



# Western Connecticut Council of Governments Multi-Jurisdiction Hazard Mitigation Plan Update 2021 – 2026

## Municipal Annex for **Newtown, CT**

3 Primrose Street  
Newtown, CT 06470  
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## 1.0 INTRODUCTION

### 1.1 Purpose of Annex

The purpose of this Hazard Mitigation Plan (HMP) annex is to provide a community-specific hazard risk assessment, capability analysis, and evaluation and prioritization of hazard mitigation measures and projects. Background information and the regional effects of pertinent natural hazards are discussed in the main body of the Western Connecticut Council of Governments (WestCOG) Multi-Jurisdictional Hazard Mitigation Plan. This annex is designed to supplement the information presented in the Multi-Jurisdictional HMP with more specific detail for the Town of Newtown and is not to be considered a standalone document.

The primary goal of this HMP, including this Municipal Annex, is to identify natural hazard risks and mitigation opportunities in order to reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources. This includes the reduction of public and private damage costs. Limiting losses of and damage to life and property will also reduce the social, emotional, and economic disruption associated with a natural disaster.

## 2.0 COMMUNITY PROFILE

### 2.1 Geography

#### 2.1.1 Physical Setting

Incorporated in 1711, the Town of Newtown is located in southern Litchfield County and is home to a population of 27,560 (2010 U.S. Census). Newtown is bordered by the municipalities of Southbury and Bridgewater to the north, Oxford to the east, Monroe to the southeast, Easton and Redding to the south, and to the west by Bethel and Brookfield. Refer to Figure 2-1 for a map showing the regional location of Newtown.

Newtown is settled at the foothills of the Berkshire Mountains, and is also bordered by the Housatonic River to the northeast. There are numerous other streams flowing in town including the Pootatuck River, Pond Brook, and Limekiln Brook.

Several main routes traverse the town including Interstate 84, U.S. Routes 6 and 302, and Connecticut routes 25 and 34. With the town covering 38,644 acres, or 60.38 square miles, Newtown is the fifth largest town by area in the state. The town includes the Borough, Sandy Hook, Hawleyville, Botsford, and Dodgingtown "neighborhoods".

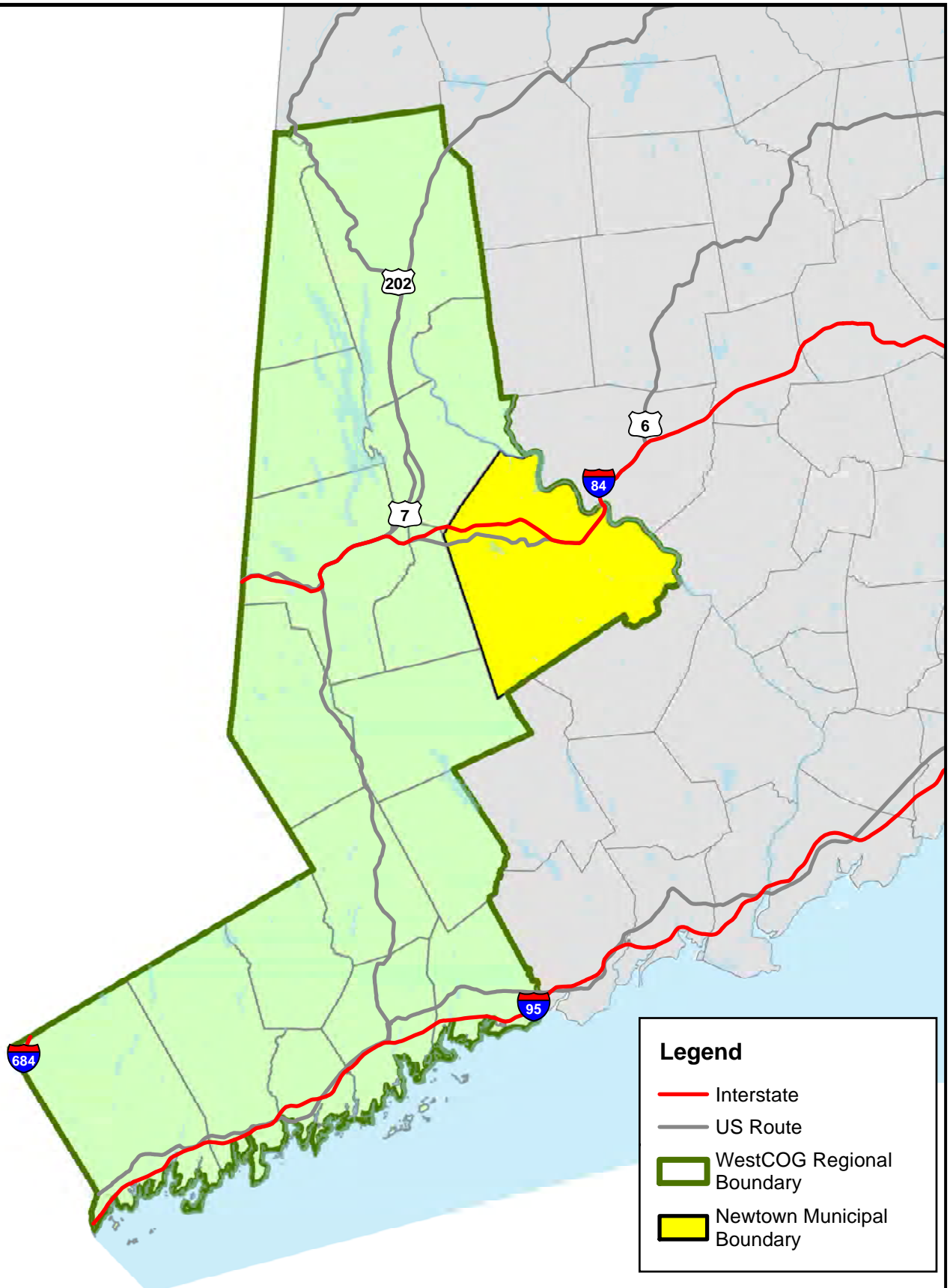
The Center for Land Use Education and Research (CLEAR) has developed a land cover dataset derived from 2016 satellite imagery to depict statewide land cover. The land cover by percent of total land for Newtown can be found in Table 2-1.

