	EARTH	R	P	0.34	5	0.1	DR RALPH DOWNS

**History:**

Since 2013 ten flood events were reported in the NOAA database for the Carroll County, one resulting in property damage. Four flood events around the state were designated as Declared Disaster events.

<sup>20</sup> <http://waterwatch.usgs.gov/>.

Hazard	Date	Location	Remarks/Description	Source
Flood	6/26-7/3/2013	Grafton, Sullivan, Cheshire	The total Public Assistance was \$5,903,017.87. Declared Disaster, DR-4139	FEMA
Flood	7/1-7/2/2017	Coos, Grafton	The total Public Assistance \$699,661.26. Flood stages ranged from 9.00ft to 13.00ft. Declared Disaster, DR-4329.	FEMA
Flood	10/29 - 11/1/2017	Coos, Grafton, Carroll, Belknap, Merrimack, Sullivan	The total Public Assistance was \$365,851.11. Flood stages ranged from 8.00ft to 13.00ft. Declared Disaster, DR-4355.	FEMA, NOAA
Flood	3/2-3/8/2018	Rockingham	Declared Disaster, DR-4370.	HSEM

COUNTY	LOCATION	DATE	TYPE	DEATHS	INJURIES	PROPERTY DAMAGE
CARROLL CO.	CONWAY	6/3/2012	Flood	0	0	0.00K
CARROLL CO.	CONWAY	9/19/2012	Flood	0	0	0.00K
CARROLL CO.	NORTH CONWAY ARPT	10/30/2012	Flood	0	0	0.00K
CARROLL CO.	CONWAY	1/12/2014	Flood	0	0	0.00K
CARROLL CO.	CONWAY	4/15/2014	Flood	0	0	0.00K
CARROLL CO.	CONWAY	4/15/2014	Flood	0	0	156.00K
CARROLL CO.	CONWAY	5/17/2014	Flood	0	0	0.00K
CARROLL CO.	CONWAY	6/26/2014	Flood	0	0	0.00K
CARROLL CO.	CONWAY	7/2/2017	Flood	0	0	50.00K
CARROLL CO.	CONWAY	10/30/2017	Flood	0	0	50.00K

Seasonal flooding has occurred most years along portions of Drake, Green Mountain, High Watch, Jones, Snow, Hobbs, and Symmes Roads. Also, Pine River Road, Bailey, Clough, and Wilkinson Swamp Road have experienced flooding and/or washouts since the 2013 update. Huntress Bridge Road has also experienced flooding issues during the last six years.

No reports of dam failures since the last update were found.

**Probability of Occurrence:** Flood – Likely, Dam Failure – Occasional

### **LIGHTNING**

**Location:** Lightning can strike anywhere in town. Tall objects tend to be most susceptible to lightning strikes.

**Extent:** Moderate

Lightning is a giant spark of electricity that occurs within the atmosphere, or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the Sun. During a lightning discharge, the sudden heating of the air causes it to expand rapidly, resulting in thunder.<sup>21</sup> Exactly where and when lightning will strike is unknown. These giant sparks of electricity can result in fire, damage to electronic equipment, injury/death to people.

<sup>21</sup> <http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hmp-chapter-3.pdf> accessed September 16, 2013.



The National Weather Service does utilize a six-point scale for characterizing lightning activity called the Lightning Activity Level (LAL) based on frequency of ground strikes along with rainfall and ground conditions.<sup>22</sup>

Lightning Activity Level (LAL)	
LAL 1	No thunderstorms
LAL 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.
LAL 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.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5-minute period.
LAL 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.
LAL 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.

**History:** Two lightning events occurred since 2013 that merited documentation. In June 2013 there was a strike at a scout camp in neighboring Gilmanton (near West Alton) sending two dozen people to local hospitals, no deaths or serious injuries occurred. There was also a lightning strike in nearby Madison, resulting in two injuries. Although lightning has occurred each summer in Effingham since 2013, there have not been any reports of damage, death, or injury in town since then.

Hazard	Date	Location	Remarks/Description	Source
Lightning	Summer 2011	Effingham	Lightning hit a tree, which fell on a house.	HMP Committee
Lightning	6/24/2013	West Alton	Large hail and wet microbursts were main concerns. 30 people were injured by lightning at a Boy Scout camp in Gilmanton.	NOAA
Lightning	7/18/2013	Melvin Village	Wind damage and heavy rain were the main concerns as the storm moved through the region. Lightning struck two sailboats causing them to catch fire and sink in Lake Winnepesaukee.	NOAA

COUNTY	LOCATION	DATE	EVENT TYPE	DEATHS	INJURIES	PROPERTY DAMAGE
BELKNAP CO.	WEIRS BEACH	7/4/2012	Lightning	0	3	0.00K
BELKNAP CO.	WEST ALTON	6/24/2013	Lightning	0	30	0.00K
CARROLL CO.	MELVIN VLG	7/18/2013	Lightning	0	0	20.00K
CARROLL CO.	EAST MADISON	7/2/2014	Lightning	0	2	0.00K

**Probability of Occurrence:** Likely.

### **SOLAR STORMS & SPACE WEATHER**

The term space weather is relatively new and describes the dynamic conditions in the Earth's outer space environment, similar to how the terms "climate" and "weather" refer to the conditions in the Earth's lower atmosphere. Space weather includes any and all conditions and events on the sun, in the

<sup>22</sup> NWS Definitions webpage, <http://graphical.weather.gov/definitions/defineLAL.html>. Accessed June 3, 2014.

solar wind, in near-Earth space, and in our upper atmosphere that can affect space-borne and ground-based technological systems.

As society becomes increasingly reliant on electronics and technology, the hazards presented by space weather are not to be underestimated. The magnetic disturbances that solar storms can bring can disrupt communications, damage or destroy electronic components, corrode gas and oil pipelines, and cause significant damage to spacecraft and satellites outside the Earth's protective atmosphere.

### Location:

Solar storms and space weather are always impacting the Earth and its atmosphere and are therefore an ongoing threat to New Hampshire and all parts of Effingham. While the Earth is somewhat protected from solar storms and space weather by its upper atmosphere, the potential for a loss of communications, power, and GPS exists on a daily basis.

### Extent: Moderate

The State of New Hampshire Multi-Hazard Mitigation Plan Update (2018) describes three different types of events: Geomagnetic Storms, Solar Radiation Storms, and Radio Blackout. Each of these is then rated on a five-level scale (minor, moderate, strong, severe, extreme), with descriptions of increasing impacts on power, spacecraft, biological, satellite, high frequency radio, and navigation systems. The area of greatest concern to Effingham is that dealing with communication; the scale addressing Radio Blackout is shown below<sup>23</sup>.

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

### History:

No significant events reported in New Hampshire and none noted for Effingham. Nearby events include Quebec, Canada, which experienced a 9-hour blackout in March of 1989 when solar winds caused a fluctuation in the Earth's magnetic field and caused Hydro-Quebec's transmission to go down.<sup>24</sup>

### Probability of Occurrence: Likely

<sup>23</sup> NOAA Space Weather Prediction Center, <https://www.swpc.noaa.gov/noaa-scales-explanation>

<sup>24</sup> Adapted from the *State of New Hampshire Multi-Hazard Mitigation Plan Update (2018)*, [https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018\\_FINAL.pdf](https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf).

### **TROPICAL & POST-TROPICAL CYCLONES**

Tropical and Post-Tropical cyclones are localized, very intense low-pressure wind system, forming over tropical oceans with winds of hurricane force. There are many stages throughout the life cycle of a tropical cyclone.

- Potential Tropical Cyclone: Describes a disturbance that is not yet a tropical cyclone, however, poses the threat of becoming one
- Tropical Disturbance: A cluster of showers and thunderstorms that flares up over the tropics. Usually 100-300 miles in diameter and generally move westward.
- Tropical Storm: Sustained wind levels are between 34 knots and 64 knots (39 to 74 MPH)
- Hurricane: Once a tropical cyclone sustains wind levels between 64 and 96 knots (74 to 111 MPH)
- Major Hurricane: A tropical cyclone with maximum sustained winds of 96 knots (111 MPH) and higher. Major hurricanes are classified as category 3 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:** A cyclone could affect all areas of Effingham. Stream crossings, floodplains, and steep slopes are most likely to be impacted.

**Extent:** Moderate

Hurricanes are severe tropical storms that have winds at least 74 miles per hour. In the Lakes Region they could produce heavy rain and strong winds that could cause flooding or damage buildings, trees, power lines, and cars.<sup>25</sup> Hurricanes are measured by the Saffir-Simpson Hurricane Scale: a 1-5 rating based on a hurricane's intensity using wind speed as the determining factor (see table below). The scale is used to give an estimate of the potential property damage and flooding expected from a hurricane landfall.

#### **Saffir-Simpson Hurricane Scale**

<b>Category</b>	<b>Characteristics</b>
<b>1</b>	Winds 74-95 mph (64-82 kts or 119-153 km/hr). Storm surge generally 4-5 ft above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Some damage to poorly constructed signs. Also, some coastal road flooding and minor pier damage.
<b>2</b>	Winds 96-110 mph (83-95 kts or 154-177 km/hr). Storm surge generally 6-8 feet above normal. Some roofing material, door, and window damage of buildings. Considerable damage to shrubbery and trees with some trees blown down. Considerable damage to mobile homes, poorly constructed signs, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of the hurricane center. Small craft in unprotected anchorages break moorings.

<sup>25</sup> [http://www.fema.gov/hazard/hurricane/hu\\_about.shtm](http://www.fema.gov/hazard/hurricane/hu_about.shtm), visited January 25, 2011.

3	Winds 111-129 mph (96-113 kts or 178-209 km/hr). Storm surge generally 9-12 ft above normal. Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Damage to shrubbery and trees with foliage blown off trees and large trees blown down. Mobile homes and poorly constructed signs are destroyed. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris. Terrain continuously lower than 5 ft above mean sea level may be flooded inland 8 miles (13 km) or more. Evacuation of low-lying residences with several blocks of the shoreline may be required.
4	Winds 130-156 mph (114-135 kts or 210-249 km/hr). Storm surge generally 13-18 ft above normal. More extensive curtainwall failures with some complete roof structure failures on small residences. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to doors and windows. Low-lying escape routes may be cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of structures near the shore. Terrain lower than 10 ft above sea level may be flooded requiring massive evacuation of residential areas as far inland as 6 miles (10 km).
5	Winds greater than 156 mph (135 kts or 249 km/hr). Storm surge generally greater than 18 ft above normal. Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive window and door damage. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of all structures located less than 15 ft above sea level and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5-10 miles (8-16 km) of the shoreline may be required.

Source: <http://www.nhc.noaa.gov/aboutsshs.shtml>

According to NOAA, while 2010 was one of the busiest hurricane seasons on record, 2013 was one of the least active hurricane seasons.<sup>26</sup> New Hampshire has not experienced a severe hurricane directly since 1938.

On September 21, 1938, a Category 3 hurricane claimed 13 lives in New Hampshire and many more throughout New England. Official records at the Weather Bureau in Concord show sustained winds of 56 miles per hour, but around the state, gusts around 100 miles per hour were reported, mostly due to topographical acceleration. The Merrimack River rose nearly 11 feet above its flood stage, *The Hanover Gazette* reported that in New Hampshire, 60,000 people were homeless, and many areas were without power. Damages were estimated at \$22 million.<sup>27</sup> Hurricane Bob, a category 2 storm, in 1991, was declared a major federal disaster in New Hampshire and is recorded as a severe storm in the state's history.<sup>28</sup>

**History:** In the past five years no hurricanes have hit the region. By the time that a hurricane reaches central New Hampshire, it is rare that it retains the characteristics of a hurricane. Wind speeds usually dissipate but they can still bring a great deal of rainfall to the region. That was the case with the remnants of Hurricanes Irene and Sandy, which hit the area in 2011 and 2012 as tropical depressions. There was little impact to Effingham from these events. The town has not experienced a tropical or post-tropical cyclone since 2013.

**Probability of Occurrence:** Occasional

<sup>26</sup> [http://www.noaanews.noaa.gov/stories2010/20101129\\_hurricane\\_season.html](http://www.noaanews.noaa.gov/stories2010/20101129_hurricane_season.html) visited January 25, 2011 and [http://www.noaanews.noaa.gov/stories2013/20131125\\_end\\_of\\_hurricane\\_season.html](http://www.noaanews.noaa.gov/stories2013/20131125_end_of_hurricane_season.html).

<sup>27</sup> <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html>, visited January 25, 2011.

<sup>28</sup> <http://www.fema.gov/news/event.fema?id=2118> visited January 25, 2011

**EARTHQUAKE**

**Location:** An earthquake could affect all areas of Effingham. The infrastructure such as bridges are of greatest concern.

**Extent:** Moderate

An earthquake is a series of vibrations induced in the Earth's crust by the abrupt rupture and rebound of rocks in which elastic strain has been slowly accumulating. Earthquakes are commonly measured using *magnitude*, or the amount of seismic energy released at the epicenter of the earthquake. The Richter magnitude scale is a mathematical device used to compare the size of earthquakes, shown in the table below<sup>29</sup>

**Richter Magnitude Scale**

Magnitude	Earthquake Effects
2.5 or less	Usually not felt but can be recorded by seismograph.
2.5 to 5.4	Often felt, but only causes minor damage.
5.5 to 6.0	Slight damage to buildings and other structures.
6.1 to 6.9	May cause a lot of damage in very populated areas.
7.0 to 7.9	Major earthquake. Serious damage.
8.0 or greater	Great earthquake. Can totally destroy communities near the epicenter.

New Hampshire is in an area of moderate seismic activity with respect to other regions of the country. This means 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 the Pacific coast. There is the potential for nearby earthquakes to register 5.5 on the Richter Scale, causing slight damage to buildings and structures. 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, possibly enlarging the area of damage.<sup>30</sup> The strongest earthquakes to strike New Hampshire occurred December 20 and 24, 1940 in the town of Ossipee. Both earthquakes had a magnitude of 5.5 and were felt over an area of 400,000 square miles.

**History:** On average, every other year the Lakes Region experiences an earthquake, though these earthquakes are mild and go mostly undetected by people. Sanbornton and Tamworth are identified as major epicenters in the region.<sup>31</sup> A search of the USGS National Earthquake Information Center database shows that since 1990 there have been 22 earthquakes with a magnitude of at least 2.5 within a 100 km (62 mi.) radius of Effingham; the largest was magnitude 4.7 (image left below).<sup>32</sup> Seven such earthquakes have occurred since 2010, including the 4.7 quake in southern Maine that shook the region on October 16, 2012. It was felt in Effingham; no damage was reported. The image below right indicates the communities where people reported feeling this event.<sup>33</sup> No earthquakes of magnitude 2.5 or higher have occurred in the area since the 2013 update and no impacts have been felt in Effingham during that timeframe.

<sup>29</sup> <http://pubs.usgs.gov/gip/earthq4/severitygip.html>, visited February 8, 2011.

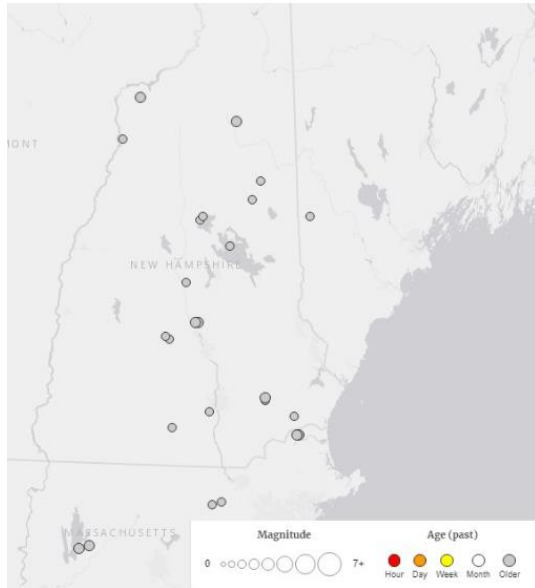
<sup>30</sup> <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html> visited February 8, 2011.

<sup>31</sup> <http://des.nh.gov/organization/commissioner/pip/factsheets/geo/documents/geo-3.pdf>, pg. 3, visited January 25, 2011.

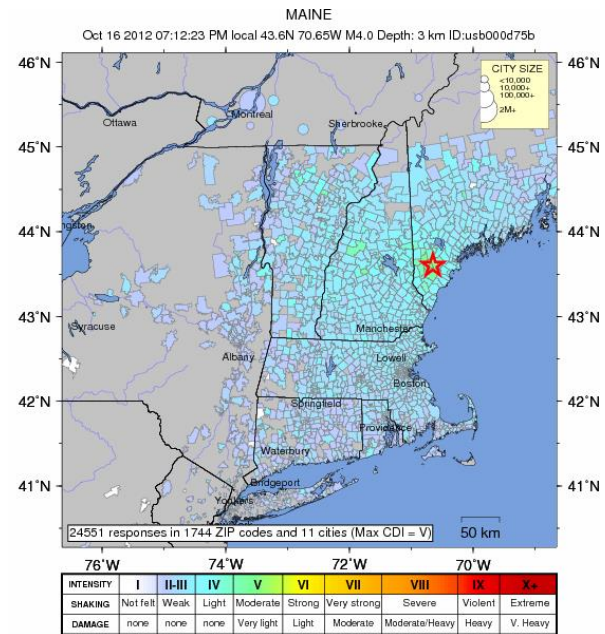
<sup>32</sup> USGS. <https://earthquake.usgs.gov/earthquakes/search/>

<sup>33</sup> USGS, Earthquake Archive Search. <http://earthquake.usgs.gov/earthquakes/search/> accessed August 8, 2013

**Probability of Occurrence: Occasional**



Earthquakes within 100 km of Effingham, NH since 1990.



Areas where the October 16, 2012 earthquake was felt

**INFECTIOUS DISEASE**

Infectious diseases are illnesses caused by organisms—such as bacteria, viruses, fungi or parasites. 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.

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.

**Location**

The entire State of New Hampshire is at risk for Infectious Diseases. The prevalent diseases can change based on the time of year, such as the influenza virus in the winter and foodborne disease in the summer. Schools, camps, and areas where the elderly gather are good places for transmission to occur.

**Extent: Moderate**

Infectious disease is not a “natural hazard” and does not have a true “extent” as far as hazard mitigation planning goes, rather the focus is on preparedness and planning to minimize its impact on people. 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

Effingham's middle and high school children attend school in the nearby town of Wolfeboro, thus enabling infection and viruses to be transmitted from elsewhere. Given the seasonal population fluctuation among Effingham, an outbreak of an infectious disease is possible. An epidemic could be categorized by 5 things: Foodborne illnesses (E. Coli), Water (Cholera), Vaccine Preventable (Measles), Sexually Transmitted (HIV), and Person-to-Person (meningitis).

**History:** The 2012-13 flu season was much more severe in New Hampshire than any of the previous decade; 35 deaths occurred statewide, the most since 1997.<sup>34</sup> While there certainly have been minor outbreaks of flu in Effingham, no major outbreaks of this or any other infectious disease was identified as occurring since the last plan.

While no specific cases were discussed, the committee expressed concern about the increasing frequency of Lyme disease in Effingham since the 2013 Plan. Lyme disease is transmitted through the bite of the black-legged tick and can result in malaise, fever, muscle and joint pain. If left untreated it can progress to more severe neural and cardiac symptoms. For the past five years New Hampshire has had one of the highest rates of Lyme disease in the country. A monthly summary of infectious disease cases in NH is available at the NH DHHS website.<sup>35</sup>

**Probability of Occurrence:** Occasional.

### **SUMMARY**

It is cost prohibitive to make the built environment resistant to the most devastating natural hazards that could occur, though reasonable measures can be taken to minimize loss of life and property damage. Effingham may be affected by an unavoidable extraordinary circumstance such as a violent earthquake, but historically, events of this magnitude have been infrequent. Those natural events that are common to the northeast also have common elements of concern for public safety. These include the potential for long-term power outages, the potential need for short-term sheltering facilities, and the availability of equipment and trained personnel. Key to loss prevention in these relatively common event scenarios is pre-event planning that critically assesses communications within the community, mutual aid resources regionally, public awareness and education, and emergency response training.

Lists of hazard events prior to 2013 is included in Appendix E.

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<sup>34</sup> NH Department of Health and Human Services <http://www.dhhs.nh.gov/media/pr/2013/01-jan/01112013flu.htm>, visited January 17, 2013.

<sup>35</sup> <https://www.dhhs.nh.gov/data/index.htm>

## CHAPTER IV: VULNERABILITY ASSESSMENT

### A. INVENTORY ASSETS

The list of critical infrastructure for the town of Effingham was updated by the Committee. Note: The generators at Emergency Response Facilities are permanent.

<b>EMERGENCY REPOSE FACILITIES (ERF)</b>			
<b>ERF'S are primary facilities and resources that may be needed during an emergency response.</b>			
<b>Facility</b>	<b>Type of Facility</b>	<b>Hazard Risk</b>	
Municipal Building (generator)	EOC & Town Records	All Hazards	1
Effingham Elementary (generator)	Primary Shelter (90 cots)	Wildfire/Structure & All Hazards	2
Police Station (generator)	Police Station	All Hazards	1
Fire Station #2 (generator)	Fire Station	Wildfire/Structure & All Hazard	2
Fire Station #1	Fire Station	Wildfire/Structure & All Hazard	2
Field across from Municipal Building	Heli Landing Zone	All Hazards	1
Elm Street Bridge over Pine River	Bridge on Evacuation Route	Flood & All Hazards	1
Huntress Bridge	Bridge on Evacuation Route	Flood & All Hazards	1
NH Route 25 Bridge (new)	Bridge on Evacuation Route	Flood & All Hazards	1
NH Route 153 Bridge (new)	Bridge on Evacuation Route	Flood & All Hazards	1
Huggins Hospital (Wolfeboro)	Medical	All Hazards	1
Memorial Hospital (North Conway)	Medical	All Hazards	1
Ossipee Valley EMS	EMS	All Hazards	1
<b>EVACUATION ROUTES</b>			
NH Route 25		All Hazards	1
NH Route 153		Flooding, Wind, Fire & All Hazards	2
Town House Road		Flooding, Wind, Fire & All Hazards	2
Green Mountain Road		Flooding, Wind, Fire & All Hazards	2
Elm Street		Flooding, Wind, Fire & All Hazards	2
Pine River Road		Flooding, Wind, Fire & All Hazards	2
Highwatch Road		Flooding, Wind, Fire & All Hazards	2



<b>NON-EMERGENCY RESPONSE FACILITIES (NERF)</b>			
<b>NERF'S are facilities, that although they are critical, they are not necessary for the immediate emergency response efforts. This would include utilities, facilities to protect public health and safety and to provide backup emergency facilities and facilities whose failure could present additional hazards.</b>			
<b>Facility</b>	<b>Type of Facility</b>	<b>Hazard Susceptibility</b>	
Municipal Building	Secondary Shelter	All Hazards	1
Fire Station #2	Secondary Shelter	Wildfire/Structure & All Hazards	2
Lost Valley (Homeowners' Association)	Community Water Supply	Flooding, Wildfire/Structure & All Hazards	2
Green Mountain Treatment Center	Community Water Supply	Wildfire/Structure & All Hazards	1
Ryefield Village (Apartments)	Community Water Supply	All Hazards	1
Communications Switching Station (Elm Street)	Communications	All Hazards	1
Communications Switching Station (Library)	Communications	All Hazards	1

<b>FACILITIES &amp; PEOPLE TO PROTECT (FPP)</b>			
<b>FPPs are facilities that need to be protected because of their importance to the town and to residents who may need help during a hazardous event.</b>			
<b>Facility</b>	<b>Type of Facility</b>	<b>Hazard Susceptibility</b>	
Effingham Elementary School	School	Wildfire/Structure & All Hazards	2
Green Mountain Treatment Center	Special Needs Population	Wildfire/Structure & All Hazards	1
JJ's Playland	Day Care Facilities	Wildfire/Structure & All Hazards	1
Lawton's Daycare	Day Care Facilities	Wildfire/Structure & All Hazards	1
Camp Marist (seasonal)	Gathering of People	Wildfire/Structure, Flooding & All Hazards	2
Ossipee Campground	Seasonal Campground	Wildfire/Structure & All Hazards	1
Province Shores Campground	Seasonal Campground	Wildfire/Structure & All Hazards	1
Jolly Rogers Campground	Seasonal Campground	Wildfire/Structure & All Hazards	1
Lord's Hill Historic District	Historic Resources	Wildfire/Structure & All Hazards	1
Center Effingham Historic District	Historic Resources	Wildfire/Structure & All Hazards	1
Iron Works Road over Ossipee River	Dam	Flooding & All Hazards	1
Hutchins Pond Dam (private)	Dam	Flooding & All Hazards	2

<b>POTENTIAL RESOURCES (PR)</b>			
<b>PRs are potential resources that could be helpful for emergency response in the case of a hazardous event.</b>			
<b>Facility</b>	<b>Type of Facility</b>	<b>Hazard Susceptibility</b>	
Fire Station (for FD use only)	Emergency Fuel Facilities	Wildfire/Structure & All Hazards	2
Transfer Station	Sand & road materials	Wildfire/Structure & All Hazards	1
Hannaford's	Food, water, and household supplies	All hazards	1
Boyle's Food Mart	Food & Water	Wildfire/Structure & All Hazards	1
Abbott's Staples – General Store	Food & Water, Fuel	Wildfire/Structure & All Hazards	1

## B. IMPACT OF HAZARDS

The impact of a hazard is the potential degree of damage that could occur in Effingham. To rate the impact of a hazard, committee members considered the damages and consequences that might result from an event, in three separate impact areas Human, Property, and Businesses & Services. This incorporates the likelihood of injury or death, the assessed value of each critical facility and the vulnerability of these facilities. It also takes into account the anticipated disruption of services to residents and visitors. Four levels of impact were used, as defined below:

- **Low:** There is little likelihood that injury or death will result from this hazard. The damage to land and property will likely be limited. Essential services and other services that residents and visitors depend upon will not be interrupted.
- **Moderate:** There is some likelihood that injury or death will result from this hazard. There will likely be some damage to land and property. There will likely be some interruption of essential services and other services that residents and visitors depend upon for hours of days.
- **High:** It is quite likely that injury or death will result from this hazard. There will be damage to multiple properties. Essential services and other services that residents and visitors depend upon be likely be interrupted for days.
- **Catastrophic:** Multiple injuries or deaths will likely result from this hazard. Damage to properties will be widespread and extensive. Essential services and other services that residents and visitors depend upon be likely be interrupted for days or weeks.

The 2018 assessed value of all the structures in Effingham is \$115,031,800. The value of the residential structures in town totals \$87,745,525 or 76%. The value of the commercial/industrial structures in Effingham is \$12,887,900 and the value of the tax-exempt structures is \$8,314,475. An additional \$6,083,900 of structural value is classified as public utilities. The figures used are from the town's 2018 MS-1 Report to the NH Dept. of Revenue. The table below illustrates the potential loss if a hazard event impacted even a small percentage of the structures in Effingham.

### Effingham Structural Assessment (2018) and Selected Percentages

	Residential*	Manufactured Housing	All Housing	Comm/ Indust	Exempt	Utilities	Total
Value - structures	\$82,916,625	\$4,828,900	\$87,745,525	\$12,887,900	\$8,314,475	\$6,083,900	\$115,031,800
1%	\$829,166	\$48,289	\$877,455	\$128,879	\$83,145	\$60,839	\$1,150,318
2%	\$1,658,333	\$96,578	\$1,754,911	\$257,758	\$166,290	\$121,678	\$2,300,636
5%	\$4,145,831	\$241,445	\$4,387,276	\$644,395	\$415,724	\$304,195	\$5,751,590

\*Residential includes Duplex, Multi-Family, and Condominium

In Chapter II Community Profile it was pointed out that while the estimated year-round population of Effingham in 2017 was 1,481 residents, the true number of people in the town in the summertime could be much more than that figure due to seasonal visitors.

### Severe Winds

Tornados and downbursts could strike anywhere in town with little, if any warning. While individual events may be small and rare, their impacts could be devastating. All structures, especially older ones, which are not necessarily built to the current building code standards, could be at risk.

Tornadoes are relatively uncommon natural hazards in New Hampshire; on average, on average, about six tornadoes touch down each year. Damage largely depends on where the tornado strikes. If it were to strike an inhabited area, the impact could be severe. More common in Effingham would be a microburst event; these are becoming more and more common in the Lakes Region and could result in damage.

Effingham has experienced both tornadoes and downbursts. On July 24, 2008, a tornado cut a 50-mile swath from near Concord through Ossipee. In Effingham, this tornado left a large swath of damage including fallen power lines and power outages, blow downs and minor damages to structures on Wilkinson Swamp Road. Downed timber and power lines blocked two major roads in Effingham, including the road to the Effingham Fire Station.

Damage can occur to most structures in town as a result of downed trees in any high wind event, including the commonly occurring thunderstorms. These winds can bring down limbs and trees, causing damage to structure as well as pulling down power and telephone lines and blocking roads. This is particularly the case along private roadways that may only get limited cutback of vegetation. No critical facilities or infrastructure were identified as particularly vulnerable.

All structures in Effingham are susceptible to damage by high wind events, whether through thunderstorms, downburst, or tornado. The potential impact to the town due to high winds is considered moderate to high. Assuming 1% to 5% town-wide damage to buildings any given year, high winds could result in \$1,150,318 to \$5,751,590 in damages annually.

### **Wildfire**

Due to the abundance of slash on the forest floor left by logging operations and blow downs, there is potential for fast burning fuels. In addition, a small part of the Effingham Falls area of town is in the "Pine Barrens", an area abundant in fast burning fuel sources, such as pitch pines, high bush blueberries and scrub oak. In 1947, a large wildfire that started in the Pine Barrens burned hundreds of acres in the region. The State of New Hampshire has done and will continue to do controlled burns in the Pine Barrens in order to mitigate the risk for wildfire.

Burn permits are required in Effingham, but often burning takes place without the proper permits. The steep terrain and heavily forested areas of town are difficult to monitor; therefore, the occasional unauthorized burn will take place. The Town reports no fires of significance in the recent past.

At the meetings it was noted by the state forest ranger that there has been cutting and an increased amount of ATV activity in the forests, raising the potential for a fire to ignite. The state does have a fire watch tower on the top of Green Mountain that is staffed on Class 3 fire days, increasing the likelihood of a fire being spotted and suppressed before it gets out of hand.

Due to the heavily wooded nature of the town, all properties in town have the potential to be impacted by a wildland fire. It was noted that water resources are much more limited on the north side of town than in other parts of town. The town's ISO rating 8.5. This reflects the insurance industry's assessment of town's available firefighting infrastructure and assets.

The impact on the town by a wildfire event would be moderate to high. Assuming 2% to 5% town-wide damage to buildings, each year wildfire could result in \$2,300,636 to \$5,751,590 in damages.

**Extreme Temperature**

The impact of extreme temperatures would be felt by all but the most vulnerable are the elderly, the young, and those with limited resources. Impacts are mainly to people's health and the costs associated with helping people feel comfortable and responding to their immediate health care needs. There could also be impacts to structures, especially due to frozen and burst pipes. The potential for impact to the town is seen as moderate. Assuming 2% town-wide damage to buildings, each year extreme temperatures could result in \$2,300,636 in damages.

**Severe Winter Weather**

The school and any flat- roofed or low-sloped buildings are all susceptible to damage from snow and ice loads. The Municipal Office Building has a low sloping roof, which may simply require extra maintenance for safe use during winter storm events.

Downed limbs and wires and unplowed or untreated roads can severely limit emergency access to many residences. The potential for very cold temperatures and loss of power can quickly compound the issue. Heavy snowstorms typically occur from December through April. New England usually experiences at least one or two heavy snowstorms with varying degrees of severity each year. Power outages, extreme cold and impacts to infrastructure are all effects of winter storms that have been felt in Effingham in the past. All these impacts are a risk to the community, including isolation, especially of the elderly (19.5% of the population), and increased traffic accidents.

In addition, the residents of Effingham rely on private wells, so they are dependent on electricity to not only operate their heating systems but also their water systems; loss of power can be deadly. Fire response can be hindered not only by poor road conditions, but also by frozen water sources.

Although Effingham's contracted road agent crew generally handles usual snow amounts without difficulty, Effingham's roads are often impacted by very poor weather conditions. The topography of Effingham and the steep slopes of Green Mountain can make for challenging work during a strong winter storm. In addition, Effingham typically receives more annual snowfall than do other NH towns. The Town recorded 13 feet of total accumulation in 2010 and three 2-foot snowstorms in one week in 2002.

Unlike normal snowfall, ice storms could present significant problems including vehicular accidents. Downed power lines and fallen trees make it difficult for the contracted road agent and emergency crews to respond. School busses are also at risk.

Heavy snow and ice storms can also cause widespread damage to forested areas. The 1998 ice storm inflicted several million dollars' worth of damage to northern New Hampshire's forests and structures and also had an impact on Effingham.

All structures in Effingham are susceptible to damage by winter weather events, whether through ice storms, blizzards, or the heavy, wet snow often associated with a nor'easter. The potential for impact to the town is seen as moderate. Assuming 1% to 5% town-wide damage to buildings, winter weather could result in \$1,150,318 to \$5,751,590 in damages annually.

**Drought**

Drought could affect individual homeowners with shallow wells, along with agricultural businesses. An extended period without precipitation could elevate the risk for wildfire and blowdowns in the

forest and with an extreme drought, the water supply and aquifer levels could be threatened. A lack of snow may also contribute to the effects of drought. In addition, all of Effingham's residents rely on wells.

The impact on the town by a drought event would be low to moderate. The cost of drought in Effingham is difficult to calculate as any cost would primarily result from an associated fire risk and diminished water supply. Therefore, the potential loss structure value was not estimated.

### **Flooding/Dam Failure**

Effingham began participation in the National Flood Insurance Program (NFIP) on August 1, 2009. The town is an active participant in the program through the administration of its floodplain ordinance. This includes correspondence with the NH Floodplain Manager regarding specific issues and periodically updating the town's floodplain ordinance. Additionally, the Zoning enforcement Officer participates in training programs offered by the state. By actively participating in the NFIP property owners can purchase flood insurance through this FEMA program.

The digital Flood Insurance Rate Maps (DFIRM) for Effingham were developed March 19, 2013 and are available through the FEMA website. The county Flood Insurance Study (FIS) was adopted on the same date. The town's most recent Community Assistance Contact with the NH Floodplain Manager was on 9/11/2015. There have not been any Community Assistance Visits to date. The town's Floodplain Ordinance was amended in 2013 in coordination with New Hampshire Office of Energy and Planning, adopted at Town Meeting, and are now compliant. The Effingham Zoning Enforcement Officer is responsible for maintaining floodproofing and elevation certificates. The ZEO will continue to inspect and maintain these certificates. The town will continue the practice described above of consulting with the NH Floodplain Manager on Floodplain Ordinance issues. The ZEO will continue to work with the Effingham Planning Board to enforce the town's up-to-date Floodplain Ordinance.

There are currently three buildings with flood insurance policies in force through the NFIP with a total of \$480,000 of insurance in force. All of these are single family homes. Two of the insured properties are in the A-Zone (1% chance of an annual flood), the other property is in the B, C, and X Zones (less than 1% chance of an annual flood - Moderate to Low Risk Areas)<sup>36</sup>. Since 2009 there have been no losses paid out (for a total of \$0). There have been no NFIP-insured structures in Effingham that have sustained repetitive losses. If there is a 1% chance of each of these properties flooding each year, then there is the potential that flooding could result in \$4,800 in damages. Analysis in the 2013 HMP found 114 structures with an estimated assessed value of \$21,860,875. The difference between the potential number of structures (114) and the actual number covered through the NFIP program (2) is substantial.

Flooding is often associated with hurricanes, heavy rains, ice jams and rapid snowmelt in the spring, as well as the expanding beaver population. These factors cause all three of Effingham's rivers (the South Ossipee, and Pine Rivers) to overflow their banks, making the roads impassable and cutting homes in flooded areas off from emergency responders.

Heavy rain, rapid snowmelt and stream flooding also cause culverts to be overwhelmed and roads to wash out. Today, with changes in land use, aging roads, designs that are no longer effective and

undersized - culverts, the risk of flooding and the subsequent erosion of Effingham's roadways is a serious concern. Inadequate and aging storm water drainage systems create local flooding on many of Effingham's roads. It is estimated that the Town experiences some sort of storm water problem whenever there is two or more inches of rain in a short period of time.

Effingham's localized flooding issues have been and continue to be addressed. work is currently being done along Green Mountain Road. It was noted that flooding due to undersized culverts occurs along portions of Drake, Green Mountain, High Watch, Jones, Snow, Hobbs, and Symmes Roads. Pine River Road, Bailey, Clough, and Wilkinson Swamp Road cross flowing water and have experienced flooding and/or washouts in the past. Huntress Bridge Road also experiences issues with drainage.

Dam Failure is defined a rapid, uncontrolled release of impounded water. Spanning the towns of Ossipee, Freedom and Effingham, Ossipee Lake at 3,245 acres is the sixth largest lake that is totally in NH. A concrete dam holds back this large volume of water; failure of the dam would create flooding that could affect shore-front properties and do damage to homes on Symmes and Partridge Cove Roads. This dam is currently part of a state reconstruction project to replace the current structure (start date pending).

Estimates of impact usually focus on structural values. It is important to note that much of the impact from flooding in Effingham has been to infrastructure. There are significant costs to repairing and maintaining roads that are so often affected by storm water flooding and erosion. In addition, there are significant life safety issues; residents are often cut off because of road closures and erosion.

Potential impact to the town due to flooding or dam failure is considered moderate to high. Assuming 1% to 5% town-wide damage to buildings any given year, high winds could result in \$1,150,318 to \$5,751,590 in damages annually.

### **Lightning**

Severe lightning as a result of summer storms or as a residual effect from hurricanes and tornadoes has occurred in Effingham. Many of the Town's structures are older buildings and virtually all structures are surrounded by forest. Dry timber on the forest floor and the age of many structures combined with lightning strikes can pose a significant disaster threat. It can also wreak havoc with electrical and communications systems. Lightning could do damage to specific structures, injure or kill an individual, but the direct damage would not be widespread.

In the summer of 2011, a lightning strike hit a tree which fell onto a house. Lightning is a potential problem, but the affects would be localized.

The potential impact to the town due to lightning is low to moderate. Assuming 1% town-wide damage to buildings annually, then each year lightning could result in \$1,150,318 in damages.

### **Solar Storms & Space Weather**

While there have not been any known impacts to Effingham due to solar or space activity, there is a recognition by the committee that there may be some interruption of communication and other electronic services in the coming years, even to a small, rural town. The potential impact to the town was rated as moderate to high, but as the major impact would be through interruption of services, a dollar amount was not put on the impact at this time.

### **Tropical or Post-Tropical Cyclone**

While most facilities in town have the potential to be impacted in some fashion, direct structural impact would most likely affect the structures in the floodplain or along steep hillsides. Emergency services might be compromised due to heavy rain or downed trees.

Higher category hurricanes are rare in central New Hampshire, but they could occur. More commonly these storms impact the area as tropical storms. In August 2011, the remnants of Hurricane Irene produced high winds and torrential rain which lead to road closures due to several factors including flooding, downed power lines, and downed trees.

All structures in Effingham are susceptible to damage by cyclones, which can bring high winds, heavy rains, and flooding in certain areas. Due to the infrequency of major hurricanes in this part of the state and the likelihood that hurricanes generally become tropical storms by the time they reach Effingham, the potential impact to the town due to Tropical or Post-Tropical Cyclones is moderate. Assuming 2% town-wide damage to buildings, a hurricane event might result in \$2,300,636 in damages.

### **Earthquake**

According to the US Geologic Survey, the overall earthquake risk to the state is high due to the built environment; which means that many structures in the state are old or not built to withstand an earthquake. A relatively large earthquake likely would impact the roads including the bridges, limiting the ability of emergency services to be rendered. All structures in Effingham are susceptible to damage by an earthquake, although very few have more than two stories and made of masonry.

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and are often associated with landslides and flash floods. Five earthquakes occurred in New Hampshire between 1924-2012 having a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. The most recent earthquake took place just over the New Hampshire/Maine state line in Hollis, ME in October 2012. None have occurred since then. The Hollis earthquake measured 4.7 on the Richter scale and was felt throughout New England. Effingham, approximately 22 miles from Hollis, experienced shaking for 30 seconds but did not report any significant damage.<sup>37</sup>

Although historically earthquakes have been uncommon in New Hampshire, the potential does exist, and depending on the location, the impact could be significant. The likely impact of an earthquake on the town was considered to be low to moderate. Therefore, the potential structure loss value due to earthquakes was determined to be between 1% to 2% of the total assessed structure value \$1,150,318 and \$2,300,636.

### **Infectious Diseases**

The concerns associated with an epidemic include local capacity to respond to not only the residents of Effingham but also any visitors. The community does partner with the Carroll County Coalition for Public Health (C3PH) for resources and training. There was discussion by the committee about the various health resources around Effingham, no facilities in town. The facilities that would most likely be impacted are the schools. In fact, most of the impact would be on staff and services, not the structures themselves. The severity of the impact would depend upon how many fell ill, and how

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<sup>37</sup> USGS <http://earthquake.usgs.gov/earthquakes/eventpage/usb000d75b#pager>.

quickly they can be treated. Catching and treating infectious diseases early can reduce the strain in limited resources.

The impact of an epidemic on the town would be moderate. The cost of infectious diseases in Effingham is difficult to calculate as any cost would primarily result from health care response. Therefore, the potential loss structure value was not estimated.



### C. SUMMARY OF RISK

Taking into account the likelihood of occurrence of an event, and the potential impact of a particular hazard event, the significance of the various hazards that might occur in Effingham was determined by the Committee through discussion. **Level of Risk** was determined by multiplying the ratings for **Probability** (1-4) X **Extent** (1-4) X the **Average Impact** (1-4). Values could range from 1 – 64; the scores from this committee ranged from 1 – 18.67. Relative ratings of High, Medium, and low utilized these definitions:

**High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

**Medium:** The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.

**Low:** Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.

#### **Hazard Risk**

Effingham Hazards - 2019	Probability	Extent	Human Impact	Property Impact	Business Impact	Average Impact	Risk
Definition	Likelihood this will occur w/in 25 yrs	(Magnitude / Strength)	Probability of Death or Injury	Physical Loss or damage	Interruption of Service	Average of Human, Property, Business	Probability x Extent x Avg. Impact
Scale	4: Highly Likely 3: Likely 2: Occasional 1: Unlikely	4: Extreme 3: Severe 2: Moderate 1: Weak	4: Catastrophic 3: High 2: Moderate 1: Low	4: Catastrophic 3: High 2: Moderate 1: Low	4: Catastrophic 3: High 2: Moderate 1: Low	4: Catastrophic 3: High 2: Moderate 1: Low	High Medium Low
High Wind Events (Torn./Downb.)	4	2	2	3	2	2.33	18.67
Wildfires	3	2	2	3	2	2.33	14.00
Extreme Temperatures	3	2	2	2	2	2.00	12.00
Severe Winter Weather	3	2	2	2	2	2.00	12.00
Drought	3	2	1	2	2	1.67	10.00
Inland Flooding	3	2	1	2	2	1.67	10.00
Lightning	3	2	2	2	1	1.67	10.00
Dam Failure	2	2	2	3	2	2.33	9.33
Solar Storms & Space Weather	2	2	2	2	3	2.33	9.33
Tropical & Post-Tropical Cyclones	2	2	2	2	2	2.00	8.00
Earthquakes	2	2	1	2	2	1.67	6.67
Infectious Diseases	2	2	2	1	2	1.67	6.67
Avalanches	1	1	1	1	1	1.00	1.00
Landslides	1	1	1	1	1	1.00	1.00

#### Impact - Human, Property, Business

**Low:** There is little likelihood that injury or death will result from this hazard. The damage to land and property will likely be limited. Essential services and other services that residents and visitors depend upon will not be interrupted.

**Moderate:** There is some likelihood that injury or death will result from this hazard. There will likely be some damage to land and property. There will likely be some interruption of essential services and other services that residents and visitors depend upon for hours of days.

**High:** It is quite likely that injury or death will result from this hazard. There will be damage to multiple properties. Essential services and other services that residents and visitors depend upon be likely be interrupted for days.

**Catastrophic:** Multiple injuries or deaths will likely result from this hazard. Damage to properties will be widespread and extensive. Essential services and other services that residents and visitors depend upon be likely be interrupted for days or weeks.

It should be noted that the ranking of individual hazards for the purposes of planning discussion should not in any way diminish the potential severity of the impacts of a given hazard event. Further, hazards ranked as low risk may have the impact of increasing the risk of other hazards when they occur. For example, in the event of a drought, the risk of wildfire may be greater. In combination, hazard events may have the impact of overwhelming existing emergency response systems.

## CHAPTER V: MITIGATION STRATEGIES

### A. CURRENT PLANS, POLICIES, AND REGULATIONS

The planning decisions that affect community growth patterns have evolved over the years as Effingham has developed. Many local programs have the effect of mitigating disasters; some of these have been in effect for years, others were implemented since the development of the 2013 Hazard Mitigation Plan. A review of existing mitigation strategies was conducted and included review of pertinent documents including the zoning ordinance, subdivision regulations, emergency management plan, site plan regulations, and discussion with Committee members. The following strategies detail existing plans and regulations related to hazard mitigation. The review of existing capabilities and effectiveness utilized these categorizations:

**Poor** ..... *The policy, plan or mutual aid system does **not work as well as it should** and **often** falls short of meeting its goals.*

**Fair** ..... *The policy, plan or mutual aid system does **not work as well as it should** and **sometimes** falls short of meeting its goals.*

**Good** ..... *The policy, plan or mutual aid system **works well** and **is achieving its goals**.*

**Excellent** ..... *The policy, plan or mutual aid system **works very well** and **often exceeds its goals**.*

**Untested** ..... *The policy, plan or mutual aid system **has not yet been tried or put to the test**.*

#### Existing Protections and Policies

Existing Program or Activity	Description	Area of Town Covered	Responsible Department	Effectiveness	Comments
Emergency Operation Plan (2018)	This plan offers all members of the emergency management team a better understanding of procedures in case of a disasters.	Effingham	EMD	Good	Plan was updated last year.
Flood Ordinance (2013)	Enrolled in NFIP program since July 9, 2008. Update ordinance regularly; meets state's standards	Effingham Floodplain	Select Board	Good	Updated in conjunction with new flood maps for the county. The ordinance is part of the Zoning Ordinance. Building permits are required and special ordinances regulate building in flood hazard zones.
Master Plan (2005/2012)	Includes goals, objectives and expectations for future development of the town	Effingham	Planning Board	Fair	The town is making plans to update the Master Plan within a couple of years.
Zoning Ordinances (2000/2018)	Constantly updated, they are considered current. Include drainage and infrastructure provisions	Town Wide	Select Board (Enforces) & Planning Board (Amends)	Very Good	<b>No Improvements Needed:</b> The Zoning ordinance is a working document that is reviewed whenever an issue arises that needs the attention of the Planning or Select Boards. The Zoning Ordinances do what they are supposed to do.