**Table 2-1: Land Cover by Area**

Land Cover Type	Percent Total Land Area
<b>Developed</b>	18.06%
<b>Turf &amp; Grass</b>	8.86%
<b>Other Grasses</b>	1.06%
<b>Agricultural Field</b>	4.98%
<b>Deciduous Forest</b>	54.83%
<b>Coniferous Forest</b>	4.75%
<b>Water</b>	2.93%
<b>Non-Forested Wetland</b>	0.18%
<b>Forested Wetland</b>	3.55%
<b>Tidal Wetland</b>	0.20%
<b>Barren Land</b>	0.56%
<b>Utility Corridor</b>	0%

Areas shown as turf and grass are maintained grasses such as residential and commercial lawns or golf courses. Development is generally spread throughout the community and not particularly concentrated in any one area. According to this data, about 63% of Newtown is forested and approximately 18% is developed.





## 2.1.2 Land Use

According to the 2014 Plan of Conservation and Development (POCD), “the Town of Newtown has total land area of approximately 58 square miles (37,110 acres). The Town includes a diversity of land use types including agricultural, commercial, government, industrial, institutional, open space, residential, transportation, and vacant areas.”

The POCD identifies that “the predominant land use in Newtown is for residential housing representing 48% of the land area. Agricultural is the second largest land use at 16%. Federal, State, and Town government lands comprise 10% of the land area in Newtown. Transportation, which includes Interstate 84 and state and local roads and their respective rights-of-way, makes up 6% of Newtown’s land area.” About 9% of Newtown’s lands is considered vacant.

The Town of Newtown has a diverse inventory of land use types including agricultural, commercial, government, industrial, institutional, open space, residential, transportation, and vacant areas. Table 2-2 summarizes the percent of each land use type in 2010 according to the 2014 Newtown POCD.

**Table 2-2: 2010 Land Use**

Land Use	Percent of Community
Residential	48%
Agriculture	16%
Government	10%
Vacant	9%
Open Space	8%
Transportation	6%
Commercial	2%
Industrial	1%
Institutional	1%
<b>Total</b>	<b>101%</b>

*Source: 2014 Newtown Plan of Conservation and Development*

## 2.1.3 Climate and Climate Change

### *Current Conditions*

Over the course of the year, the temperature in Newtown typically varies from 20°F to 82°F and is rarely below 5°F or above 89°F. The warm season lasts from May 31 to September 15, with an average daily high temperature above 72°F. The hottest day of the year is July 20, with an average high of 82°F and low of 64°F. The cold season lasts from December 2 to March 11, with an average daily high temperature below 44°F. The coldest day of the year is January 29, with an average low of 20°F and high of 35°F.

Precipitation falls throughout the year in Newtown. The wetter season lasts from May 3 to August 18, with a greater than 29% chance of a given day being a wet day. The chance of a wet day peaks at 36% on May 29. The smallest chance of a wet day is 22% on January 29.

The most rain falls during the 31 days centered around June 3, with an average total accumulation of 3.9 inches. The least rain falls around January 29, with an average total accumulation of 1.7 inches.

The snowy period of the year lasts from November 5 to April 12, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 26, with an average total liquid-equivalent accumulation of 1.1 inches.