Existing Program or Activity	Description	Area of Town Covered	Responsible Department	Effectiveness	Comments
Local Road Design Standards	Standards and specifications for construction of roads are included in the Subdivision Regulations. Town will not assume ownership of substandard roads	Effingham	Planning Board	Fair	Road standards are based on Average Daily Traffic (ADT) and new roads will not receive approval if the standards are not met. The Town will not assume ownership (vote at Town Meeting) of substandard roads that are not built to standards.
Police Mutual Aid	County and state police mutual aid system and individual agreements with surrounding communities	Effingham	Police Chief	Very Good	<b>No Improvements Needed:</b> The Town has MOUs with the Carroll County Sheriff's Office, NH State Police and surrounding communities.
Fire Mutual Aid	Ossipee Valley Mutual Aid	Effingham	Fire Chief	Very Good	<b>No Improvements Needed:</b> Ossipee Valley Mutual Aid, as dispatched through Carroll County, provides the excellent and reliable mutual aid response to all its member towns.
Capital Reserve Funds	A phased projection of major equipment and supply purchase/replacement by individual department and town	Effingham	Select Board	Good	<b>No Improvements Needed:</b> The Effingham Capital Reserve Funds are discussed with Department Heads every year prior to establishing the budget to see what each department needs for the next fiscal year.
Life safety and fire codes	Provides guidance for all buildings for life safety and fire codes; state codes are adopted (National Fire Protection Association - NFPA)	Effingham	State Fire Marshall	Good	<b>No Improvements Needed:</b> The Effingham Fire Department inspects multi-family or public rental properties, commercial properties and public assembly buildings for safety and fire codes; when needed, the Fire Department will call on the State Fire Marshall for assistance.
State Division of Forest and Lands/Fire Permits	State regulations for open burning and permits	Effingham	NH Forests & Lands & Town Forest Fire Warden	Good	The system that is in place for fire permits works well; residents are aware of the need to obtain fire permits through the local fire warden. Consider the option of getting permits on-line.
E-911	Markers at driveway entrances that identify residence locations in conjunction with the E- 911 alerting system	Effingham	Fire & Police	Good	<b>Improvements Needed:</b> Many residences in Effingham have 911 markers at driveway entrances, but not all; a public outreach initiative should be put in place to encourage all citizens to install 911 markers. Consider the option of getting signs on-line.
Land Subdivision Regulations (2016)	Includes fire and emergency access, drainage, street and road standards, and other subdivision requirements.	Effingham	Planning Board	Good	<b>No improvements needed.</b>

Existing Program or Activity	Description	Area of Town Covered	Responsible Department	Effectiveness	Comments
NIMS & ICS Training for Town Officials & EOC Staff	Ensure effective command, control, and communications during emergencies	Effingham	EMD	Good	<b>Improvements Needed:</b> Some town officials need to get NIMS and ICS training, ICS 100 & 200; NIMS 700. Much of this can be done on-line.
Fire Department Training	Fire Department personnel receive yearly training addressing wildfire attack strategies	Effingham	Fire Chief & State Fire Warden	Very Good	<b>No Improvements Needed:</b> The Effingham Fire Department takes part in trainings three times a month (or more) that are recommended by the EMD/Fire Chief and the State Fire Warden and that include wildfire attack strategies. This has lifted standards and improved recruitment.
State Health Department Public Health Plan	State plan, "Influenza, Pandemic, Public Health Preparedness and Response Plan" written by state health department to be prepared for any public health emergency; the Town is part of All Health Hazard Region #8 (Carroll County)	Effingham	State AHHR	Good	<b>No Improvements Needed:</b> The State Health Department Public Health Plan works well.
Wetlands Ordinance (2011)	A Town ordinance that protects the wetlands areas from development and regulates commercial impacts; wetlands can serve as both a filter to pollutants and a buffer from flooding	Effingham	Board of Selectmen	Good	<b>No Improvements Needed:</b> Effingham's Wetlands Ordinance protects the wetlands from development and regulates the impact of commercial enterprises. Effingham's Wetlands Ordinance is providing the protection that it is meant to do. The ordinance protects the wetlands from development. Wetlands have been mapped as part of the Natural Resources Inventory.
Steep Slopes Ordinance (2007)	This regulates development on slopes greater than 15% and areas above 1,300', reducing the likelihood of erosion.	Effingham	Board of Selectmen	Good	<b>No Improvements Needed:</b> It was noted that a Timber Harvesting Ordinance was adopted in 2014.
Radio Communications	The Police and Fire Departments, as well as the EMD radios have interoperability, enhancing communication and response in an emergency	Effingham	EMD	Fair to Poor	<b>Improvements Needed:</b> The Town needs to research and obtain a repeater system to ensure town wide communications. Poor reception in SE corner of town. Seeking a repeater on Green Mountain. Issues of funding and state vs. local property.

Existing Program or Activity	Description	Area of Town Covered	Responsible Department	Effectiveness	Comments
Fire Tower	There is a state fire tower atop Green Mountain that is staffed on higher than Class 3 fire days during the summer months by a DRED employee	Effingham	NH Forests & Land (DRED)	Very effective when manned; Ineffective when not-staffed	<b>No Improvements Needed:</b> The fire tower enhances the likelihood that small fires in this heavily wooded community will be caught before fire becomes large and difficult to manage; fire can threaten property and lives. The tower is staffed on Class 3 Fire Days.
Dry Hydrants	Dry Hydrants in Town to assist firefighting	Effingham	Fire Department	Fair	<b>Improvements Needed:</b> Effingham has added a fifth dry hydrant (on Stevens Rd.), enabling fire fighters to obtain water in various places around town, enhancing their ability to protect both structures and wildfires. The Lakeview facility has four pressurized hydrants to assist in fire control; the Town needs more dry hydrants in order to provide more effective fire suppression in sections of town that are not adequately covered, especially on the north side of town.
Backup power - Generators	In the event of an emergency, backup power is available at three critical facilities; the Effingham Elementary School (primary shelter), Fire Station #2, The Municipal Building (the Emergency Operations Center, Town Offices, and Police Station), and Green Mountain Treatment Center (home to a large special needs population)	Effingham	EMD	Good	<b>No Improvements Needed:</b> The Town of Effingham has adequate emergency backup power (generators) to be used at the time of an emergency or natural hazard event should the power fail; generators are fairly new and are working well; a maintenance program is in place to keep the generators in working condition.
Capital Improvements Plan	A long-range plan to balance large municipal expenses in the context of development expectations and budgets.	Effingham	Planning Board	Untested	In development.
School EOP	The plan offers all members of the school emergency management team a better understanding of procedures in case of a disasters.	Effingham Elementary School	EMD, SAU	Untested	In development.

**B. STATUS OF 2013 ACTIONS**

The 2013 HMP contained 25 recommendations. A review of the status of these actions reveals that five have been completed and three others are no longer considered pertinent or workable. The status of the mitigation actions recommended in the 2013 plan is indicated in Table 1 as either Completed, Deleted, or Deferred. Deferred Actions (or deferred portions of Actions) were carried forward to be considered as new Mitigation Actions (Table 2).

**Table 1: Status of Actions from the 2013 Hazard Mitigation Plan**

Hazard	Problem Statement	New Mitigation Project	2019 Complete, Delete, Defer	2019 Notes
Unknown	There is currently no system that allows the Town and commercial enterprises to establish temporary driveways.	Enact a system that allows for a "temporary driveway permit" ordinance.	Delete	Not pertinent
Fire	The Fire Tower on Green Mountain is either not manned or sporadically manned.	Lobby the State Legislature to request more consistent staffing of the fire tower with additional manned- hours.	Delete	This tower is owned and managed by the state. It is staffed seasonally on any day that is considered at least a Class 3 Fire Danger.
All Haz. Response	Those entities mentioned in the Plan that are considered possible resources for food, water, gas, lodging, landing zones, etc. are not aware of the role they may have to play during a hazard event.	Mail or distribute "courtesy notifications" to resources that are mentioned in this plan as determined by the EMD.	Delete	MOUs or charge accounts have been established with Hannaford's and fuel distributors. This was recommended in the EOP update.
Fire (Landslide)	Effingham's Steep Slopes Ordinance could be improved with better definitions and the use of Best Management Practices.	Amend the zoning ordinance to improve the definitions within the ordinance and by incorporating Best Management Practices.	Complete	Steep Slope BMPs are in place and the Timber Harvesting regulations were updated in 2014. Both work well.
Fire	Land Subdivision Regulations (2008) do not include references to fire suppression requirements.	Amend subdivision regulations to include fire suppression requirements.	Complete	Subdivisions of five or more lots must have an appropriate water supply. This works well.
All Haz. Response	New Town Employees and Emergency Responders may not be familiar with the emergency procedures that are outlined in the Town's EOP or the EOP is older than five years, does not have the 16-ESF format and needs to be update.	Review, create, or update Emergency Operations Plan; the EOP is on the agenda to begin revision in the Fall of 2012.	Complete	This was completed in 2018 and works fine. EOP will need to be updated for 2023.

Hazard	Problem Statement	New Mitigation Project	2019 Complete, Delete, Defer	2019 Notes
All Haz. Communic.	The Town currently does not have a method of reverse calling that would enable residents to be notified simultaneously.	Implement "Reverse 911" as a method for contacting residents in the event of an emergency, allowing for quick and easy dissemination of accurate information such as Nixle, a Yahoo Group, and Facebook.	Complete	Reverse 911 is active. It works well. Some suggested adding in Code Red.
Fire - Response	The Town's firefighting equipment needs improvement.	To update forest firefighting equipment (especially vehicles) to be able to access small fires and prevent their expansion.	Complete	The town now has a new Forestry Truck and Mini-Pumper and these work well.
Flood	Residents and Builders may not be aware of flood regulations & the availability of flood insurance through the NFIP.	Obtain a supply of NFIP brochures to have available in the Town Offices and to give to homeowners and builders when proposing new development or substantial improvements; inform property owners about the availability of flood insurance for all properties in town, whether or not they are in the flood zone.	Defer	Partially complete. Zoning Enforcement Officer has full-sized maps covering all properties in town. Additional actions might included put info in website, link to flood map on website, and a checkbox on the Building Permit.
Flood	Residents may not be aware of the risk of building in the floodplain and the steps they can take to reduce flooding.	Through Public Outreach and the Town's website, educate homeowners regarding the risks of building in flood zone and measures that can be taken to reduce the chance of flooding.	Defer	Combine this with Item H.
Fire	Residents may not be aware of the steps they can take to reduce the risk of fire at their homes.	Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes and add a link on the Town's website to "Firewise".	Defer	More outreach and education about fire prevention can be done through the town's website. The Fire Warden should be in responsible for this.
Fire	There are not enough water sources in town to offer the best fire suppression and those that are available are not mapped; locations for water resources are limited.	Review the Town's firefighting water resources and consider locations for dry hydrants and fire breaks.	Defer	Fire Department does have a small amount of funding for stabling and maintaining water resources for fire protection (fire ponds, cisterns).
All Haz. Response & Communic.	Not all Town Officials (those who would respond at the time of an emergency) have been trained in ICS 100 & 200 and NIMS 700	NIMS & ICS Training for Town Officials.	Defer	Works well. This is an Ongoing Item as there is turnover on boards.



Hazard	Problem Statement	New Mitigation Project	2019 Complete, Delete, Defer	2019 Notes
All Haz. Response & Communic.	Official helicopter landing zones have not been established and GPSed.	Identify helicopter landing areas and document their GPS coordinates in case these sites are needed for emergency evacuation.	Defer	Landing zones have been designated at the Ossipee Congregational Church, Constitution Park (Ossipee) and the golf course in Parsonsfield, ME. Despite repeated requests, the helicopter company has not come out to designate one or more locations in Effingham.
All Haz. Educ/Outreach	The citizens of Effingham need to become more aware of the risks associated with natural hazards and other dangerous situations.	Provide education to residents about surviving severe winter storms and other natural hazards through the Town's website and links; topics to include carbon monoxide inhalation, downed wires, back feeding of generators.	Defer	
All Haz. Communic. & Response	Residents may not be aware of the factors that impede emergency response.	Advise residents who live on private roads of the importance of maintaining their roads for first responders, perhaps through the Town's website.	Defer	This continues to be a problem. A statement could be put on the town's website.
All Haz. Communic.	Public Outreach via mail or personal contact can be difficult in small rural areas.	Add an emergency page to the Town's website.	Defer	
All Haz. Communic.	Some residents may not have appropriate E-911 markers at the beginning of their driveways; public needs to be educated as to the difficulties this brings for emergency responders.	A public outreach initiative using the Town's website to be put in place to encourage all citizens to install 911 markers.	Defer	The town website does now have a link for easy purchasing of signs online. It was suggested that firefighters or an Eagle Scout might conduct outreach and sell signs.
Flood	The Town's ditch system does not work effectively to drain and direct water flow during times of rapid snow melt or heavy rain.	Assess ditch capacity in Town and seek funding to repair ditches that are not adequately directing the flow of rainwater and snow melt.	Defer	Just started in 2018 due to high cost. Huntress Bridge Rd. is 40% done.
Flood	The Town's does not have a written culvert maintenance program.	Develop a program of scheduled culvert maintenance, reducing the likelihood of flooding during periods of heavy rain.	Defer	This is in progress - it should be written down.

Hazard	Problem Statement	New Mitigation Project	2019 Complete, Delete, Defer	2019 Notes
Fire Response	Recruitment and retention of Firefighters needs to be improved.	Develop incentives that will allow the Fire Department to recruit and retain the appropriate staffing levels.	Defer	While this is an Ongoing Issue, it is no longer a critical issue. Higher standards, including weekly training has led to better candidates and retention.
All Haz. Implement.	The Master Plan makes no reference to the projects that are in the All Hazard Mitigation Plan.	Update and Incorporate a natural hazards section into Town's Master Plan.	Defer	The CIP committee will be updating the Master Plan in the next few years.
Flood	Undersized or aging culverts create local flooding of the Town's roads.	Replace and enlarge culverts along portions of Drake, Green Mountain, High Watch, Jones, Snow and Symmes Roads to improve drainage reducing flooding, as well as the washouts and icy winter-time conditions associated with poorly drained roads.	Defer	Aging culverts are falling apart. Have been working on grants to pay for work. Highwatch is complete and Green Mtn. is partially complete. (BoS will discuss and send list of roads.)
Fire Response	The Town needs a new fire station.	Establish a new fire station in Effingham to reduce response times, especially in the northern sections of town.	Defer	Consider a joint (PD & FD) Public Safety Building.
All Haz. Communic.	Radio Communications are currently not possible town wide.	Research and obtain a repeater system to insure town wide communications.	Defer	Carroll County repeaters are being upgraded. New, higher wattage radios help but gaps still exist. New advances in technology may help with the challenge.

Some of the actions completed since the last plan update relied upon several planning mechanisms to implement them including additions to the Zoning Ordinance and an update of the Subdivision Regulations and the Budget Committee for firefighting equipment. A Capital Improvements Plan is being developed this year and will incorporate recommendations from this plan into the Plan. Also, the Planning Board intended to update the Master Plan in the next three years and will reference material in this plan.

## C. MITIGATION GOALS AND TYPES OF ACTIONS

### GOALS

The town's Hazard Mitigation Goals have not change substantially and reflect goals similar to those in the state plan.

1. To improve upon the protection of the general population, the citizens of Effingham and visitors, from all natural and human-caused hazards.
2. To reduce Effingham's potential exposure to risk with respect to natural and human-caused hazards.
3. To raise the awareness and acceptance of hazard mitigation opportunities through public education and outreach programs.
4. To reduce the occurrence of road closures and road erosion due to localized flooding within the town of Effingham.
5. To increase public awareness of the fire risk in Effingham.
6. To improve communication capabilities so that the citizens of Effingham can be notified in the most efficient manner as possible.
7. To reduce the potential impact of natural and human-caused disasters on the Town of Effingham's:
  - a. Emergency Response Capability
  - b. Critical Infrastructure & Key Resources
  - c. Private property
  - d. Economy
  - e. Natural environment
  - f. Historic treasures and interests, as well as other tangible and intangible characteristics that adds to the quality of life of the citizens and visitors to Effingham.
8. To improve the Town of Effingham's:
  - a. Emergency preparedness and communication network.
  - b. Disaster response and recovery capability.
9. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the town's Goals and Objectives

## ACTION TYPES

There are several types of actions that communities may take to reduce the likelihood that a hazard might impact the community. These include:

### **A. Actions that will keep things from getting worse - Prevention**

- a. Zoning – floodplain and steep slope overlays
- b. Open space preservation
- c. Subdivision and Site Plan Review
  - i. Impervious surface limits
  - ii. Stormwater management
- d. Capital Improvements Plan – limiting the extension of public infrastructure into hazard areas
- e. Building and Fire codes

### **B. Actions that address individual buildings - Property Protection**

- a. Flood-proofing existing buildings
- b. Retrofitting existing buildings to reduce damage
- c. Relocating structures from hazard-prone areas
- d. Public procurement and management of land vulnerable to hazard damage

### **C. Actions that will inform the public - Public education and awareness**

- a. Make hazard information and maps available to residents and visitors.
  - i. Paper or electronic
  - ii. Targeted at residents and businesses in hazard-prone areas
  - iii. Set up displays in public areas, or homeowners associations.
  - iv. Give educational programs in schools.
  - v. Make information available through newspapers, radio, TV.
- b. Ask businesses to provide hazard information to employees.
- c. Adopt a real estate disclosure requirement so that potential owners are informed of risks prior to purchase.

### **D. Actions that will protect natural resources**

- a. Erosion and sediment control programs
- b. Wetlands protection programs
- c. Expand public open space
- d. Environmental restoration programs

### **E. Actions that will protect emergency services before, during, and immediately after an event (long-term continuity)**

- a. Protect warning system capability
- b. Protection or hardening of critical facilities such as fire stations or hospitals
- c. Protection of infrastructure, such as roads that are needed in emergency response

### **F. Actions that will control the hazard – Structural projects**

- a. Diversion of stormwater away from developed areas
- b. Reservoirs to store drinking water

**D. POTENTIAL ACTIONS**

Through a review of the risk assessment and local vulnerabilities, several Problem Statements were identified and refined by the Committee. As noted earlier, actions or portions of actions which were deferred from the previous plan were brought forward in this table and considered along with new ideas. Multiple brainstorming sessions yielded an updated list of potential actions to address these current problems. Table 2 lists the gaps and potential actions along with the hazard that they address. The ID numbers are used simply for tracking purposes; they do not indicate any sort of prioritization. Highlighted Hazard text (blue) indicate actions from the 2013 plan that are either partially completed but the committee suggested improvements or deferred (note that in some cases the action has been modified to increase the likelihood of implementation). The right-hand columns note whether the potential action addresses existing structures/infrastructure or future (new) structures/infrastructure as well as which goals they address (number) and the type of mitigation action each represents (letter). Highlighted ID numbers (red) indicate actions that are likely to mitigate the gap/problem as opposed to a preparedness/response action.

**Table 2: Problem Statements and Potential Actions indicating Hazard, Structure, Goal, and Type of Action**

ID	Hazard	Problem Statement	Action	Existing/ New Infrastructure	Goal	Type
1	Flood	Residents may not be aware of the risk of building in the floodplain and the steps they can take to reduce flooding.	Through Public Outreach and the Town's website, educate homeowners regarding where the floodplain is, the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, and inform property owners about the availability of flood insurance for all properties in town, whether or not they are in the flood zone.	New	1 2 3 7	C
2	Fire	Residents may not be aware of the steps they can take to reduce the risk of fire at their homes.	Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes and add a link on the Town's website to "Firewise".	Existing/New	1 2 3 5 7	C
3	All Haz. Response & Communic.	Not all Town Officials (those who would respond at the time of an emergency) have been trained in ICS 100 & 200 and NIMS 700	NIMS & ICS Training for Town Officials.	n/a	6 8	C
4	All Haz. Communic. & Response	Residents may not be aware of the factors that impede emergency response.	Advise residents who live on private roads of the importance of maintaining their roads for first responders, perhaps through the Town's website.	Existing	1 2 3 7 8	C
5	All Haz. Communic.	Public Outreach via mail or personal contact can be difficult in small rural areas.	Add an emergency page to the Town's website. And develop a brochure with Emergency Resources and phone numbers (including Code Red)	Existing/New	3 8	C
6	Extreme Temps	The elderly and other vulnerable populations may suffer during extended periods of cold or heat. Pipes can freeze.	Raise awareness among the public of availability of resources and services to address extreme heat and cold.	Existing	3 8	C

ID	Hazard	Problem Statement	Action	Existing/ New Infra structure	Goal	Type
7	Drought	Private wells might run dry. Vulnerable populations and animals may suffer from dehydration.	Raise awareness of a) how to stay up to date on conditions, such as with the Code Red system and b) resources that may be available to assist.	Existing/New	1 3 6 8	C
8	High Wind	High Winds can snap tree limbs, uproot trees, and this can result in downed power lines, damage to structures, vehicles, and injuries.	Raise awareness of safety benefits of property maintenance against high winds by making information available at municipal offices and the library.	Existing/New	1 2 3 7	C
9	Severe Winter Weather	Flat or low-pitched roofs can collapse under heavy snow loads. Power lines can come down, especially in icy weather. Carbon monoxide (CO) can build up inside some homes.	Encourage that there be redundancies/loop wiring in the power grid. Raise awareness among the public of the need to have CO detectors operating in homes.	Existing/New	1 6 8	E
10	All Haz. Educ/Outreach	The citizens of Effingham need to become more aware of the risks associated with natural hazards and other dangerous situations.	Provide education to residents about surviving severe winter storms and other natural hazards through the Town's website and links; topics to include carbon monoxide inhalation, downed wires, back feeding of generators	Existing	1 2 7	C
11	Dam Failure	Effingham has five active dams; two are Low Hazard and three are Non-Menace dams. One is state-owned, the others are private. Maintenance practices and impacts posed by the failure of one or more of these dams was not clearly known by the committee.	Establish contact with dam owners to discuss dam maintenance procedures. Explore methods to better understand the threats posed by one or more dam failure. Including FEMA grants for EAP.	Existing	1 2 3 7	C
12	Fire Response	Recruitment and retention of Firefighters needs to be improved.	Develop incentives that will allow the Fire Department to recruit and retain the appropriate staffing levels.	Existing/New	5 8	C
13	All Haz. Communic.	Some residents may not have appropriate E-911 markers at the beginning of their driveways; public needs to be educated as to the difficulties this brings for emergency responders.	Put in place a public outreach initiative to encourage all citizens to install 911 markers.	Existing/New	3 6 8	C
14	Lightning	Structures, including municipal facilities are susceptible to substantial damage due to a lightning strike. Additionally, municipal records along with electronic and communications systems can be destroyed by lightning.	Back-up municipal files.	n/a	7 8	B
15	Other (Infectious Diseases)	A variety of infectious diseases were discussed that might impact the town from measles to Lyme Disease. In a small town, the absence of a few volunteers or staff could make a big difference in town operations and services.	In conjunction with C3PH, utilize the town website, municipal offices, library, as well as the Fire and Police Department offices to disseminate information to the public about prevention of infectious diseases.	n/a	1 2 3	C

ID	Hazard	Problem Statement	Action	Existing/ New Infra structure	Goal	Type
16	All Haz. Implement.	The Master Plan makes no reference to the projects that are in the All Hazard Mitigation Plan.	Update and Incorporate a natural hazards section into Town's Master Plan.	Existing/New	9	A
17	Dam Failure	Effingham has five active dams; two are Low Hazard and three are Non-Menace dams. One is state-owned, the others are private. Maintenance practices and impacts posed by the failure of one or more of these dams was not clearly known by the committee.	Explore methods to better understand the threats posed by one or more dam failure.	Existing	1 2 6 8	C
18	Lightning	Structures, including municipal facilities are susceptible to substantial damage due to a lightning strike. Additionally, municipal records along with electronic and communications systems can be destroyed by lightning.	Install lightning rods and/or surge protection systems on critical facilities.	Existing	2 7	E
19	Fire	There are not enough water sources in town to offer the best fire suppression and those that are available are not mapped; locations for water resources are limited.	Review the Town's firefighting water resources and consider locations for dry hydrants and fire breaks.	Existing/New	1 7 8	B
20	Flood	The Town's does not have a written culvert maintenance program.	Develop a program of scheduled culvert maintenance, reducing the likelihood of flooding during periods of heavy rain.	Existing	2 4 7 9	E
21	Flood	Undersized or aging culverts create local flooding of the Town's roads.	Replace and enlarge culverts along portions of Drake, Green Mountain, High Watch, Jones, Snow, Hobbs, and Symmes Roads to improve drainage reducing flooding, as well as the washouts and icy winter-time conditions associated with poorly drained roads.	Existing/New	2 4 7	E
22	Flood	Undersized or aging culverts create local flooding of the Town's roads.	Replace and enlarge drainage structures along portions of Pine River, Bailey, Clough, and Wilkinson Swamp Roads to reduce flooding & washouts.	Existing	2 4 7	E
23	All Haz. Response & Communic.	Official helicopter landing zones have not been established and GPSed.	Identify helicopter landing areas and document their GPS coordinates in case these sites are needed for emergency evacuation.	n/a	8	C
24	High Wind	High Winds can snap tree limbs, uproot trees, and this can result in downed power lines, damage to structures, vehicles, and injuries.	Trim trees and brush along roads and around infrastructure and municipal facilities.	Existing	1 2 7	B
25	All Haz. Communic.	Radio Communications are currently not possible town wide.	Research and obtain a repeater system to insure town wide communications.	Existing/New	6 8	E

ID	Hazard	Problem Statement	Action	Existing/ New Infra structure	Goal	Type
26	Flood	Unmaintained catch basins can lead to flooding along major roadways	Work with NH DOT (District 3) to ensure that maintenance occurs on the catch basins at the intersection of Green Mountain Rd. and NH Rte. 25.	Existing	2 4 7	E
27	Flood	The Town's ditch system does not work effectively to drain and direct water flow during times of rapid snow melt or heavy rain.	Assess ditch capacity in Town and seek funding to repair ditches that are not adequately directing the flow of rainwater and snow melt.	Existing	2 4 7	E
28	Other (Water Supply)	The water in Effingham Elementary School (Primary Shelter) has fluorine levels above what is permitted for children.	Work with state and local officials to identify and implement a permanent solution to ensure that the school/shelter has potable water for all.	Existing	1 8	E
29	Other (Emerging Pollutants)	Concern was raised about the possible health effects of PFOAs that might be seeping from the old town dump.	Monitor for PFOA contamination through a well-testing program.	n/a	1 8	C
30	Flood	Undersized or aging culverts create local flooding of the Town's roads.	Replace and enlarge drainage structures along Huntress Bridge Road	Existing	2 4 7	E
31	Fire	There are not enough water sources in town to offer the best fire suppression and those that are available are not mapped; locations for water resources are limited.	Develop new water sources as identified in Water Resources Plan (north side of town)	Existing/New	1 7 8	R
32	Fire Response	The Town needs a new fire station.	Establish a new fire station in Effingham to reduce response times, especially in the northern sections of town.	Existing/New	1 5 7 8	Response
33	Fire Response	There is only one egress from Green Mountain Treatment Center, potentially stranding the residents and staff during an emergency event.	Reconsider options for developing an alternate egress from the Green Mountain Treatment Center.	Existing	8	Response
34	Flood	Several roads flood due to beaver dams (Clough, Hobbs, Pine River, Town House, Nutter, Bailey, & Wilkinson Swamp Roads). The beaver population is expanding and uncontrolled.	Develop a systematic beaver relocation & eradication program.	Existing	2,4, 7	A, B

The Committee identified the various costs with each action. The estimated cost represents what the town estimates it will cost, within a range to implement each action. This was incorporated into the prioritization process (Section E) but for ease of presentation here, it is included in the implementation table (Table 4). Note that the town's HSEM Field Representative can be a good resource for specific federal funding opportunities.



## E. PRIORITIZATION OF ACTIONS

After considering the pros and cons of each proposed action, the Committee prioritized the various projects which had been identified. All suggested actions, whether deferred or new were treated as potential actions and prioritized in a similar manner. Table 3 shows the Actions ordered by their overall score; those with similar scores are then ordered by the Hazard Type (See Appendix H for full details). Total scores range from a high of 21 to a low of 8.

**Table 3: Proposed Actions in Ranked Order**

<b>Hazard</b>	<b>New Mitigation Project</b>	<b>TOTAL</b>
Lightning	Back-up municipal files.	<b>21</b>
Flood	Through Public Outreach and the Town's website, educate homeowners regarding where the floodplain is, the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, and inform property owners about the availability of flood insurance for all properties in town, whether or not they are in the flood zone.	<b>21</b>
Fire	Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes and add a link on the Town's website to "Firewise".	<b>21</b>
Extreme Temps	Raise awareness among the public of availability of resources and services to address extreme heat and cold.	<b>21</b>
Drought	Raise awareness of a) how to stay up-to-date on conditions, such as with the Code Red system and b) resources that may be available to assist.	<b>21</b>
All Haz. Response & Communic.	NIMS & ICS Training for Town Officials.	<b>21</b>
All Haz. Communic. & Response	Advise residents who live on private roads of the importance of maintaining their roads for first responders, perhaps through the Town's website.	<b>21</b>
All Haz. Communic.	Add an emergency page to the Town's website. And develop a brochure with Emergency Resources and phone numbers (including Code Red)	<b>21</b>
All Haz. Communic.	Put in place a public outreach initiative to be put in place to encourage all citizens to install 911 markers.	<b>21</b>
Severe Winter Weather	Encourage that there be redundancies/loop wiring in the power grid. Raise awareness among the public of the need to have CO detectors operating in homes.	<b>21</b>
High Wind	Raise awareness of safety benefits of property maintenance against high winds by making information available at municipal offices and the library.	<b>21</b>
Other (Infectious Diseases)	In conjunction with C3PH, utilize the town website, municipal offices, library, as well as the Fire and Police Department offices to disseminate information to the public about prevention of infectious diseases.	<b>20</b>
Dam Failure	Establish contact with dam owners to discuss dam maintenance procedures. Explore methods to better understand the threats posed by one or more dam failure. Including FEMA grants for EAP.	<b>19</b>
All Haz. Educ/Outreach	Provide education to residents about surviving severe winter storms and other natural hazards through the Town's website and links; topics to include carbon monoxide inhalation, downed wires, back feeding of generators.	<b>19</b>
Lightning	Install lightning rods and/or surge protection systems on critical facilities.	<b>19</b>

<b>Hazard</b>	<b>New Mitigation Project</b>	<b>TOTAL</b>
Fire Response	Develop incentives that will allow the Fire Department to recruit and retain the appropriate staffing levels.	<b>19</b>
All Haz. Implement.	Update and Incorporate a natural hazards section into Town's Master Plan.	<b>19</b>
Fire	Review the Town's firefighting water resources and consider locations for dry hydrants and fire breaks.	<b>18</b>
Flood	Develop a program of scheduled culvert maintenance, reducing the likelihood of flooding during periods of heavy rain.	<b>17</b>
Flood	Replace and enlarge culverts along portions of Drake, Green Mountain, High Watch, Jones, Snow, Hobbs, and Symmes Roads to improve drainage reducing flooding, as well as the washouts and icy winter-time conditions associated with poorly drained roads.	<b>17</b>
All Haz. Response & Communic.	Identify helicopter landing areas and document their GPS coordinates in case these sites are needed for emergency evacuation.	<b>16</b>
Other (Emerging Pollutants)	Monitor for PFOA contamination through a well testing program.	<b>16</b>
High Wind	Trim trees and brush along roads and around infrastructure and municipal facilities.	<b>16</b>
Flood	Replace and enlarge drainage structures along portions of Pine River, Bailey, Clough, and Wilkinson Swamp Roads to reduce flooding & washouts	<b>15</b>
All Haz. Communic.	Research and obtain a repeater system to insure town wide communications.	<b>15</b>
Other (Water Supply)	Work with state and local officials to identify and implement a permanent solution to ensure that the school/shelter has potable water for all.	<b>15</b>
Flood	Develop a systematic beaver relocation & eradication program.	<b>13</b>
Dam Failure	Explore methods to better understand the threats posed by one or more dam failure.	<b>13</b>
Fire	Develop new water sources as identified in Water Resources Plan (north side of town)	<b>12</b>
Flood	Replace and enlarge drainage structures along Huntress Bridge Road	<b>12</b>
Flood	Work with NH DOT (District 3) to ensure that maintenance occurs on the catch basins at the intersection of Green Mountain Rd. and NH Rte. 25.	<b>11</b>
Flood	Assess ditch capacity in Town and seek funding to repair ditches that are not adequately directing the flow of rain water and snow melt.	<b>9</b>
Fire Response	Establish a new fire station in Effingham to reduce response times, especially in the northern sections of town.	<b>9</b>
Fire Response	Reconsider options for developing an alternate egress from the Green Mountain Treatment Center.	<b>8</b>

**F. IMPLEMENTATION OF MITIGATION ACTIONS**

There are many factors that influence how a town chooses to spend its energy and resources in implementing recommended actions. Factors include:

- Urgency
- How quickly an action could be implemented
- Likelihood that the action will reduce future emergencies
- Regulations required to implement the action
- Administrative burdens
- Time (both paid and volunteer)
- Funding availability
- Political acceptability of the action.

In the context of these factors, the Committee discussed the mitigation actions and relative level of priority, recognizing that some actions are of greater priority to different town departments. This implementation schedule (Table 4) indicates the estimated cost of implementation, potential funding sources, the parties responsible for bringing about these actions, and implementation time frame. Though some of the proposed actions received a high score in the previous section, the time frame for which the actions are executed depend upon staff time and budgetary limitations. Note that the highlighted ID numbers indicate mitigation actions as opposed to preparation actions.

These are listed in order of their Time Frame. To keep the plan current, the implementation schedule should be updated and re-evaluated on a regular basis as outlined in the monitoring section of this plan (Section VI.B).

<b>Timeframe</b>	<b>Description</b>
Short Term	1 year or less, or ongoing*
Medium Term	2 -3 years
Long Term	4-5 years

\*Ongoing - This action will be completed on a periodic basis (often annual) throughout the life of the plan.

**Table 4: Implementation Schedule for Mitigation Actions by Time Frame**

ID	Hazard	Problem Statement	Action	2019 Notes	Cost	Funding or Support	Responsibility or Oversight	Time frame
1	Flood	Residents may not be aware of the risk of building in the floodplain and the steps they can take to reduce flooding.	Through Public Outreach and the Town's website, educate homeowners regarding where the floodplain is, the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, and inform property owners about the availability of flood insurance for all properties in town, whether or not they are in the flood zone.	A combination of two previous actions.	Low	Local	Select Board, Planning Board, Zoning Officer	Short
2	Fire	Residents may not be aware of the steps they can take to reduce the risk of fire at their homes.	Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes and add a link on the Town's website to "Firewise".	More outreach and education about fire prevention can be done through the town's website. The Fire Warden should be in responsible for this.	Low	Local	Select Board & Fire Chief	Short
3	All Haz. Response & Communic.	Not all Town Officials (those who would respond at the time of an emergency) have been trained in ICS 100 & 200 and NIMS 700	NIMS & ICS Training for Town Officials.	Works well. This is an Ongoing Item as there is turnover on boards.	Low	Local	EMD	Short
4	All Haz. Communic. & Response	Residents may not be aware of the factors that impede emergency response.	Advise residents who live on private roads of the importance of maintaining their roads for first responders, perhaps through the Town's website.	This continues to be a problem. A statement could be put on the town's website.	Low	Local	Select Board	Short

ID	Hazard	Problem Statement	Action	2019 Notes	Cost	Funding or Support	Responsibility or Oversight	Time frame
5	All Haz. Communic.	Public Outreach via mail or personal contact can be difficult in small rural areas.	Add an emergency page to the Town's website. And develop a brochure with Emergency Resources and phone numbers (including Code Red)	While the Committee acknowledges that the town webpage can be a relatively effective means of disseminating information, they want to clear that there are many in town who would not be able to access this information and might need to receive this information in hard copy format.	Low	Local	Select Board	Short
6	Extreme Temps	The elderly and other vulnerable populations may suffer during extended periods of cold or heat. Pipes can freeze.	Raise awareness among the public of availability of resources and services to address extreme heat and cold.	The Police and Sheriffs Departments check in on vulnerable people through Project Good Morning. The school serves as a heating/cooling shelter. MOU exists with Eldridge Transportation to provide transportation where needed.	Low	Local	EMD, Welfare Office	Short
7	Drought	Private wells might run dry. Vulnerable populations and animals may suffer from dehydration.	Raise awareness of a) how to stay up to date on conditions, such as with the Code Red system and b) resources that may be available to assist.		Low	Local, Regional	EMD, Welfare Office	Short
8	High Wind	High Winds can snap tree limbs, uproot trees, and this can result in downed power lines, damage to structures, vehicles, and injuries.	Raise awareness of safety benefits of property maintenance against high winds by making information available at municipal offices and the library.	Lately power companies have been trimming back trees more. Town follows the state standards requiring the use of the International Building Code and tie-downs for mobile homes.	Low	Local	EMD	Short
9	Severe Winter Weather	Flat or low-pitched roofs can collapse under heavy snow loads. Power lines can come down, especially in icy weather. Carbon monoxide (CO) can build up inside some homes.	Encourage that there be redundancies/loop wiring in the power grid. Raise awareness among the public of the need to have CO detectors operating in homes.		High, Low	Power companies, local	EMD	Short

ID	Hazard	Problem Statement	Action	2019 Notes	Cost	Funding or Support	Responsibility or Oversight	Time frame
10	All Haz. Educ/Outreach	The citizens of Effingham need to become more aware of the risks associated with natural hazards and other dangerous situations.	Provide education to residents about surviving severe winter storms and other natural hazards through the Town's website and links; topics to include carbon monoxide inhalation, downed wires, back feeding of generators		Low	Local	Select Board	Short
11	Dam Failure	Effingham has five active dams; two are Low Hazard and three are Non-Menace dams. One is state-owned, the others are private. Maintenance practices and impacts posed by the failure of one or more of these dams was not clearly known by the committee.	Establish contact with dam owners to discuss dam maintenance procedures. Explore methods to better understand the threats posed by one or more dam failure. Including FEMA grants for EAP.		Low	Local	EMD, Select Board	Short
12	Fire Response	Recruitment and retention of Firefighters needs to be improved.	Develop incentives that will allow the Fire Department to recruit and retain the appropriate staffing levels.	While this is an Ongoing Issue, it is no longer a critical issue. Higher standards, including weekly training has led to better candidates and retention.	Medium	Local	Fire Chief	Short
13	All Haz. Communic.	Some residents may not have appropriate E-911 markers at the beginning of their driveways; public needs to be educated as to the difficulties this brings for emergency responders.	Put in place a public outreach initiative to encourage all citizens to install 911 markers.	The town website does now have a link for easy purchasing of signs online. It was suggested that firefighters or an Eagle Scout might conduct outreach and sell signs.	Low	Local	Select Board	Medium

ID	Hazard	Problem Statement	Action	2019 Notes	Cost	Funding or Support	Responsibility or Oversight	Time frame
14	Lightning	Structures, including municipal facilities are susceptible to substantial damage due to a lightning strike. Additionally, municipal records along with electronic and communications systems can be destroyed by lightning.	Back-up municipal files.		Low	Local	EMD, Select Board	Medium
15	Other (Infectious Diseases)	A variety of infectious diseases were discussed that might impact the town from measles to Lyme Disease. In a small town, the absence of a few volunteers or staff could make a big difference in town operations and services.	In conjunction with C3PH, utilize the town website, municipal offices, library, as well as the Fire and Police Department offices to disseminate information to the public about prevention of infectious diseases.		Low	Regional, Local	EMD, Welfare Officer	Medium
16	All Haz. Implement.	The Master Plan makes no reference to the projects that are in the All Hazard Mitigation Plan.	Update and Incorporate a natural hazards section into Town's Master Plan.	The CIP committee will be updating the Master Plan in the next few years.	Medium	Local	Planning Board	Medium
17	Dam Failure	Effingham has five active dams; two are Low Hazard and three are Non-Menace dams. One is state-owned, the others are private. Maintenance practices and impacts posed by the failure of one or more of these dams was not clearly known by the committee.	Explore methods to better understand the threats posed by one or more dam failure.	State Emergency Action Plans are usually only developed for dams with a High or Severe rating. Consider engaging Dam Bureau (NH DES) and HSEM regarding modelling and Emergency Action Plan.	Medium	Local & Grants	EMD, Select Board	Medium
18	Lightning	Structures, including municipal facilities are susceptible to substantial damage due to a lightning strike. Additionally, municipal records along with electronic and communications systems can be destroyed by lightning.	Install lightning rods and/or surge protection systems on critical facilities.		Medium	Local, HSEM grant	EMD, Select Board	Medium

ID	Hazard	Problem Statement	Action	2019 Notes	Cost	Funding or Support	Responsibility or Oversight	Time frame
19	Fire	There are not enough water sources in town to offer the best fire suppression and those that are available are not mapped; locations for water resources are limited.	Review the Town's firefighting water resources and consider locations for dry hydrants and fire breaks.		Low	Local	Fire Chief	Medium
20	Flood	The Town's does not have a written culvert maintenance program.	Develop a program of scheduled culvert maintenance, reducing the likelihood of flooding during periods of heavy rain.	This is in progress - it should be written down.	Medium	Local	Select Board	Medium
21	Flood	Undersized or aging culverts create local flooding of the Town's roads.	Replace and enlarge culverts along portions of Drake, Green Mountain, High Watch, Jones, Snow, Hobbs, and Symmes Roads to improve drainage reducing flooding, as well as the washouts and icy winter-time conditions associated with poorly drained roads.	Aging culverts are falling apart. Have been working on grants to pay for work. Highwatch is complete and Green Mtn. is partially complete. (BoS will discuss and send list of roads.)	High	Local & Grants	Select Board	Medium
22	Flood	Undersized or aging culverts create local flooding of the Town's roads.	Replace and enlarge drainage structures along portions of Pine River, Bailey, Clough, and Wilkinson Swamp Roads to reduce flooding & washouts.		High	Local & Grants	Select Board	Medium
23	All Haz. Response & Communic.	Official helicopter landing zones have not been established and GPSed.	Identify helicopter landing areas and document their GPS coordinates in case these sites are needed for emergency evacuation.	Landing zones have been designated at the Ossipee Congregational Church, Constitution Park (Ossipee) and the golf course in Parsonsfield, ME. Despite repeated requests, the helicopter company has not come out to designate one or more locations in Effingham.	Low	Local	EMD	Medium



ID	Hazard	Problem Statement	Action	2019 Notes	Cost	Funding or Support	Responsibility or Oversight	Time frame
24	High Wind	High Winds can snap tree limbs, uproot trees, and this can result in downed power lines, damage to structures, vehicles, and injuries.	Trim trees and brush along roads and around infrastructure and municipal facilities.		Medium	Local	Select Board	Medium
25	All Haz. Communic.	Radio Communications are currently not possible town wide.	Research and obtain a repeater system to insure town wide communications.	Carroll County repeaters are being upgraded. New, higher wattage radios help but gaps still exist. New advances in technology may help with the challenge.	High	Local & Grants	Select Board, Fire & Police Chiefs	Medium
26	Flood	Unmaintained catch basins can lead to flooding along major roadways	Work with NH DOT (District 3) to ensure that maintenance occurs on the catch basins at the intersection of Green Mountain Rd. and NH Rte. 25.	There has been dialogue between the Town and NH DOT regarding ownership and maintenance responsibility (local).	Medium	Local & Grants	Select Board	Medium
27	Flood	The Town's ditch system does not work effectively to drain and direct water flow during times of rapid snow melt or heavy rain.	Assess ditch capacity in Town and seek funding to repair ditches that are not adequately directing the flow of rainwater and snow melt.	Just started in 2018 due to high cost. Huntress Bridge Rd. is 40% done.	Medium	Local & Grants	Select Board	Medium
28	Other (Water Supply)	The water in Effingham Elementary School (Primary Shelter) has fluorine levels above what is permitted for children.	Work with state and local officials to identify and implement a permanent solution to ensure that the school/shelter has potable water for all.	The school currently purchases bottled water. Solutions might include filtration, treatment, or a new water source.	Medium to High	Local & Grants	School Principal, SAU, EMD	Medium
29	Other (Emerging Pollutants)	Concern was raised about the possible health effects of PFOAs that might be seeping from the old town dump.	Monitor for PFOA contamination through a well-testing program.	Evaluation was completed in 2019.	Medium	Local	Select Board	Long

ID	Hazard	Problem Statement	Action	2019 Notes	Cost	Funding or Support	Responsibility or Oversight	Time frame
30	Flood	Undersized or aging culverts create local flooding of the Town's roads.	Replace and enlarge drainage structures along Huntress Bridge Road		High	Local & Grants	Select Board	Long
31	Fire	There are not enough water sources in town to offer the best fire suppression and those that are available are not mapped; locations for water resources are limited.	Develop new water sources as identified in Water Resources Plan (north side of town)	Fire Department does have a small amount of funding for establishing and maintaining water resources for fire protection (fire ponds, cisterns).	Medium	Local	Fire Chief	Long
32	Fire Response	The Town needs a new fire station.	Establish a new fire station in Effingham to reduce response times, especially in the northern sections of town.	Consider a joint (PD & FD) Public Safety Building.	High	Local & Grants	Select Board	Long
33	Fire Response	There is only one egress from Green Mountain Treatment Center, potentially stranding the residents and staff during an emergency event.	Reconsider options for developing an alternate egress from the Green Mountain Treatment Center.	A proposal to gate an existing Class VI road and maintain it for emergency purposes was in the 2008 HMP but deleted from the 2013 HMP.	High	Private, Grants	Select Board	Long
34	Flood	Several roads flood due to beaver dams (Clough, Hobbs, Pine River, Town House, Nutter, Bailey, & Wilkinson Swamp Roads). The beaver population is expanding and uncontrolled.	Develop a systematic beaver relocation & eradication program.		Medium	Local	Select Board	Short

## **CHAPTER VI: PLAN ADOPTION AND MONITORING**

### **A. IMPLEMENTATION**

The Effingham Hazard Mitigation Plan Update Committee, established by the EMD and Board of Selectmen, will meet annually to review the Plan and provide a mechanism for ensuring that an attempt is made to incorporate the actions identified in the plan into ongoing town planning activities. Essential elements of implementation require that all responsible parties for the various recommendations understand what is expected of them, and that they are willing to fulfill their role in implementation. It is therefore important to have the responsible parties clearly identified when the town adopts the final plan. Where appropriate it would be helpful to have any hazard mitigation activities identified in job descriptions.

Many of the actions in this plan rely on the town's operating budget along with grant funds available through FEMA and other sources such as those listed in Appendix B. The Emergency Management Director will coordinate with the department heads, Budget and CIP Committees, and Selectmen to ensure that funds and staff time for these projects are available. The EMD will also coordinate with the NH HSEM Field Representative to ensure that the town applies for appropriate grant funds.

For those mitigation actions which involve either revisions to the Subdivision Regulations or development of regulations or standards, members of the Hazard Mitigation Committee will work with the Planning Board to develop appropriate language.

When appropriate, an effort will be made to incorporate this plan into the Emergency Operations Plan. Within a year after the town officially adopts the 2019 update to the Hazard Mitigation Plan, an effort will be made to have hazard mitigation strategies integrated into these existing mechanisms and into all other ongoing town planning activities.

### **B. PLAN MAINTENANCE & PUBLIC INVOLVEMENT**

The Effingham Hazard Mitigation Planning Committee and the Selectboard, in order to track progress and update the mitigation strategies identified in Chapter V - D & E, will review the Effingham Hazard Mitigation Plan every year or after a hazard event. The town of Effingham Emergency Management Director is responsible for initiating this review and needs to consult with members of the Effingham HMP Committee identified in this Plan. Changes will be made to the Plan to revisit projects that have failed, are no longer consistent with the timeframe identified, are no longer consistent with the community's priorities, or lack funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, will be reviewed during the monitoring and update of this Plan to determine feasibility of future implementation. In keeping with the process of adopting the Plan, a public hearing will be held to receive public comment on the Plan.

Maintenance and updating will be held during the annual review period and the final product adopted by the Selectboard. The Committee will meet annually as part of this plan maintenance. The Emergency Management Director is also responsible for updating and resubmitting the plan to NH HSEM to be re-approved every five years. The EMD will convene a plan update committee in mid-2023 to begin updating this plan before it expires.

On behalf of the Hazard Mitigation Committee, the Emergency Management Director, under direction of the Selectboard, will be responsible for ensuring that town's departments and the public have adequate opportunity to participate in the planning process during the Plan's annual review and during any Hazard Mitigation Committee meetings. Administrative staff may be utilized to assist with the public involvement process.

For each committee meeting, and the annual update process, techniques that may be utilized for public involvement include:

- ❖ Provide invitations to Budget Committee members;
- ❖ Provide invitations to municipal department heads;
- ❖ Post notices of meetings at the Town Hall, Police and Fire Stations, and on the town website;
- ❖ Submit press releases for publication in the *Granite State News*, *Conway Daily Sun*, and other appropriate newspapers or media outlets.

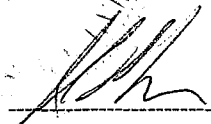
Entities to invite to future Hazard Mitigation plan updates include the Emergency Management Directors of the neighboring communities of Wakefield, Ossipee, Freedom New Hampshire, and Parsonsfield, Maine


C. SIGNED CERTIFICATE OF ADOPTION

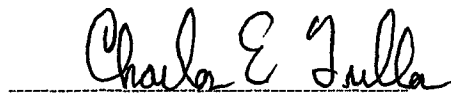
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The Effingham Board of Selectmen by majority vote does hereby adopt the Effingham Hazard Mitigation Plan, as a statement of policy. Actions for implementation under this statement of policy are set forth in priority order in the "Implementation of Mitigation Actions" (page 50) and "Plan Maintenance" (page 57) sections of this document. All other sections of this Plan are supporting documentation for informational purposes only and not included as the statement of policy.

Date 08/13/2019 Seal  
EFFINGHAM BOARD OF SELECTMEN

  
\_\_\_\_\_  
John Meisner (Chair)

  
\_\_\_\_\_  
Michael Cahalane

  
\_\_\_\_\_  
Chuck Fuller

**APPENDIX A: TECHNICAL RESOURCES**

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**NH Homeland Security and Emergency Management** ..... 271-2231  
<http://www.nh.gov/safety/divisions/HSEM/>

Hazard Mitigation Section..... 271-2231  
<http://www.nh.gov/safety/divisions/hsem/HazardMitigation/index.html>

**Federal Emergency Management Agency** ..... (617) 223-4175  
<http://www.fema.gov/>

FEMA, National Flood Insurance Program, Community Status Book  
<http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book>

**Regional Planning Commissions:**

Lakes Region Regional Planning Commission..... 279-8171  
<http://www.lakesrpc.org/>

**NH Governor’s Office Strategic Initiatives**..... 271-2155  
<https://www.nh.gov/osi/index.htm>

New Hampshire Floodplain Management Program  
<http://www.nh.gov/ocp/programs/floodplainmanagement/index.htm>

**NH Department of Transportation** ..... 271-3734  
<http://www.nh.gov/dot/index.htm>

**NH Department of Cultural Affairs** ..... 271-2540  
<http://www.nh.gov/nhculture/>

Division of Historical Resources..... 271-3483  
<http://www.nh.gov/nhdhr/>

**NH Department of Environmental Services** ..... 271-3503  
<http://www.des.state.nh.us/>

Dam Bureau..... 271-63406  
<http://www.des.state.nh.us/organization/divisions/water/dam/index.htm>

**NH Municipal Association** ..... 224-7447  
<http://www.nhmunicipal.org/LGCWebsite/index.asp>

**NH Fish and Game Department** ..... 271-3421  
<http://www.wildlife.state.nh.us/>

**NH Department of Business and Economic Development**..... 271-2591  
<http://www.dbea.nh.gov/>

Division of Forests and Lands..... 271-2214  
<http://www.nhdfl.org/>

Natural Heritage Inventory ..... 271-2215  
<http://www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/>

Division of Parks and Recreation..... 271-3255  
<http://www.nhstateparks.org/>

**NH Department of Health and Human Services** ..... 271-9389  
<http://www.dhhs.state.nh.us/>

<b>Northeast States Emergency Consortium, Inc. (NESEC)</b> .....	(781) 224-9876
<a href="http://www.nesec.org/">http://www.nesec.org/</a>	
<b>US Department of Commerce</b> .....	(202) 482-2000
<a href="http://www.commerce.gov/">http://www.commerce.gov/</a>	
National Oceanic and Atmospheric Administration.....	(202) 482-6090
<a href="http://www.noaa.gov/">http://www.noaa.gov/</a>	
National Weather Service, Eastern Region Headquarters	
<a href="http://www.erh.noaa.gov/">http://www.erh.noaa.gov/</a>	
National Weather Service, Tauton, Massachusetts.....	(508) 824-5116
<a href="http://www.erh.noaa.gov/er/box/">http://www.erh.noaa.gov/er/box/</a>	
National Weather Service, Gray, Maine.....	(207) 688-3216
<a href="http://www.erh.noaa.gov/er/gyx/">http://www.erh.noaa.gov/er/gyx/</a>	
<b>US Department of the Interior</b>	
<a href="http://www.doi.gov/">http://www.doi.gov/</a>	
US Fish and Wildlife Service.....	225-1411
<a href="http://www.fws.gov/">http://www.fws.gov/</a>	
US Geological Survey.....	225-4681
<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>	
US Geological Survey Real Time Hydrologic Data	
<a href="http://waterdata.usgs.gov/nwis/rt">http://waterdata.usgs.gov/nwis/rt</a>	
US Army Corps of Engineers.....	(978) 318-8087
<a href="http://www.usace.army.mil/">http://www.usace.army.mil/</a>	
<b>US Department of Agriculture</b>	
<a href="http://www.usda.gov/wps/portal/usdahome">http://www.usda.gov/wps/portal/usdahome</a>	
US Forest Service.....	(202) 205-8333
<a href="http://www.fs.fed.us/">http://www.fs.fed.us/</a>	
<b>New Hampshire Electrical Cooperative</b> .....	(800) 698-2007
<a href="http://www.nhec.com/">http://www.nhec.com/</a>	
<b>Cold Region Research Laboratory</b> .....	646-4187
<a href="http://www.crrel.usace.army.mil/">http://www.crrel.usace.army.mil/</a>	
<b>National Emergency Management Association</b> .....	(859) 244-8000
<a href="http://nemaweb.org">http://nemaweb.org</a>	
<b>National Aeronautics and Space Administration</b>	
<a href="http://www.nasa.gov/">http://www.nasa.gov/</a>	
NASA Optical Transient Detector – Lightning and Atmospheric Research	
<a href="http://thunder.msfc.nasa.gov/">http://thunder.msfc.nasa.gov/</a>	
<b>National Lightning Safety Institute</b> .....	<a href="http://lightningsafety.com/">http://lightningsafety.com/</a>
<b>The Tornado Project Online</b> .....	<a href="http://www.tornadoproject.com/">http://www.tornadoproject.com/</a>
<b>National Severe Storms Laboratory</b> .....	<a href="http://www.nssl.noaa.gov/">http://www.nssl.noaa.gov/</a>
<b>Plymouth State University Weather Center</b> .....	<a href="http://vortex.plymouth.edu/">http://vortex.plymouth.edu/</a>

**APPENDIX B: MITIGATION FUNDING RESOURCES**

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There are numerous potential sources of funding to assist with the implementation of mitigation efforts. Two lists of state and federal resources are provided below. Some of these may not apply or be appropriate for Effingham. The NH Homeland Security and Emergency Management Field Representative for Carrol County can provide some assistance.

- 404 Hazard Mitigation Grant Program (HMGP) ..... NH Homeland Security and Emergency Management
- 406 Public Assistance and Hazard Mitigation ..... NH Homeland Security and Emergency Management
- Community Development Block Grant (CDBG) ..... NH HSEM, NH OEP, also refer to RPC
- Dam Safety Program ..... NH Department of Environmental Services
- Emergency Watershed Protection (EWP) Program ..... USDA, Natural Resources Conservation Service
- Flood Mitigation Assistance Program (FMA) ..... NH Homeland Security and Emergency Management
- Highway Safety Improvement Program ..... NH Department of Transportation
- Pre-Disaster Mitigation Assistance Planning (PDM) ..... NH Homeland Security and Emergency Management
- Mutual Aid for Public Works ..... NH Municipal Association
- National Flood Insurance Program (NFIP) ..... NH Office of Strategic Initiatives
- Project Impact ..... NH Homeland Security and Emergency Management
- Roadway Repair & Maintenance Program(s) ..... NH Department of Transportation
- Shoreline Protection Program ..... NH Department of Environmental Services
- Various Forest and Lands Program(s) ..... NH Department of Resources & Economic Development
- Wetlands Programs ..... NH Department of Environmental Services
- State Aid Bridge Program for Communities ..... NH Department of Transportation
- Contribution to Damage Losses (RSA 235:34) ..... NH Department of Transportation



## APPENDIX C: PUBLICITY AND INFORMATION

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Press releases were sent to the daily *Conway Daily Sun* prior to the Committee meetings. Open committee meetings were also posted on the LRPC web calendar. Emails were sent out for each meeting to committee members and stakeholders (samples below). Several informational handouts and the 2013 Hazard Mitigation Plan were distributed to the committee and available at meetings.

### Lakes Region Planning Commission Event Calendar

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**Date:** 3/25/2019  
**Time:** 4:00 PM -  
**Title:** Town of Effingham Hazard Mitigation Plan Meeting  
**Contact:** See below,  
**Location:** Effingham Municipal Offices, 68 School Street, Effingham  
**Description:**

The Effingham Hazard Mitigation Plan Committee will meet at the Effingham Municipal Offices (68 School Street) at 4:00 PM. Residents of Effingham and representatives from neighboring communities are encouraged to attend and provide input during the process of updating the Town's 2013 Hazard Mitigation Plan.

The committee is represented by a variety of local interests including the Fire and Police departments, along with the Planning and Select boards. The group is focusing on the natural hazards that put Effingham at risk as well as the development of recommendations to protect the safety and well-being of town residents.

For more information, please call Chief Burbank, Effingham Emergency Management Director, at 539-7956 or David Jeffers, Regional Planner, LRPC, at 279-5341.

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[www.lakesrpc.org](http://www.lakesrpc.org)

603-279-8171

**LAKES REGION PLANNING COMMISSION**

103 Main Street, Suite #3  
 Meredith, NH 03253  
 tel (603) 279-8171  
 fax (603) 279-0200  
 www.lakesrpc.org



April 2, 2019

## For Immediate Release

Contact: David Jeffers, 279-5341, [djeffers@lakesrpc.org](mailto:djeffers@lakesrpc.org)

### Town of Effingham Hazard Mitigation Plan Meeting

The Effingham Hazard Mitigation Plan Committee is in the process of updating its 2013 Hazard Mitigation Plan. The committee is represented by a variety of local interests including the Fire and Police departments, along with the Planning and Select boards and the Capital Improvements Committee. The group is focusing on the natural hazards that put Effingham at risk as well as the development of recommendations to protect the safety and well being of town residents.

The committee will meet on April 8, 2019 at the Effingham Municipal Offices (68 School Street) starting at 4:00 PM. Residents of Effingham and representatives from neighboring communities are encouraged to attend and provide input.

Hazard Mitigation Planning is important to reducing disaster losses, as are appropriate regulations and land use ordinances. The most significant areas of concern for Effingham are being reviewed and evaluated through this process; in the 2013 Plan these included winter storms and flooding.

With the update to the Hazard Mitigation Plan, town leaders will be able to evaluate the status of current plans, policies, and actions then develop and prioritize actions to reduce the impacts of these and other hazards. Community leaders want the town to be a disaster resistant community and believe that updating the Hazard Mitigation Plan will bring Effingham one step closer to that goal.

For more information please call Chief Burbank, Emergency Management Director at 539-7956 or David Jeffers, Regional Planner, Lakes Region Planning Commission at 279-5341.

XXXXX

## Effingham HMP meeting 5/6



David Jeffers

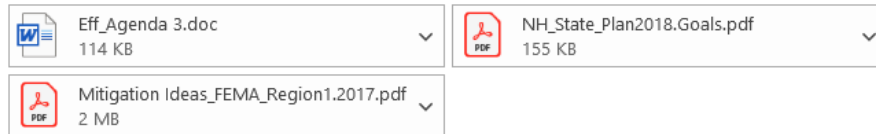
Reply
 Reply All
 Forward
 ...

To 'Town of Effingham'; 'Adam Riley'; 'Carl Huddleston'; Dana Cullen Jr. (dcull74@hotmail.com); 'James Eldridge'; 'Kevin Wells'; 'station1@wakefieldfirerescue.com'; 'Trask, Thomas'; Catalina Kirsch (continuum@c3ph.org); 'mschobbs@gmail.com'; 'chuck.fuller@gmail.com'; '66partman@gmail.com'; 'Theresa Swanick'; 'snowfarm1777@gmail.com'; 'mriley@greemountaintreatment.com'; 'efandr@hotmail.com'; 'epd@hotmail.com'

Cc 'nancy.baillargeon@des.nh.gov'; 'Lawton, Heidi'; 'Henderson, Kayla'; Gilbert, Jennifer; 'efandr@hotmail.com'

Fri 5/3/2019 4:32 PM

You forwarded this message on 5/10/2019 3:36 PM.



Hello all,

This is a reminder that the Effingham Hazard Mitigation Plan Committee will hold its next meeting Monday May 6 at 4:00 PM at the Effingham Municipal Offices. Attached are:

- the agenda for the meeting
- and two resources that will be discussed at the meeting
- Goals from the 2018 State HMP (the Goals of the 2013 Effingham HMP are on p. 55 of the plan)
- Mitigation Ideas from FEMA Region 1 – a good resource for considering mitigation strategies for a variety of natural hazards.

We hope to see you at the meeting.

Dave

-----  
David Jeffers  
Regional Planner  
Lakes Region Planning Commission  
603.279-5341 – Direct Line  
603.279.8171 – Main Office  
103 Main Street Suite #3  
Meredith, NH 03253  
[www.lakesrpc.org](http://www.lakesrpc.org)



**SAVE THE DATE | June 24**  
**ANNUAL MEETING 2019**  
THE PRESERVE AT CHOCORUA  
T a m w o r t h



## State and Local Mitigation Planning

### Building stronger and safer

Hazard mitigation planning is the process state, local and tribal governments use to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), State, local and Tribal governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance.

### Reducing risks through mitigation planning

A hazard mitigation plan is a long-term strategy for reducing disaster losses. The planning process promoted by the Disaster Mitigation Act of 2000 is as important as the resulting plan because it encourages jurisdictions to integrate mitigation with day-to-day decision-making regarding land-use planning, floodplain management, site design and other functions.

### Mitigation planning elements

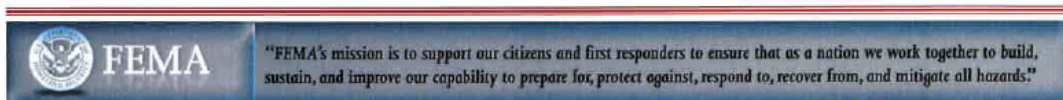
- **Public involvement** – In addition to government agencies involved in incident management, floodplain management and economic development, the planning process usually involves a range of stakeholders, including representatives of neighborhood groups, civic organizations, academia, environmental groups, the business community and individual citizens. Involving stakeholders is essential to determining the

most vulnerable populations and facilities in the community and to assuring community wide support for the plan.

- **Risk assessment** – A risk assessment is the process of identifying natural hazards and risks associated with them, including threats to public health and safety, property damage and economic loss. The assessment answers the fundamental question, “What would happen if a natural disaster occurred?” and provides a factual basis for the mitigation activities proposed in the strategy. The assessment includes a description of the type, location and extent of natural hazards; the jurisdiction’s vulnerability to the hazards; and the type and numbers of buildings, infrastructure and critical facilities located in identified hazard areas.
- **Mitigation strategy** – Based on the risk assessment, State, local and Tribal governments develop mitigation goals and objectives and a strategy for mitigating disaster losses. The strategy sets forth an approach for implementing activities that are cost-effective, technically feasible and environmentally sound.

### Hazard mitigation plan required to receive HMGP Project Grants

Local jurisdictions are required by federal law to have a FEMA-approved hazard mitigation plan in order to receive Pre-Disaster Mitigation (PDM) or Hazard Mitigation Grant Program (HMGP) project grant funding. However, in extraordinary circumstances, HMGP funds can be awarded to communities that agree to develop a hazard mitigation plan within 12 months of receiving the project grant. Every State has a FEMA-approved hazard mitigation plan, though many local jurisdictions still do not.



## Fact Sheet

### State and Local Mitigation Planning



#### Mitigation Examples

History shows that the physical, financial and emotional losses caused by disasters can be reduced significantly through mitigation planning. Mitigation focuses attention and resources on solving a particular problem (such as reducing repetitive flood losses) and thereby produces successive benefits over time. Through implementation of local floodplain ordinances, for example, it is estimated that \$1.1 billion in flood damages are prevented annually.

Mitigation includes a broad range of activities designed to protect homes, schools, public buildings and critical facilities. Examples include the following types of projects:

- Adopting and enforcing more stringent building codes, flood-proofing requirements, seismic design standards, or wind-bracing requirements for new construction or the retrofit of existing buildings.
- Exceeding the National Flood Insurance Program (NFIP) floodplain management regulations by elevating structures above the base flood elevation (BFE) in high-risk areas.
- Adopting stricter development regulations and zoning ordinances that steer development away from areas subject to flooding, storm surge, or coastal erosion.
- Retrofitting public buildings, schools and critical facilities, such as police and fire stations, to withstand hurricane-strength winds or ground shaking from earthquakes.
- Using public funds to acquire damaged homes or businesses in flood-prone areas, demolish or relocate the structures and use the property for open space, wetlands, or recreational uses.
- Building community shelters and “safe rooms” to help protect people in public buildings and schools in hurricane- and tornado-prone areas.

#### Planning tool available for government agencies

FEMA has developed a number of planning tools to help government agencies develop mitigation plans. These include how-to guides, CD ROMs and online information about organizing a planning team, involving stakeholders, conducting risk assessments, evaluating potential mitigation measures, conducting benefit-cost analyses and other planning issues.

#### For more information

Please visit: <http://www.fema.gov/plan/mitplanning/index>.

For state name disaster recovery, visit [www.fema.gov](http://www.fema.gov) or your state Web-site.



*“FEMA’s mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.”*

## APPENDIX D: MEETING AGENDAS AND NOTES

This section contains samples of the Committee meeting agendas, notes, and a summary of participation. All Committee meetings were held in the Effingham Municipal Offices. Agendas were developed by the LRPC planner, and meetings were chaired by the Emergency Management Director; copies were posted and sent to neighboring EMDs. Agendas indicated opportunities for public input.

### Effingham Hazard Mitigation Plan Update Committee

March 25, 2019      4:00 PM  
Effingham Municipal Offices  
68 School Street, Effingham, NH

#### AGENDA

1. Introductions
2. What is Hazard Mitigation Planning?
  - a. Mitigation planning vs. emergency response planning
3. Purpose of Committee and Community Outreach
4. Identify all natural hazards in the Effingham area
  - a. since 2013
  - b. potential
5. Changes to Critical Facilities
6. Development Trends
7. Community Capabilities
  - a. Planning & Regulatory
  - b. Administrative and Technical
  - c. Financial
  - d. Education & Outreach
  - e. National Flood Insurance Program (NFIP)
8. Schedule for future meetings
9. Public Input

- Goals for next meeting:
- a. Risk Assessment, including data collection
  - b. Town Goals



(Back of agendas)

**The focus of this process is mitigation, which is action taken to reduce or eliminate long-term risk to hazards.**

**Mitigation is different from preparedness, which is action taken to improve emergency response or operational preparedness.**

Definitions for evaluation of Capabilities

**Poor (P)**..... The policy, plan, mutual aid system or action does **not work as well as it should** and **often** falls short of meeting its goals.

**Fair (F)**..... The policy, plan, mutual aid system or action does **not work as well as it should** and **sometimes** falls short of meeting its goals.

**Good (G)**..... The policy, plan, mutual aid system or action **works well** and is **achieving its goals**.

**Excellent (E)**..... The policy, plan, mutual aid system or action **works very well** and **often exceeds its goals**.

**Untested (U)**..... The policy, plan, mutual aid system or action **has not yet been developed, tested, or built** and **cannot yet be evaluated**.

**Effingham Hazard Mitigation Plan (HMP) Update Committee Meeting**  
**March 25, 2019      Effingham Municipal Offices**  
**NOTES**

**In Attendance:**

Randy Burbank	Effingham EMD & Fire Chief
Jeff Jones	Public Health Emergency Preparation Coordinator (C3PH)
Chuck Fuller	Effingham Selectman
Michael Cahalane	Effingham Selectman
John Meisner	Effingham Selectman
Patti Morrissey	Effingham Elementary School Principal
Grace Fuller	Effingham Capital Improvements Plan Committee
Rebecca Boyden	Effingham Zoning Enforcement Officer
Cheryl Feirick	Effingham Supervisor of the Checklist
Jonathan Burbank	Effingham Resident
Kayla Henderson	State Hazard Mitigation Planner (NH HSEM)
David Jeffers	Lakes Region Planning Commission (LRPC), Regional Planner

After introductions, the distinctions between Mitigation and Response planning were discussed, and D. Jeffers reviewed the plan development process.

- Hazard mitigation is sustained action to reduce or eliminate long-term risk to people and property from hazards, NOT preparing for an impending event, immediate response, or short-term recovery; for example installing a larger culvert in advance as opposed to fixing a blown out culvert.
- Effingham has selected to work with LRPC through a contract with NH HSEM (Homeland Security and Emergency Management) in updating their HMP, which require updating every five years. The funding for this program comes from FEMA (Federal Emergency Management Agency).
- An adopted HMP is a requirement for receiving FEMA funding for mitigation projects.
- The focus will be on any local changes that may have occurred in terms of hazards, facilities, and priorities since 2013.
- As with past versions of the HMP, this is the town's Plan but it does need to satisfy the 20 items on the FEMA checklist.
- The State HMP was updated in 2018 and included some changes to the list of hazards, mainly name changes, a couple were dropped, and a couple were added. It was explained that the local plan should at least consider the inclusion of these new hazards in the plan (and document the committee's thinking on whether to include the new hazards).
- RPC will research and map information, facilitate meetings, and write drafts of the plan.
- The committee is responsible for providing local information, brainstorming mitigation actions, and prioritizing those actions.
- The draft plan will be reviewed by the committee and the public, sent to NH HSEM for review and conditional approval, and ultimately needs to be adopted by the Selectmen.

**Review Critical Infrastructure and Key Resources**

- Tables 4.1 - 4. 4 in the current plan were reviewed and discussed.
- Most of the town's generators are permanent.
- Lake View Neurorehabilitation has been replaced by Green Mountain Treatment Center.
- Care Plus is current EMS provider
- Several additional facilities were noted for medical services - Saco River (Conway), White Mtn. Health (Wakefield), Saco Valley Medical (Cornish, ME), Tamworth Community Nurse



**Effingham Hazard Mitigation Plan (HMP) Update Committee Meeting**  
**March 25, 2019      Effingham Municipal Offices**  
**NOTES**

- There was discussion of sheltering capabilities, including ADA requirements, kitchen and bathroom facilities, and potable water.
- IF a helicopter landing zone were needed, the Congregational Church lot at NH 16 and NH 25 would be more appropriate
- The bridge on Granite Road is closed and the bridge on Snow Road over the South River is on the state's Municipal Red List. The Elm Street Bridge over the Pine River needs repairs.
- What should be listed as historical structures and resources in this plan was discussed
- Several road and drainage projects were noted as concerns - Bailey Rd, Pine River Road, and Wilkinson Swamp Rd.
- 

**Review of Hazard Events**

- High winds during the storm of October 30 - November 1, 2017 were noted as having an impact on the town
- The March 7, 2018 blizzard brought down a number of trees and wires in town.
- March 13-14, 2018 storm brought high winds making it difficult to fight the fire that destroyed the Province Lake Golf Club. This included downed wires.
- There have not been HMPG funding requests from the town since 2013.
- From the state plan infectious diseases (Lyme and Zika) were mentioned and hazardous chemicals - PFAS from the town landfill were noted.

**Review of Community Capabilities**

- There have not been major rewrites to the town's Site Plan and Subdivision Regulations in the last five years.
- The Zoning Enforcement Officer went through floodplain training and the town has new flood maps.
- Most floodplain development is agricultural in nature.
- No substantive changes in the Zoning Regulations.

**Development Trends since 2013 were discussed.**

- Development trends have been minimal.

**For the next meeting**

- Committee members were to be provided with the 2013 Plan
- Copies of Table 6.1 Policies, Plans, and Mutual Aid were to be reviewed in advance of the next meeting.

**Next meeting: 4/8/19 at 4:00 PM in the Effingham Municipal Offices**

<b>Name</b>	<b>Position</b>	<b>3/6/19</b>	<b>3/25</b>	<b>4/8</b>	<b>5/6</b>	<b>5/23</b>	<b>6/20</b>	<b>7/3</b>	<b>7/17/19</b>
Randy Burbank	Effingham Fire Chief & EMD	X	X	X		X	X	X	X
John Meisner	Effingham Selectman		X			X	X	X	X
Chuck Fuller	Effingham Selectman		X	X		X	X		X
Michael Cahalane	Effingham Selectman		X	X	X		X		X
Grace Fuller	Effingham Planning Board		X	X		X	X	X	X
Rebecca Boyden	Effingham Zoning Officer		X		X	X	X		
Patti Morrisey	Effingham Elem. School Principal		X				X	X	
Mark Riley	Green Mtn. Treatment Center		X	X			X	X	X
Cheryl Feirick	Effingham Supervisor of Checklist		X		X	X		X	
Jeff Jones	Public Health Emerg. Prep. C3PH		X						
Eric Diaz	Effingham Police Department			X					
Tom Trask	NH Div. of Forest and Lands			X	X				
Brian Taylor	Effingham Fire & Rescue			X		X	X		
Carol Pfister	Effingham Trustee of Trust Funds					X	X		
Ian MacMillan	Effingham Police Department					X	X		
Theresa Swanick	Effingham Planning Board						X		
Kayla Henderson	NH HSEM State Haz. Mit Planner		X	X			X		
Heidi Lawton	NH HSEM Field Rep								
David Jeffers	LRPC Planner	X	X	X	X	X	X	X	

**APPENDIX E: PAST HAZARD EVENTS**

Type of Event	Date	Location	Extent	Source
<p><b>Past Flooding Hazards:</b> Riverine flooding is the most common disaster event in the State of New Hampshire (aside from frequent inconveniences from rather predictable moderate winter storms). Significant riverine flooding impacts upon some areas in the State in less than ten-year intervals. The entire State of New Hampshire has a high flood risk. Areas prone to flooding and road erosion are indicated on <b>Map 3</b>.</p>				
<p><b>General flood record for the State of New Hampshire</b></p>				
Flooding Prior to 1970	1927, 1936, 1938, 1943 (2), 1953, 1955, 1959	State & Town Wide	Spring and fall flooding events resulting from severe storms and/or heavy snowmelt	<p>See References Below.</p> <p>Presidential Proclamations (DRs) and Emergency Declarations (EMs) represent all flooding events that have taken place throughout the State</p>
Flooding 1970-1979	1972 (DR-327), 1973 (DR-399), 1974 (DR-411), 1976, 1978 (DR-549), 1979 (EM-3073)	State & Town Wide	Spring and fall flooding events resulting from severe storms and/or heavy snowmelt	
Flooding 1980-1989	1986 (DR-771), 1987 (DR-789)	State & Town Wide	Spring and fall flooding events resulting from severe storms and/or heavy snowmelt	
Flooding 1990-1999	1990 (DR-876), 1991 (DR-923), 1995 (DR-1077), 1996 (DR-1144), 1998 (DR-1231)	State & Town Wide	Spring and fall flooding events resulting from severe storms and/or heavy snowmelt	
Flooding 2000-2009	2003 (DR-1489), 2005 (DR-1610), 2006 (DR-1643), 2007 (DR-1695), 2008 (DR-1787), 2008 (DR-1799)	State & Town Wide	Spring and fall flooding events resulting from severe storms and/or heavy snowmelt	
Flooding 2010-Present	2010 (DR-1892), 2010 (DR-1913), 2011 (DR-4006), 2011 (DR-4026), 2012 (DR-4065)	State & Town Wide	Spring and fall flooding events resulting from severe storms and/or heavy snowmelt	
<p><b>Specific flood record for the Community &amp; Recent Presidential Proclamations &amp; Emergency Declarations</b></p>				
Flood (Riverine and Local)	2007 & Potential	Effingham	Heavy Rain - Washed out Molly Philbrick, Hutchins Pond Road, Town House (shoulders), Jack Russell Road; Clough Road; flooded houses on Symmes Road and Partridge Cove (Ossipee River flooding)	2013 HMP Team
Flooding (erosion)	Annually, Spring & Potential	Effingham	Portions of Jones, Green Mountain, High Watch, and Hutchins Ponds Roads washout frequently during heavy rains	2008 HMP Team

Type of Event	Date	Location	Extent	Source
Carroll County flood events (taken from 2008 HMP)	4/18/1997	Carroll County	Three to five inches of rain in 8 to 12 hours caused small rivers and streams to rise rapidly. Many roads were closed due to washouts and water over roadways. Some homes were evacuated	2008 HMP Team & NOAA
	3/31/98	Carroll County	Rapid snowmelt due to record breaking high temperatures combined with rainfall to cause river flooding on the tributaries of the Saco River. Many homes were flooded and schools were closed in the affected areas	
	4/1/98	Carroll County	Three to eight inches of rain caused small rivers and streams to rise. Many roads were flooded and/or washed out. Campgrounds and some lakeside homes had to be evacuated	
Flooding	Every Several Years	Effingham	Ossipee River floods frequently flooding Partridge Cove & Symmes Roads	2008 HMP Team
Flooding & Severe Storms	May 12-23, 2006	Belknap, Carroll, Grafton, Hillsborough, Merrimack, Rockingham & Strafford	<b>Presidential Disaster Proclamation: DR-1643:</b> Flooding in most of southern NH, May 12-23, 2006	FEMA
Flooding, Nor'easter & Severe Storms	April 15, 2007	All Ten NH Counties	<b>Presidential Disaster Proclamation: DR-1695:</b> flood damages; FEMA & SBA obligated more than \$27.9 million in disaster aid following the April nor'easter	FEMA
Flooding & Severe Storms	July 24-August 14, 2008	Belknap, Carroll & Grafton & Coos	<b>Presidential Disaster Proclamation: DR-1787:</b> Severe storms, tornado, and flooding on July 24, 2008	FEMA
Flooding; Tropical Storm Irene	August 26-September 6, 2011	Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan	<b>Presidential Disaster Proclamation: DR-4026:</b> Tropical Storm Irene Aug 26th- Sept 6, 2011 Carroll, Coos, Grafton, Merrimack, Belknap, Strafford, & Sullivan Counties; Effingham was impacted by Tropical Storm Irene; roads flooded, power outages	FEMA & 2013 HMP Team

Type of Event	Date	Location	Extent	Source
<p><b>Past or Potential Wildfire:</b> New Hampshire is heavily forested and is therefore vulnerable to wildfire, particularly during periods of drought. The proximity of many populated areas to the state's forested lands exposes these areas and their populations to the potential impact of Wildfire. Wildfires were <b>not mapped</b>.</p>				
Forest Fire	1953	NA	<b>Presidential Disaster Proclamation: DR-11:</b> This fire took place in the Pine Barrens region of east-central NH	FEMA
Forest Fire	1957	Area Communities	Fire started at Madison Lumber; most of the fire was in Tuftonboro and Freedom, burning a total of 3,000 Acres	2013 HMP Team
Forest Fire	1947	Bald Ledge Fire	Off East Madison Road; approx. 800 Acres total in both Madison and Freedom	2013 HMP Team
<p><b>Past or Potential Tornado, Downburst, Microburst &amp; Hurricane Hazards:</b> Tornadoes are spawned by thunderstorms and, occasionally by hurricanes, and may occur singularly or in multiples. A downburst is a severe localized wind blasting down from a thunderstorm. Downburst activity is very prevalent throughout the State, yet most go unrecognized unless significant damage occurs. Hurricanes develop from tropical depressions which form off the coast of Africa. New Hampshire's exposure to direct and indirect impacts from hurricanes is real, but modest, as compared to other states in New England. These hazards were <b>not mapped</b>.</p>				
<p><b>General high wind event record for the State of New Hampshire</b></p>				
Hurricanes	1938, 1944, 1954 (2), 1985, 1991 ( <b>DR-917</b> ), 1999 ( <b>DR-1305</b> ), 2005 ( <b>EM-3258</b> ), 2011 ( <b>DR-4026 &amp; EM-3333</b> ), 2012 ( <b>DR-4095 &amp; EM-3360</b> )	State & Town Wide	<b>Number 4</b> (1938), <b>Number 7</b> (1944); <b>Carol</b> (1954), <b>Edna</b> (1954), <b>Gloria</b> (1985), <b>Bob</b> (1991), <b>Floyd</b> (1999), <b>Irene</b> (2011), <b>Sandy</b> (2012)	See References Below
Tornadoes	1963, 1965, 1970, 1972 (2), 1986 (2), 2006, 2008 ( <b>DR-1782</b> )	Carroll County	F1 or F2 the Fujita Scale	Presidential Proclamations (DRs) and Emergency Declarations (EMs) represent all wind events that have taken place throughout the State.
High Wind Events	1998, 1999, 2003, 2006 (2), 2007, 2008 ( <b>DR-1782</b> )	State & Town Wide	Events that resulted in downed trees on power lines, power outages and property damage	

Type of Event	Date	Location	Extent	Source
<b>Specific high wind event record for the Community &amp; Recent Presidential Proclamations &amp; Emergency Declarations</b>				
Tornado, Severe Storms & Flooding	July 24, 2008	Belknap, Carroll, Merrimack, Strafford & Rockingham	<b>Presidential Proclamation: DR-1782:</b> Tornado damage to several NH counties; in Effingham, trees down, whole roads closed, one shed got flipped over on Town House road; Route 153, Town House road, Wilkinson Swamp Road blocked; heavy damage in state forest, timber damage on state & private & town property; power failure isolated for a full week; went through whole town Ossipee to Freedom	2013 HMP Team
Hurricane Irene	August 26-September 6, 2011	All Ten NH Counties	<b>Presidential Emergency Declaration: EM-3333:</b> Emergency Declaration for Tropical Storm Irene for in all ten counties; Heavy rain, trees, wires, Town House Road culvert washed out; tree on house on Green Mountain Road	FEMA & 2013 HMP Team
Microburst	9/29/2006	Effingham	Along NH Route 153; Route 153, trees down blocked the road; some power outages caused by trees on power lines	2013 HMP Team
Hurricane Katrina Evacuation	Aug-05	All Ten NH Counties	<b>Presidential Emergency Declaration: EM-3258:</b> Assistance to evacuees from the area struck by Hurricane Katrina and to provide emergency assistance to those areas beginning on August 29, 2005	FEMA
<b>Past or Potential Severe Winter Weather Hazards:</b> Severe winter weather in New Hampshire may include heavy snowstorms, blizzards, Nor'easters, and ice storms (particularly at elevations over 1500 feet). Generally speaking, New Hampshire will experience at least one of these hazards during any winter season. Most New Hampshire communities are well prepared for such hazards. These hazards were <b>not mapped</b> .				
<b>General ice and snowstorm event record for the State of New Hampshire</b>				
Ice Storms	1979; 1998 ( <b>DR-1199</b> ); 2008 ( <b>DR-1812</b> )	State & Town Wide	Ice Storms: major disruptions to power; transportation; public and private utilities	
Severe Winter Storms	1929, 1952, 1958, 1960, 1961, 1969, 1978 ( <b>DR-549</b> ), 1982, 1993, 1994 ( <b>EM-3101</b> ), 2001 ( <b>EM-3166</b> ), 2003 ( <b>EM-3177 &amp; EM-3193</b> ), 2004, 2005 ( <b>EM-3207, EM-3208 &amp; EM-3211</b> ), 2008 ( <b>EM-3297</b> ), 2009, 2010 ( <b>DR-1892</b> ), 2011 ( <b>DR-4049 &amp; EM-3344</b> )	State & Town Wide	Events marked by snowfalls exceeding 2' in parts of the State; disruptions to power and transportation; in Effingham the 1969 storm impacted structures with damage to buildings. Roads were blocked for a few days	Presidential Proclamations (DRs) and Emergency Declarations (EMs) represent all snow & ice events from throughout the State.

Type of Event	Date	Location	Extent	Source
<b>Specific ice and snowstorm event record for the Community &amp; Recent Presidential Proclamations &amp; Emergency Declarations</b>				
Carroll county snow events (taken from 2008 HMP)	12/7/1996	Carroll County	County Wet, heavy snow led to power outages NOAA	2008 HMP Team & NOAA
	1/3/1999	Carroll County	County Heavy snow, sleet, and freezing rain resulted in power outages. NOAA	
	2/18/2000	Carroll County	County More than a foot of snow in 24 hours NOAA	
	3/5/2001	Carroll County	County Up to 2' of snow from a 36-hour blizzard NOAA	
	3/18/2001	Carroll County	County One foot of snow in 18-hour storm. NOAA	
	11/16/2002	Carroll County	County Snow, sleet, and freezing rain resulting in downed power lines. NOAA	
	12/25/2002	Carroll County	County More than a foot of snow in 20-hour storm. NOAA	
	3/11/2005	Carroll County	County More than a foot of snow in a 40-hour spring storm. NOAA	
Ice Storm	1/7/1998	State & Town-Wide	<b>Presidential Proclamation: DR-1199</b> ; Some without power for up to two weeks; National Guard helped Effingham open roads; trees and power lines and poles were down; most roads had problems while many were impassable	2013 HMP & HSEM
Snow	Jan-03	Effingham	3 snowstorms of 2' or more within a week; 13' feet of snow in 2003	2013 HMP Team
Snow	January, 22-23, 2005	Belknap, Carroll, Cheshire, Grafton, Hillsborough, Rockingham, Merrimack, Strafford & Sullivan	<b>Presidential Emergency Declaration: EM-3207</b> : Total aid for the January storm is \$3,658,114.66 (Carroll County: \$52,864.23)	FEMA
Snow	February 10-11, 2005	Carroll, Cheshire, Coos, Grafton & Sullivan	<b>Presidential Emergency Declaration: EM-3208</b> : Total aid for the February storm is <b>\$1,121,727.20</b> (Carroll County: \$91,832.72)	FEMA
Snow	March 11-12, 2005	Carroll, Cheshire, Hillsborough, Rockingham & Sullivan	<b>Presidential Emergency Declaration: EM-3211</b> : Total aid for the March storm is \$2,112,182.01 (Carroll County: \$73,964.57)	FEMA

Type of Event	Date	Location	Extent	Source
Snow	January, February & March 2005	All Ten NH Counties	<b>EM 3208-002:</b> The Federal Emergency Management Agency (FEMA) has obligated more than \$6.5 million to reimburse state and local governments in New Hampshire for costs incurred in three snowstorms that hit the state earlier this year, according to disaster recovery officials. Total aid for all three storms is \$6,892,023.87 (January: \$3,658,114.66; February: \$1,121,727.20; March: \$2,113,182.01); Effingham had significant snowfall in the winter of 2005, perhaps more than area communities	FEMA & 2013 HMP Team
Snow	December 6-7, 2006	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan	<b>Presidential Emergency Declaration: EM-3193:</b> The declaration covers jurisdictions with record and near-record snowfall that occurred over the period of December 6-7, 2003	FEMA
Snow	Winter of 2007-2008	Effingham	High accumulations of snow; roof collapses become a major issue; largest snow totals since 1969	2013 HMP Team
Severe Winter Storm	11-Dec-08	All Ten NH Counties	<b>Presidential Emergency Declaration: EM-3297:</b> Severe winter storm beginning on December 11, 2008	FEMA
Ice Storm	December 11-23, 2008	All Ten NH Counties	<b>Presidential Proclamation: DR-1812;</b> damaging ice storms to entire state including all ten NH counties; fallen trees and large scale power outages; five months after December's ice storm pummeled the region, nearly \$15 million in federal aid had been obligated by May 2009; in Effingham, trees down, power outages; town opened shelter for one night because of the power outages	2013 HMP & FEMA
Snow	2009-2010	Effingham	Extremely heavy snow for the entire winter; 13 ' feet for the season	2013 HMP Team
Severe Storm	October 29-30, 2011	All Ten NH Counties	<b>Presidential Emergency Declaration: EM-3344:</b> Severe storm during the period of October 29-30, 2011. - All ten counties in the State of New Hampshire (aka: Snow-tober).	FEMA



Heavy Snow	Nov-11	Effingham	More than a foot of snow fell in this early winter storm, causing travelling difficulties throughout Effingham	2013 HMP Team
Type of Event	Date	Location	Extent	Source
<b>Past or Potential Earthquake Hazards:</b> According to the NH State Hazard Mitigation Plan, New Hampshire is considered to lie in an area of "Moderate" seismic activity when compare to other areas of the United States and is bordered to the North and Southwest by areas of "Major" activity. Generally, earthquakes in NH cause little or no damage and have not exceeded a magnitude 5.5 since 1940. These hazards were <b>not mapped</b> .				
Earthquakes	December 1940 (2)	Ossipee, NH	Magnitude 5.5 felt in two separate earthquakes	See Referenc es Below
Earthquakes	1947, 1951, 1957, 1962, 1973, 1982, 2011	New England	Small earthquakes felt in New England measuring from 4.2 to 4.7 magnitude	
Earthquakes	October 2012	Northern New England	An earthquake measuring 4.6 on the Richter Scale with an epic center in Hollis, ME (just over the NH border) was felt throughout New Hampshire and as far south as Rhode Island; buildings shook for 10-30 seconds but no damage was reported	
<b>Past or Potential Drought Hazards:</b> Droughts are generally not as damaging or disruptive as floods but are more difficult to define. A drought is a natural hazard that evolves over months or even years and can last as long as several years to as short as a few months. These hazards were <b>not mapped</b> .				
Drought	1929-1936	Town & Statewide	Regional	See Referenc es Below
Drought	1939-1944	Town & Statewide	Most severe in southeast	
Drought	1947-1950	Town & Statewide	Moderate	
Drought	1960-1969	Town & Statewide	Regionally, longest recorded continuous spell of less than normal precipitation	
Drought	2001-2002	Town & Statewide	Third worst drought on record	
<b>Other Past or Potential Hazards:</b> Human-caused hazards and other unusual hazardous events have been noted throughout NH. These hazards are <b>not mapped</b> .				

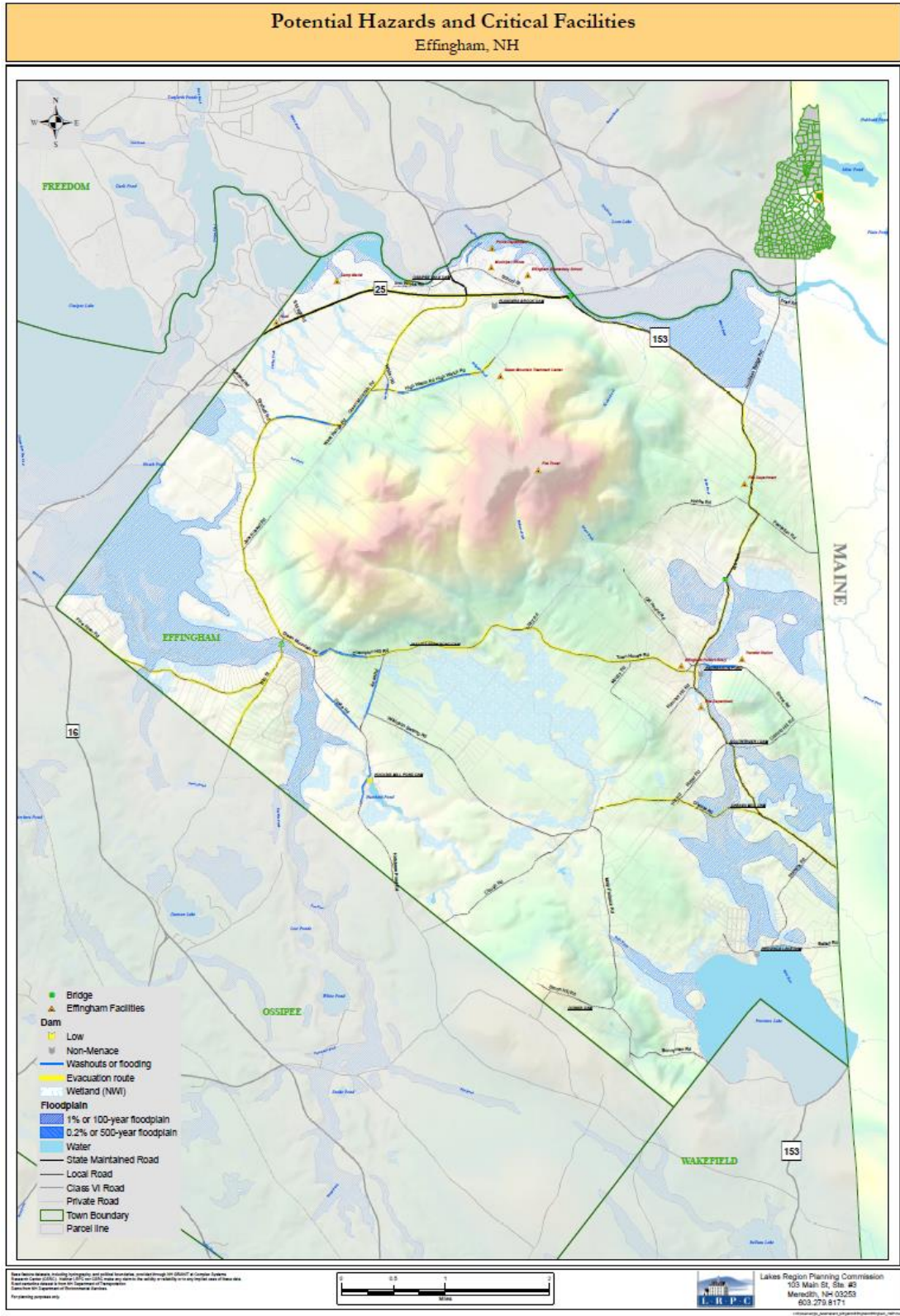
Hailstorm	1984, 1985, 1987 (4), 1994, 2006	Carroll County	Hailstones ranging in size from .75" in diameter to 1.75" in diameter	2008 HMP & NOA
Lightning	Aug-93	Carroll County	Lightning injured three hikers on the face of Mt. Chocorua	2008 HMP & NOA

Type of Event	Date	Location	Extent	Source
Thunderstorms	1970, 1971, 1974, 1983, 1984, 1986 (3), 1987, 1988 (2), 1990; 1993 (2), 1994, 1997, 1998, 2000, 2003, 2005, 2006,	Carroll County	Trees and powers line down from fallen trees	2008 HMP & NOA

\*Historic hazards events were derived from the following sources unless noted otherwise:

- Website for NHDisasters:<http://www3.gendisasters.com/mainlist/newhampshire/Tornadoes>
- New Changing Climate, Weather and Air Quality; <http://www.neci.sr.unh.edu/necccwaq.html>
- The Tornado Project: <http://www.tornadoproject.com/alltorns/nhtorn.htm>
- The Tornado History Project; <http://www.tornadohistoryproject.com/>
- The Disaster Center (NH); <http://www.disastercenter.com/newhamp/tornado.html>
- FEMA Presidential Proclamations and Emergency Declarations; <http://www.fema.gov/disasters>

### APPENDIX F: MAP



## APPENDIX G: SUPPLEMENTARY HAZARD INFORMATION

### Additional Hazard Information

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This section provides statewide or regional information regarding hazards. Some information is about hazards mentioned in the NH Hazard Mitigation Plan. Other information either provides context or extra detail which supplements the locally important information addressed in Chapter III.

#### I. FLOOD, WILDFIRE, DROUGHT

##### **Flooding**

Historically, the state's two largest floods occurred in 1936 and 1938. The 1936 flood was associated with snow melt and heavy precipitation. The 1938 flooding was caused by the Great New England Hurricane of 1938. Those floods prompted the construction of a series of flood control dams throughout New England, built in the 1950s and '60s. They continue to be operated by the US Army Corps of Engineers.<sup>38</sup>

A series of floods in New Hampshire began in October 2005 with a flood that primarily affected the southwest corner of the state and devastated the town of Alstead. The flood killed seven people. It was followed by floods in May 2006 and April 2007 and a series of floods during the late summer and early fall of 2008. The most recent flooding in the region was associated with Tropical Storm Irene in September 2011.

Flooding in the Lakes Region is most commonly associated with structures and properties located within a floodplain. There are numerous rivers and streams within the region and significant changes in elevation, leading to some fast-moving water. The region also has a great deal of shoreline, making it exposed to rising water levels as well. Although historically, there have not been many instances of shoreline flooding, the potential always exists for a major flood event to occur.

Recent rain events have proven this is becoming an increasing concern as additional development is contributing to flood hazards. As areas are covered with impervious surfaces, less water can infiltrate, evaporate, or be transpired by vegetative growth and more of it runs off directly into surface drainages and water bodies. This increases the likelihood of flash floods and substantial overland flow. Of greatest concern are the waterfront properties on the rivers, lakes, ponds, and associated tributaries.

Culvert improvements and roadwork have been conducted throughout the region as a result of localized flooding events. Of concern in the region are areas of steep slopes and soils with limited capacity to accept rapid volumes of rainwater. Roads and culverts near these conditions are most at risk of localized flooding.

##### **Flooding due to Dam Failure**

Dam failure results in rapid loss of water that is normally held back by a dam. These types of floods can be extremely dangerous and pose a threat to both life and property. Dam classifications in New

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<sup>38</sup> <http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html> date visited: January 18, 2011

Hampshire are based on the degree of potential damages that a failure or disoperation of the dam is expected to cause. The classifications are designated as non-menace, low hazard, significant hazard, and high hazard and are summarized in greater detail below.

### New Hampshire Dam Classifications<sup>39</sup>

Classification	Description
Non-Menace	<p>A dam that is not a menace because it is in a location and of a size that failure or mis operation of the dam would not result in probable loss of life or loss to property, provided the dam is:</p> <ul style="list-style-type: none"> <li>• Less than six feet in height if it has a storage capacity greater than 50 acre-feet; or</li> <li>• Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.</li> </ul>
Low Hazard	<p>A dam that has a low hazard potential because it is in a location and of a size that failure or mis operation of the dam would result in any of the following:</p> <ul style="list-style-type: none"> <li>• No possible loss of life.</li> <li>• Low economic loss to structures or property.</li> <li>• Structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services.</li> <li>• The release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course.</li> <li>• Reversible environmental losses to environmentally sensitive sites.</li> </ul>
Significant Hazard	<p>A dam that has a significant hazard potential because it is in a location and of a size that failure or mis operation of the dam would result in any of the following:</p> <ul style="list-style-type: none"> <li>• No probable loss of lives.</li> <li>• Major economic loss to structures or property.</li> <li>• Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services.</li> <li>• Major environmental or public health losses, including one or more of the following:</li> <li>• Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair.</li> <li>• The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more.</li> <li>• Damage to an environmentally sensitive site that does not meet the definition of reversible environmental losses.</li> </ul>
High Hazard	<p>A dam that has a high hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in probable loss of human life as a result of:</p> <ul style="list-style-type: none"> <li>• Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions.</li> <li>• Water levels rising above the first-floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot.</li> <li>• Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services.</li> <li>• The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII.</li> <li>• Any other circumstance that would more likely than not cause one or more deaths.</li> </ul>

<sup>39</sup> NH DES Fact Sheet WD-DB-15 "Classification of Dams in New Hampshire", <http://des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf>. Accessed October 1, 2012.

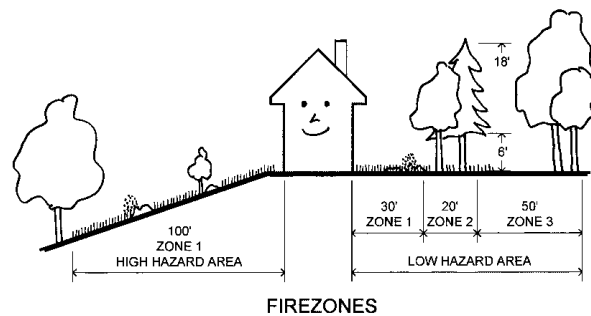
## Wildfire

Several areas in the region are relatively remote in terms of access and fire-fighting abilities. Of greatest concern are those areas characterized by steep slopes and vast woodlands, with limited vehicular access.

As these once remote areas begin to see more development (the urban wildfire interface), care should be taken to ensure that adequate fire protection and buffers are established. Techniques include increased buffers between wooded areas and residential buildings, requirements for cisterns or fire ponds, a restriction on the types of allowable building materials such as shake roofs, and special considerations for landscaping. While historically massive wildfires have been western phenomena, each year hundreds of woodland acres burn in New Hampshire. The greatest risk exists in the spring when the snow has melted and before the tree canopy has developed, and in the late summer – early fall. Appropriate planning can significantly reduce a community's vulnerability for woodland fires. There are four-zone suggestions from the Firewise community program that could be potentially helpful homeowners in Effingham.<sup>40</sup>

**ZONE 4** is a natural zone of native or naturalized vegetation. In this area, use selective thinning to reduce the volume of fuel. Removing highly flammable plant species offers further protection while maintaining a natural appearance.

**ZONE 3** is a low fuel volume zone. Here selected plantings of mostly low-growing and fire-resistant plants provide a decreased fuel volume area. A few well-spaced, fire resistant trees in this zone can further retard a fire's progress.



**ZONE 2** establishes a vegetation area consisting of plants that are fire resistant and low growing. An irrigation system will help keep this protection zone green and healthy.

**ZONE 1** is the protection area immediately surrounding the house. Here vegetation should be especially fire resistant, well irrigated and carefully spaced to minimize the threat from intense flames and sparks.

## LANDSLIDE

**Location:** While there are areas in New Hampshire and other parts of Carroll County that are susceptible, none were identified for Effingham.

### Extent: Weak

No specific scale for measuring landslide was found for this update.

A landslide is the downward or outward movement of slope-forming materials reacting to the force of gravity, including mudflows, mudslides, debris flows, rockslides, debris slides and earth flows. Landslides may be formed when a layer of soil atop a slope becomes saturated by significant

<sup>40</sup> <http://www.firewise.org> accessed September 22, 2014.

precipitation and slides along a more cohesive layer of soil or rock. Seismic activity may play a role in the mass movement of landforms also. Although New Hampshire is mountainous, it consists largely of relatively old geologic formations that have been worn by the forces of nature for eons. Consequently, much of the landscape is relatively stable and the exposure to this hazard type is generally limited to areas in the north and north central portion of the state. Formations of sedimentary deposits and along the Connecticut and Merrimack Rivers also create potential landslide conditions.

Although the overall vulnerability for landslides in the state is low, there is considerable terrain susceptible to landslide action. This was exemplified in May of 2003 when the Old Man of the Mountain collapsed. The continuous action of freezing and thawing of moisture in rock fissures causes it to split and separate. This action occurs frequently on the steeply sloped areas of the state, increasing the risk of landslides.

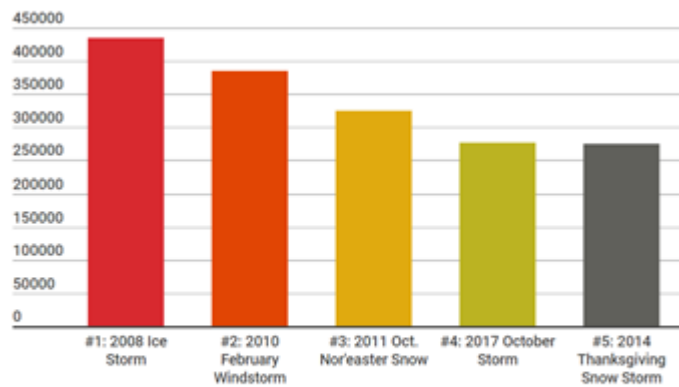
**History:** None in Effingham

**Probability of Occurrence:** Unlikely

### **LONG-TERM UTILITY OUTAGE**

While this update focused on natural hazards, such events do usually have the potential to impact the power grid and other utilities. This was addressed in the 2013 HMP and that text is reprinted here.

A Long-term utility outage is defined as a prolonged absence of a public utility caused by natural, human or technological causes. These prolonged absences are generally caused by infrastructure failure, cyber-attack, supply depletion, distribution disruption, or water source contamination. Types of public utilities can be categorized into four categories: Power/Electricity, Heat/Fuel, Water Supply, and Communications. Although many of these sectors overlap, a prolonged absence of any of the generalized



Source: N.H. Division of Homeland Security & Emergency Management

categories can be disastrous in terms of public safety and economic security. The figure above shows the number of customers impacted by the Top 5 power outages in New Hampshire.

Extended power outages have occurred in Effingham, both as a result of local line damage from high winds and storms and problems with the power grid. A disruption of any of the public utility sectors of any duration can cause life safety and critical resource problems. Power outages most common in New Hampshire are fueled by winter storms and are typically short lived. Historically, the top 5 power outages in NH have occurred in the last decade. With increased weathing trends due to climate change, it is expected undergo stronger, more severe storm weather in the future. Which could furthermore pose a greater concern among a long-term utility outage in the future.

If a major and/or extended power outage occurs and lasts for more than a week, a significant hardship on individual residents could result, particularly those citizens who are elderly, handicapped or poor. In the last twenty years, the Team estimated that a power failure of more than five days has occurred three or four times.

The Team felt that most residents were somewhat self-sufficient; many residences are equipped with generators and many others have woodstoves. The biggest impact from an extended power failure would be the inconvenience caused by the inability to pump water for residents who rely on wells. It is also noted that Effingham is a somewhat difficult place for senior citizens to live; not only is the driving difficult due to weather conditions, but most services including pharmacies and grocers are located out of town. During the 1998 Ice Storm, some residences were without power for several weeks.

As a small close-knit community, town officials are aware of persons who may need help in emergency situations. Nonetheless, an extended power failure causing frozen pipes and a lack of heat and water is potentially a serious hazard for the community. Due to the localized and individual nature of the effects of an extended power failure, the potential loss value is estimated to be between 0% and 1% of the total assessed value of all structures in town.



## APPENDIX H: PRIORITIZATION DETAILS

As the Committee began the process of prioritizing these actions, the group was introduced to the standard STAPLEE Prioritization Tool. This utilizes the standard STAPLEE categories (Social, Technical, Administrative, Political, Economic, and Environmental).

This section contains a summary of rankings for each of the proposed Mitigation Actions by the Effingham Hazard Mitigation Committee. For each action, the benefits and costs of implementing the action (under each of the seven categories) was considered and scored 1, 2, or 3 with a 'one' indicating that the costs outweighed the benefits in a particular category, a 'three' meant that the benefits were greater than the costs, and a 'two' meant that while there are costs associated with the project, they are balanced out by the benefits. The seven category scores were summed for an overall project total. A maximum total score is 21, the minimum is 7. Actual results ranged from 9 to 21. These ratings were arrived at through committee discussion and group consensus.

Hazard	New Mitigation Project	TOTAL	Social	Technical	Administrative	Political	Legal	Economic	Environmental
Lightning	Back-up municipal files.	<b>21</b>	3	3	3	3	3	3	3
Flood	Through Public Outreach and the Town's website, educate homeowners regarding where the floodplain is, the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, and inform property owners about the availability of flood insurance for all properties in town, whether or not they are in the flood zone.	<b>21</b>	3	3	3	3	3	3	3
Fire	Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes and add a link on the Town's website to "Firewise".	<b>21</b>	3	3	3	3	3	3	3
Extreme Temps	Raise awareness among the public of availability of resources and services to address extreme heat and cold.	<b>21</b>	3	3	3	3	3	3	3
Drought	Raise awareness of a) how to stay up-to-date on conditions, such as with the Code Red system and b) resources that may be available to assist.	<b>21</b>	3	3	3	3	3	3	3

Hazard	New Mitigation Project	TOTAL	Social	Technical	Administrative	Political	Legal	Economic	Environmental
All Haz. Response & Communic.	NIMS & ICS Training for Town Officials.	21	3	3	3	3	3	3	3
All Haz. Communic. & Response	Advise residents who live on private roads of the importance of maintaining their roads for first responders, perhaps through the Town's website.	21	3	3	3	3	3	3	3
All Haz. Communic.	Add an emergency page to the Town's website. And develop a brochure with Emergency Resources and phone numbers (including Code Red)	21	3	3	3	3	3	3	3
All Haz. Communic.	Put in place a public outreach initiative to be put in place to encourage all citizens to install 911 markers.	21	3	3	3	3	3	3	3
Severe Winter Weather	Encourage that there be redundancies/loop wiring in the power grid. Raise awareness among the public of the need to have CO detectors operating in homes.	21	3	3	3	3	3	3	3
High Wind	Raise awareness of safety benefits of property maintenance against high winds by making information available at municipal offices and the library.	21	3	3	3	3	3	3	3
Other (Infectious Diseases)	In conjunction with C3PH, utilize the town website, municipal offices, library, as well as the Fire and Police Department offices to disseminate information to the public about prevention of infectious diseases.	20	3	3	2	3	3	3	3
Dam Failure	Establish contact with dam owners to discuss dam maintenance procedures. Explore methods to better understand the threats posed by one or more dam failure. Including FEMA grants for EAP.	19	3	2	2	3	3	3	3
All Haz. Educ/Outreach	Provide education to residents about surviving severe winter storms and other natural hazards through the Town's website and links; topics to include carbon monoxide inhalation, downed wires, back feeding of generators.	19	3	2	2	3	3	3	3
Lightning	Install lightning rods and/or surge protection systems on critical facilities.	19	3	2	3	3	3	2	3

Hazard	New Mitigation Project	TOTAL	Social	Technical	Administrative	Political	Legal	Economic	Environmental
Fire Response	Develop incentives that will allow the Fire Department to recruit and retain the appropriate staffing levels.	<b>19</b>	3	2	2	3	3	3	3
All Haz. Implement.	Update and Incorporate a natural hazards section into Town's Master Plan.	<b>19</b>	3	2	2	3	3	3	3
Fire	Review the Town's firefighting water resources and consider locations for dry hydrants and fire breaks.	<b>18</b>	3	3	3	2	3	2	2
Flood	Develop a program of scheduled culvert maintenance, reducing the likelihood of flooding during periods of heavy rain.	<b>17</b>	3	1	1	3	3	3	3
Flood	Replace and enlarge culverts along portions of Drake, Green Mountain, High Watch, Jones, Snow, Hobbs, and Symmes Roads to improve drainage reducing flooding, as well as the washouts and icy winter-time conditions associated with poorly drained roads.	<b>17</b>	3	2	2	3	3	1	3
All Haz. Response & Communic.	Identify helicopter landing areas and document their GPS coordinates in case these sites are needed for emergency evacuation.	<b>16</b>	3	1	1	3	2	3	3
Other (Emerging Pollutants)	Monitor for PFOA contamination through a well-testing program.	<b>16</b>	3	2	2	2	2	2	3
High Wind	Trim trees and brush along roads and around infrastructure and municipal facilities.	<b>16</b>	3	2	2	2	2	2	3
Flood	Replace and enlarge drainage structures along portions of Pine River, Bailey, Clough, and Wilkinson Swamp Roads to reduce flooding & washouts	<b>15</b>	3	1	2	3	2	1	3
All Haz. Communic.	Research and obtain a repeater system to insure town wide communications.	<b>15</b>	3	2	2	3	2	1	2
Other (Water Supply)	Work with state and local officials to identify and implement a permanent solution to ensure that the school/shelter has potable water for all.	<b>15</b>	3	2	2	3	2	1	2

Hazard	New Mitigation Project	TOTAL	Social	Technical	Administrative	Political	Legal	Economic	Environmental
Flood	Develop a systematic beaver relocation & eradication program.	<b>13</b>	2	2	1	2	2	2	2
Dam Failure	Explore methods to better understand the threats posed by one or more dam failure.	<b>13</b>	3	1	1	2	2	2	2
Fire	Develop new water sources as identified in Water Resources Plan (north side of town)	<b>12</b>	2	2	2	2	1	1	2
Flood	Replace and enlarge drainage structures along Huntress Bridge Road	<b>12</b>	2	1	1	2	2	1	3
Flood	Work with NH DOT (District 3) to ensure that maintenance occurs on the catch basins at the intersection of Green Mountain Rd. and NH Rte. 25.	<b>11</b>	2	1	1	2	1	1	3
Flood	Assess ditch capacity in Town and seek funding to repair ditches that are not adequately directing the flow of rain water and snow melt.	<b>9</b>	1	1	1	1	2	1	2
Fire Response	Establish a new fire station in Effingham to reduce response times, especially in the northern sections of town.	<b>9</b>	1	1	1	1	2	1	2
Fire Response	Reconsider options for developing an alternate egress from the Green Mountain Treatment Center.	<b>8</b>	2	1	1	1	1	1	1

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## APPENDIX I: EXISTING PLANS, STUDIES, REPORTS, AND TECHNICAL INFORMATION

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Effingham Hazard Mitigation Plan, 2013

Effingham Master Plan, 2014

Effingham Zoning Ordinance, 2017

Effingham Subdivision Regulations, 2016

Effingham Site Plan Regulations, 2016

“Development Activity in the Lakes Region, 2015 Annual Report”, Lakes Region Planning Commission.

FEMA Community Information System

Effingham Annual Report 2018

State of New Hampshire Multi-Hazard Mitigation Plan, Update 2018

National Oceanic and Atmospheric Administration website, <http://www.ncdc.noaa.gov/>

NH Division of Forests and Lands <http://www.nhdf.org/fire-control-and-law-enforcement/fire-statistics.aspx>

NH Department of Transportation Traffic Volume Reports,

<https://www.nh.gov/dot/org/operations/traffic/documents.htm>

**APPENDIX J: MONITOR, EVALUATE, & UPDATE**

**Table A: Periodic Hazard Mitigation Plan Review Record**

Meeting Schedule (dates)	Tasks Accomplished	How well (or not-so-well) is implementation progressing?	Lead Parties	Public Involvement (citizens, neighboring communities)

The Action Tracker is a data system FEMA is using to document mitigation ideas and progress for all communities. Check this link to obtain and set up a profile to follow and maintain your community’s selected mitigation actions/projects: <http://www.starr-team.com/starr/Pages/default.aspx>

**Table B: Project Implementation Checklist**

ID	Hazard	Action	Funding or Support	Responsibility or Oversight	Time frame	Status 2020	Status 2021	Status 2022	Status 2023
1	Flood	Through Public Outreach and the Town's website, educate homeowners regarding where the floodplain is, the risks of building in flood zone and measures that can be taken to reduce the chance of flooding, and inform property owners about the availability of flood insurance for all properties in town, whether or not they are in the flood zone.	Local	Select Board, Planning Board, Zoning Officer	Short				
2	Fire	Obtain and have available "Firewise" brochures to educate homeowners on methods to reduce fire risk around their homes and add a link on the Town's website to "Firewise".	Local	Select Board & Fire Chief	Short				
3	All Haz. Response & Communic.	NIMS & ICS Training for Town Officials.	Local	EMD	Short				
4	All Haz. Communic. & Response	Advise residents who live on private roads of the importance of maintaining their roads for first responders, perhaps through the Town's website.	Local	Select Board	Short				
5	All Haz. Communic.	Add an emergency page to the Town's website. And develop a brochure with Emergency Resources and phone numbers (including Code Red)	Local	Select Board	Short				
6	Extreme Temps	Raise awareness among the public of availability of resources and services to address extreme heat and cold.	Local	EMD, Welfare Office	Short				
7	Drought	Raise awareness of a) how to stay up to date on conditions, such as with the Code Red system and b) resources that may be available to assist.	Local, Regional	EMD, Welfare Office	Short				

ID	Hazard	Action	Funding or Support	Responsibility or Oversight	Time frame	Status 2020	Status 2021	Status 2022	Status 2023
8	High Wind	Raise awareness of safety benefits of property maintenance against high winds by making information available at municipal offices and the library.	Local	EMD	Short				
9	Severe Winter Weather	Encourage that there be redundancies/loop wiring in the power grid. Raise awareness among the public of the need to have CO detectors operating in homes.	Power companies, local	EMD	Short				
10	All Haz. Educ/Outreach	Provide education to residents about surviving severe winter storms and other natural hazards through the Town's website and links; topics to include carbon monoxide inhalation, downed wires, back feeding of generators	Local	Select Board	Short				
11	Dam Failure	Establish contact with dam owners to discuss dam maintenance procedures. Explore methods to better understand the threats posed by one or more dam failure. Including FEMA grants for EAP.	Local	EMD, Select Board	Short				
12	Fire Response	Develop incentives that will allow the Fire Department to recruit and retain the appropriate staffing levels.	Local	Fire Chief	Short				
13	All Haz. Communic.	Put in place a public outreach initiative to encourage all citizens to install 911 markers.	Local	Select Board	Medium				
14	Lightning	Back-up municipal files.	Local	EMD, Select Board	Medium				
15	Other (Infectious Diseases)	In conjunction with C3PH, utilize the town website, municipal offices, library, as well as the Fire and Police Department offices to disseminate information to the public about prevention of infectious diseases.	Regional, Local	EMD, Welfare Officer	Medium				



ID	Hazard	Action	Funding or Support	Responsibility or Oversight	Time frame	Status 2020	Status 2021	Status 2022	Status 2023
16	All Haz. Implement.	Update and Incorporate a natural hazards section into Town's Master Plan.	Local	Planning Board	Medium				
17	Dam Failure	Explore methods to better understand the threats posed by one or more dam failure.	Local & Grants	EMD, Select Board	Medium				
18	Lightning	Install lightning rods and/or surge protection systems on critical facilities.	Local, HSEM grant	EMD, Select Board	Medium				
19	Fire	Review the Town's firefighting water resources and consider locations for dry hydrants and fire breaks.	Local	Fire Chief	Medium				
20	Flood	Develop a program of scheduled culvert maintenance, reducing the likelihood of flooding during periods of heavy rain.	Local	Select Board	Medium				
21	Flood	Replace and enlarge culverts along portions of Drake, Green Mountain, High Watch, Jones, Snow, Hobbs, and Symmes Roads to improve drainage reducing flooding, as well as the washouts and icy winter-time conditions associated with poorly drained roads.	Local & Grants	Select Board	Medium				
22	Flood	Replace and enlarge drainage structures along portions of Pine River, Bailey, Clough, and Wilkinson Swamp Roads to reduce flooding & washouts.	Local & Grants	Select Board	Medium				
23	All Haz. Response & Communic.	Identify helicopter landing areas and document their GPS coordinates in case these sites are needed for emergency evacuation.	Local	EMD	Medium				

ID	Hazard	Action	Funding or Support	Responsibility or Oversight	Time frame	Status 2020	Status 2021	Status 2022	Status 2023
24	High Wind	Trim trees and brush along roads and around infrastructure and municipal facilities.	Local	Select Board	Medium				
25	All Haz. Communic.	Research and obtain a repeater system to insure town wide communications.	Local & Grants	Select Board, Fire & Police Chiefs	Medium				
26	Flood	Work with NH DOT (District 3) to ensure that maintenance occurs on the catch basins at the intersection of Green Mountain Rd. and NH Rte. 25.	Local & Grants	Select Board	Medium				
27	Flood	Assess ditch capacity in Town and seek funding to repair ditches that are not adequately directing the flow of rainwater and snow melt.	Local & Grants	Select Board	Medium				
28	Other (Water Supply)	Work with state and local officials to identify and implement a permanent solution to ensure that the school/shelter has potable water for all.	Local & Grants	School Principal, SAU, EMD	Medium				
29	Other (Emerging Pollutants)	Monitor for PFOA contamination through a well-testing program.	Local	Select Board	Long				
30	Flood	Replace and enlarge drainage structures along Huntress Bridge Road	Local & Grants	Select Board	Long				
31	Fire	Develop new water sources as identified in Water Resources Plan (north side of town)	Local	Fire Chief	Long				
32	Fire Response	Establish a new fire station in Effingham to reduce response times, especially in the northern sections of town.	Local & Grants	Select Board	Long				
33	Fire Response	Reconsider options for developing an alternate egress from the Green Mountain Treatment Center.	Private, Grants	Select Board	Long				
34	Flood	Develop a systematic beaver relocation & eradication program.	Local	Select Board	Short				

## APPENDIX K: FEMA WEBLIOGRAPHY

### DISASTERS AND NATURAL HAZARDS INFORMATION

FEMA-How to deal with specific hazards	<a href="http://www.ready.gov/natural-disasters">http://www.ready.gov/natural-disasters</a>
Natural Hazards Center at the University of Colorado	<a href="http://www.colorado.edu/hazards">http://www.colorado.edu/hazards</a>
National Oceanic and Atmospheric Administration (NOAA): Information on various projects and research on climate and weather.	<a href="http://www.websites.noaa.gov">http://www.websites.noaa.gov</a>
National Climatic Data Center active archive of weather data.	<a href="http://lwf.ncdc.noaa.gov/oa/ncdc.html">http://lwf.ncdc.noaa.gov/oa/ncdc.html</a>
Northeast Snowfall Impact Scale	<a href="http://www.erh.noaa.gov/rnk/Newsletter/Fall%202007/NESIS.htm">http://www.erh.noaa.gov/rnk/Newsletter/Fall%202007/NESIS.htm</a>
Weekend Snowstorm Strikes the Northeast Corridor Classified As A Category 3 "Major" Storm	<a href="http://www.publicaffairs.noaa.gov/releases2006/feb06/noaa06-023.html">http://www.publicaffairs.noaa.gov/releases2006/feb06/noaa06-023.html</a>

### FLOOD RELATED HAZARDS

FEMA Coastal Flood Hazard Analysis & Mapping	<a href="http://www.fema.gov/national-flood-insurance-program-0/fema-coastal-flood-hazard-analyses-and-mapping-1">http://www.fema.gov/national-flood-insurance-program-0/fema-coastal-flood-hazard-analyses-and-mapping-1</a>
Floodsmart	<a href="http://www.floodsmart.gov/floodsmart/">http://www.floodsmart.gov/floodsmart/</a>
National Flood Insurance Program (NFIP)	<a href="http://www.fema.gov/nfip">http://www.fema.gov/nfip</a>
Digital quality Level 3 Flood Maps	<a href="http://msc.fema.gov/MSD/statemap.htm">http://msc.fema.gov/MSD/statemap.htm</a>
Flood Map Modernization	<a href="http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization">http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization</a>
Reducing Damage from Localized Flooding: A Guide for Communities, 2005 FEMA 511	<a href="http://www.fema.gov/library/viewRecord.do?id=1448">http://www.fema.gov/library/viewRecord.do?id=1448</a>

### FIRE RELATED HAZARDS

Firewise	<a href="http://www.firewise.org">http://www.firewise.org</a>
NOAA Fire Event Satellite Photos	<a href="http://www.osei.noaa.gov/Events/Fires">http://www.osei.noaa.gov/Events/Fires</a>
U.S. Forest Service, USDA	<a href="http://www.fs.fed.us/land/wfas/welcome.htm">http://www.fs.fed.us/land/wfas/welcome.htm</a>
Wildfire Hazards - A National Threat	<a href="http://pubs.usgs.gov/fs/2006/3015/2006-3015.pdf">http://pubs.usgs.gov/fs/2006/3015/2006-3015.pdf</a>

### GEOLOGIC RELATED HAZARDS

USGS Topographic Maps	<a href="http://topomaps.usgs.gov/">http://topomaps.usgs.gov/</a>
Building Seismic Safety Council	<a href="http://www.nibs.org/?page=bssc">http://www.nibs.org/?page=bssc</a>
Earthquake hazard history by state	<a href="http://earthquake.usgs.gov/earthquakes/states/">http://earthquake.usgs.gov/earthquakes/states/</a>
USGS data on earthquakes	<a href="http://earthquake.usgs.gov/monitoring/deformation/data/download/">http://earthquake.usgs.gov/monitoring/deformation/data/download/</a>
USGS Earthquake homepage	<a href="http://quake.wr.usgs.gov">http://quake.wr.usgs.gov</a>
National Cooperative Geologic Mapping Program (NCGMP)	<a href="http://ncgmp.usgs.gov/">http://ncgmp.usgs.gov/</a>
Landslide Overview Map of the Conterminous United States	<a href="http://landslides.usgs.gov/learning/nationalmap/">http://landslides.usgs.gov/learning/nationalmap/</a>
Kafka, Alan L. 2008. Why Does the Earthquake in New England? Boston College, Weston Observatory, Department of Geology and Geophysics	<a href="http://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html">http://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html</a>
Map and Geographic Information Center, 2010, "Connecticut GIS Data", University of Connecticut	<a href="http://magic.lib.uconn.edu/connecticut_data.html">http://magic.lib.uconn.edu/connecticut_data.html</a>
2012 Maine earthquake	<a href="http://www.huffingtonpost.com/2012/10/17/maine-earthquake-2012-new-england_n_1972555.html">http://www.huffingtonpost.com/2012/10/17/maine-earthquake-2012-new-england_n_1972555.html</a>

**WIND-RELATED HAZARDS**

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

**GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND MAPPING**

The National Spatial Data Infrastructure & Clearinghouse (NSDI) and Federal Geographic Data Committee (FGDC) Source for information on producing and sharing geographic data	<a href="http://www.fgdc.gov">http://www.fgdc.gov</a>
The OpenGIS Consortium Industry source for developing standards and specifications for GIS data	<a href="http://www.opengis.org">http://www.opengis.org</a>
Northeast States Emergency Consortium (NESEC): Provides information on various hazards, funding resources, and other information	<a href="http://www.nesec.org">http://www.nesec.org</a>
US Dept of the Interior Geospatial Emergency Management System (IGEMS) provides the public with both an overview and more specific information on current natural hazard events. It is supported by the Department of the Interior Office of Emergency Management.	<a href="http://igems.doi.gov/">http://igems.doi.gov/</a>
FEMA GeoPlatform: Geospatial data and analytics in support of emergency management	<a href="http://fema.maps.arcgis.com/home/index.html">http://fema.maps.arcgis.com/home/index.html</a>

**DETERMINING RISK AND VULNERABILITY**

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

**DATA GATHERING**

National Information Sharing Consortium (NISC): brings together data owners, custodians, & users in the fields of homeland security, public safety, & emergency management and response. Members leverage efforts related to the governance, development, & sharing of situational awareness & incident management resources, tools, & best practices	<a href="http://nisconsortium.org/">http://nisconsortium.org/</a>
The Hydrologic Engineering Center (HEC), an organization in the Institute for Water Resources, is the Center of Expertise for the US Army Corps of Engineers	<a href="http://www.hec.usace.army.mil/">http://www.hec.usace.army.mil/</a>

National Water & Climate Center	<a href="http://www.wcc.nrcs.usda.gov/">http://www.wcc.nrcs.usda.gov/</a>
WinTR-55 Watershed Hydrology	<a href="http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?&amp;cid=stelprdb1042901">http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?&amp;cid=stelprdb1042901</a>
USACE Hydrologic Engineering Center (HEC)	<a href="http://www.hec.usace.army.mil/software/">http://www.hec.usace.army.mil/software/</a>
Stormwater Manager's Resource Center SMRC	<a href="http://www.stormwatercenter.net">http://www.stormwatercenter.net</a>
USGS Current Water Data for the Nation	<a href="http://waterdata.usgs.gov/nwis/rt">http://waterdata.usgs.gov/nwis/rt</a>
USGS Water Data for the Nation	<a href="http://waterdata.usgs.gov/nwis/">http://waterdata.usgs.gov/nwis/</a>
Topography Maps and Aerial photos	<a href="http://www.terraserver.com/view.asp?tid=142">http://www.terraserver.com/view.asp?tid=142</a>
National Register of Historic Places	<a href="http://www.nps.gov/nr/about.htm">http://www.nps.gov/nr/about.htm</a>
National Wetlands Inventory	<a href="http://www.fws.gov/wetlands/">http://www.fws.gov/wetlands/</a>
ICLUS Data for Northeast Region	<a href="http://www.epa.gov/ncea/global/iclus/inclus_nca_northeast.htm">http://www.epa.gov/ncea/global/iclus/inclus_nca_northeast.htm</a>

### SUSTAINABILITY/ADAPTATION/CLIMATE CHANGE

Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability	<a href="http://www.fema.gov/media-library-data/20130726-1454-20490-3505/fema364.pdf">http://www.fema.gov/media-library-data/20130726-1454-20490-3505/fema364.pdf</a>
Why the Emergency Management Community Should be Concerned about Climate Change: A discussion of the impact of climate change on selected natural hazards	<a href="http://www.cna.org/sites/default/files/research/WEB%2007%2029%2010.1%20Climate%20Change%20and%20the%20Emergency%20Management%20Community.pdf">http://www.cna.org/sites/default/files/research/WEB%2007%2029%2010.1%20Climate%20Change%20and%20the%20Emergency%20Management%20Community.pdf</a>
NOAA RISA for the Northeast (Regional Integrated Sciences and Assessments)	<a href="http://ccrun.org/home">http://ccrun.org/home</a>
Resilient Sustainable Communities: Integrating Hazard Mitigation& Sustainability into Land Use	<a href="http://www.earth.columbia.edu/sitefiles/file/education/documents/2013/Resilient-Sustainable-Communities-Report.pdf">http://www.earth.columbia.edu/sitefiles/file/education/documents/2013/Resilient-Sustainable-Communities-Report.pdf</a>
U.S. EPA	<a href="http://www.epa.gov/climatechange/">http://www.epa.gov/climatechange/</a>
NOAA National Ocean Service (NOS)	<a href="http://oceanservice.noaa.gov/">http://oceanservice.noaa.gov/</a>
The Northeast Climate Research Center (NRCC) were heavily involved in climate data in the NCA, below. They have a wealth of historic climate data and weather information, trends, etc.	<a href="http://www.nrcc.cornell.edu/">http://www.nrcc.cornell.edu/</a>
Community and Regional Resilience: Perspectives from hazards, disasters, and emergency management	<a href="http://www.resilientus.org/library/FINAL_CUTTER_9-25-08_1223482309.pdf">http://www.resilientus.org/library/FINAL_CUTTER_9-25-08_1223482309.pdf</a>
National Fish, Wildlife and Plants Climate Adaptation Strategy	<a href="http://www.wildlifeadaptationstrategy.gov">www.wildlifeadaptationstrategy.gov</a>
ICLEI Local Governments for Sustainability	<a href="http://www.icleiusa.org/">http://www.icleiusa.org/</a>
Kresge Foundation Survey	<a href="http://www.kresge.org/news/survey-finds-communities-northeast-are-trying-plan-for-changes-climate-need-help-0">http://www.kresge.org/news/survey-finds-communities-northeast-are-trying-plan-for-changes-climate-need-help-0</a>
New England's Sustainable Knowledge Corridor	<a href="http://www.sustainableknowledgecorridor.org/site/">http://www.sustainableknowledgecorridor.org/site/</a>
The Strategic Foresight Initiative (SFI)	<a href="http://www.fema.gov/pdf/about/programs/oppa/findings_051111.pdf">http://www.fema.gov/pdf/about/programs/oppa/findings_051111.pdf</a>
Northeast Climate Choices	<a href="http://www.climatechoices.org/ne/resources_ne/nereport.html">http://www.climatechoices.org/ne/resources_ne/nereport.html</a>
Northeast Climate Impacts Assessment	<a href="http://www.northeastclimateimpacts.org/">http://www.northeastclimateimpacts.org/</a>
Draft National Climate Assessment Northeast Chapter released early 2013	<a href="http://ncadac.globalchange.gov/">http://ncadac.globalchange.gov/</a>
Northeast Chapter of the National Climate Assessment of 2009:	<a href="http://www.globalchange.gov/images/cir/pdf/northeast.pdf">http://www.globalchange.gov/images/cir/pdf/northeast.pdf</a>
NEclimateUS.org	<a href="http://www.neclimateus.org">http://www.neclimateus.org</a>
ClimateNE	<a href="http://www.climate-northeast.com">www.climate-northeast.com</a>

Scenarios for Climate Assessment and Adaptation	<a href="http://scenarios.globalchange.gov/">http://scenarios.globalchange.gov/</a>
Northeast Climate Science Center	<a href="http://necsc.umass.edu/">http://necsc.umass.edu/</a>
FEMA Climate Change Adaptation and Emergency Management	<a href="https://www.llis.dhs.gov/content/climate-change-adaptation-and-emergency-management-0">https://www.llis.dhs.gov/content/climate-change-adaptation-and-emergency-management-0</a>
Climate Central	<a href="http://www.climatecentral.org">http://www.climatecentral.org</a>
EPA State and Local Climate and Energy Program	<a href="http://www.epa.gov/statelocalclimate/index.html">http://www.epa.gov/statelocalclimate/index.html</a>

**PLANNING**

American Planning Association	<a href="http://www.planning.org">http://www.planning.org</a>
PlannersWeb - Provides city & regional planning resources	<a href="http://www.plannersweb.com">http://www.plannersweb.com</a>

**OTHER FEDERAL RESOURCES**

U.S. Army Corps of Engineers: Provides funding for floodplain management planning and technical assistance and other water resources issues.	<a href="http://www.nae.usace.army.mil">www.nae.usace.army.mil</a>
Natural Resources Conservation Service: Technical assistance to individual landowners, groups of landowners, communities, and soil and water conservation districts.	<a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>
NOAA Coastal Services Center	<a href="http://www.csc.noaa.gov/">http://www.csc.noaa.gov/</a>
Rural Economic and Community Development: Technical assistance to rural areas & smaller communities in rural areas on financing public works projects.	<a href="http://www.rurdev.usda.gov">www.rurdev.usda.gov</a>
Farm Service Agency: Manages the Wetlands Reserve Program (useful in open space or acquisition projects by purchasing easements on wetlands properties) and farmland set aside programs	<a href="http://www.fsa.usda.gov">www.fsa.usda.gov</a>
National Weather Service: Prepares and issues flood, severe weather and coastal storm warnings. Staff hydrologists can work with communities on flood warning issues; can give technical assistance in preparing flood-warning plans.	<a href="http://www.weather.gov">www.weather.gov</a>
Economic Development Administration (EDA): Assists communities with technical assistance for economic development planning	<a href="http://www.osec.doc.gov/eda/default.htm">www.osec.doc.gov/eda/default.htm</a>
National Park Service: Technical assistance with open space preservation planning; can help facilitate meetings and identify non-structural options for floodplain redevelopment.	<a href="http://www.nps.gov">www.nps.gov</a>
Fish and Wildlife Services: Can provide technical & financial assistance to restore wetlands & riparian habitats.	<a href="http://www.fws.gov">www.fws.gov</a>
Department of Housing & Urban Development	<a href="http://www.hud.gov">www.hud.gov</a>
Small Business Administration: SBA can provide additional low-interest funds (up to 20% above what an eligible applicant would qualify for) to install mitigation measures. Can also loan the cost of bringing a damaged property up to state or local code requirements.	<a href="http://www.sba.gov/disaster">www.sba.gov/disaster</a>
Environmental Protection Agency	<a href="http://www.epa.gov">www.epa.gov</a>

**OTHER RESOURCES**

New England States Emergency Consortium (NESEC): NESEC conducts public awareness and education programs on natural disaster and emergency management activities throughout New England. Resources are available on earthquake preparedness, mitigation, and hurricane safety.	<a href="http://www.nesec.org">www.nesec.org</a>
Association of State Floodplain Managers (ASFPM): ASFPM has developed a series of technical and topical research papers, and a series of Proceedings from their annual conferences.	<a href="http://www.floods.org">www.floods.org</a>
National Voluntary Organizations Active in Disaster (VOAD) is a non-profit, nonpartisan membership organization that serves as the forum where organizations share knowledge and resources throughout the disaster cycle—preparation, response, recovery and mitigation.	<a href="http://www.nvoad.org">http://www.nvoad.org</a>

**FEMA RESOURCES**

Federal Emergency Management Agency (FEMA)	<a href="http://www.fema.gov">www.fema.gov</a>
National Mitigation Framework	<a href="http://www.fema.gov/national-mitigation-framework">http://www.fema.gov/national-mitigation-framework</a>
Federal Insurance and Mitigation Administration (FIMA)	<a href="http://www.fema.gov/fima">http://www.fema.gov/fima</a>
Community Rating System (CRS)	<a href="http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-rating-system">http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-rating-system</a>
FEMA Building Science	<a href="http://www.fema.gov/building-science">http://www.fema.gov/building-science</a>
National Flood Insurance Program (NFIP)	<a href="http://www.fema.gov/national-flood-insurance-program">http://www.fema.gov/national-flood-insurance-program</a>
Floodplain Management & Community Assistance Program	<a href="http://www.fema.gov/floodplain-management">http://www.fema.gov/floodplain-management</a>
Increased Cost of Compliance (ICC): ICC coverage provides up to \$30,000 for elevation and design requirements to repeatedly or substantially damaged property.	<a href="http://www.fema.gov/national-flood-insurance-program-2/increased-cost-compliance-coverage">http://www.fema.gov/national-flood-insurance-program-2/increased-cost-compliance-coverage</a>
National Disaster Recovery Framework	<a href="http://www.fema.gov/national-disaster-recovery-framework">http://www.fema.gov/national-disaster-recovery-framework</a>
Computer Sciences Corporation: contracted by FIMA as the NFIP Statistical Agent, CSC provides information and assistance on flood insurance to lenders, insurance agents and communities	<a href="http://www.csc.com">www.csc.com</a>
Integrating the Local Natural Hazard Mitigation Plan into a Community's Comprehensive Plan: A Guidebook for Local Governments	<a href="https://www.fema.gov/ar/media-library/assets/documents/89725">https://www.fema.gov/ar/media-library/assets/documents/89725</a>
Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning	<a href="http://www.fema.gov/media-library/assets/documents/4317">http://www.fema.gov/media-library/assets/documents/4317</a>

**Mitigation Best Practices Portfolio** <http://www.fema.gov/mitigation-best-practices-portfolio>

FEMA Multi-Hazard Mitigation Planning Website	<a href="http://www.fema.gov/multi-hazard-mitigation-planning">http://www.fema.gov/multi-hazard-mitigation-planning</a>
FEMA Resources Page	<a href="http://www.fema.gov/plan/mitplanning/resources.shtm">http://www.fema.gov/plan/mitplanning/resources.shtm</a>
Local Mitigation Plan Review Guide	<a href="http://www.fema.gov/library/viewRecord.do?id=4859">http://www.fema.gov/library/viewRecord.do?id=4859</a>

Local Mitigation Planning Handbook complements and liberally references the Local Mitigation Plan Review Guide above	<a href="http://www.fema.gov/library/viewRecord.do?id=7209">http://www.fema.gov/library/viewRecord.do?id=7209</a>
HAZUS	<a href="http://www.fema.gov/protecting-our-communities/hazus">http://www.fema.gov/protecting-our-communities/hazus</a>
Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards	<a href="http://www.fema.gov/library/viewRecord.do?id=6938">http://www.fema.gov/library/viewRecord.do?id=6938</a>
Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials	<a href="http://www.fema.gov/library/viewRecord.do?id=7130">http://www.fema.gov/library/viewRecord.do?id=7130</a>
IS-318 Mitigation Planning for Local and Tribal Communities Independent Study Course	<a href="http://training.fema.gov/EMIWeb/IS/is318.asp">http://training.fema.gov/EMIWeb/IS/is318.asp</a>