Climate data was sourced from Weather Spark based on analysis of the years 1980 to 2016.

### *Climate Change*

Climate change projections for Connecticut were sourced from the 2019 Connecticut Physical Climate Science Assessment Report, which was developed by the University of Connecticut (UConn) Atmospheric Sciences Group, commissioned by the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) with funding from the Department of Energy and Environmental Protection (DEEP). All projections are based on the IPCC high CO<sub>2</sub> emission scenario (RCP8.5).

### **Temperature**

Annual temperatures have been increasing throughout Connecticut and is projected to continue to do so in the future. By mid-century, average annual temperature is projected to increase by 5°F. Seasonal average temperatures are also expected to rise, with the greatest increase (6°F) experienced in summer (June to August). The number of nights over which temperature remains above 68°F will quadruple from 10 days per year to more than 40 days, and the number of extremely hot days will increase from above 4 a year to 48 per year.

### **Precipitation**

Rainfall data in "Technical Paper No. 40" by the U.S. Weather Bureau (now the National Weather Service) (Hershfield, 1961) dates from the years 1938 through 1958. According to these data, the 24-hour rainfall amount for a 50% annual-chance storm in Fairfield County is 3.3 inches.

The continued increase in precipitation only heightens the need for hazard mitigation planning as the occurrence of floods may change in accordance with the greater precipitation.

The Northeast Regional Climate Center (NRCC) has partnered with the Natural Resources Conservation Service (NRCS) to provide a consistent, current regional analysis of rainfall extremes (<http://precip.eas.cornell.edu/>). In 2020 this dataset listed the 24-hour rainfall amount for a 50% annual-chance storm in Newtown as 3.42 inches.

The NOAA Atlas 14, released on September 30, 2015 puts the 24-hour rainfall amount for a 50% annual-chance annual storm in Newtown at 3.57 inches.

These precipitation amounts, and more details, are summarized in Table 2-3, below.

**Table 2-3: 24-Hour Rainfall Amounts by Annual-Chance Occurrence**

Source	24-Hour Rainfall Amount (inches) by Annual-Chance Occurrence		
	50%	4%	1%
<b>Technical Paper No. 40</b>	3.3	5.7	7.2
<b>NRCC</b>	3.42	6.36	8.97
<b>NOAA Atlas 14</b>	3.57	6.85	8.80

Annual precipitation has been increasing statewide and is projected to continue to increase. By mid-century, annual precipitation is projected to increase by 8.5%, with the greatest increase (13.4%) occurring in the winter months. Extreme precipitation events are projected to increase in both frequency and magnitude. Based on this increase and the precipitation figures above, by 2050 Newtown can expect the 24-hour rainfall amount for a 50% annual-chance storm to be around 3.7 to 3.9 inches or greater.

Impervious surfaces and infrastructure in town have increased over time as well, leading to increasing runoff and peak discharge values.

Despite overall increases in precipitation, drought risk is projected to increase, especially during summer, due to changing precipitation patterns and projected increases in potential evapotranspiration (plants taking up more water in hotter temperatures and longer growing seasons).

#### **2.1.4 Drainage Basins and Hydrology**

Newtown is divided among eight subregional drainage basins including: Aspetuck River, Deep Brook, Halfway River, Housatonic River, Limekiln Brook, Pequonnock River, Pond Brook, and Pootatuck River.

Most of these basins have a FEMA-defined Special Flood Hazard Aa along the primary watercourse. Such areas consist of 1% annual chance storm floodplains without elevations, 1% annual chance storm floodplains with elevations, and 0.2% annual chance floodplains. Refer to section 3 for more detail regarding SFHAs.

##### *Aspetuck River*

Part of the headwaters of the Aspetuck River lie within Huntington State Park in southeastern Bethel, with the watershed covering a total of 0.67 square miles of area. The Aspetuck River flows generally south through Newtown and Redding, and Easton before reaching its confluence with the Saugatuck River in Weston. The total area of the Aspetuck River watershed is approximately 23 square miles.

##### *Deep Brook*

The Deep Brook basin covers an area of 5.35 square miles and is completely encompassed by Newtown's borders. The headwaters of Deep Brook are at Castle Hill Road, traversing through Dickson Town Park, and under a railroad line and Wasserman's Way. Roughly 3/4 of the eastern stretch of the stream is lined with 1% annual chance floodplains, as well as floodway along the eastern half of the brook until its confluence with the Pootatuck River.

##### *Halfway River*

The Halfway River drainage basin covers approximately 10.68 square miles and is split between Newtown and the Town of Monroe to the south. The River is a tributary of the Housatonic River and flows through the Stevenson part of Newtown. There are narrow stretches of 1% annual chance floodplain along the eastern part of the river, with floodway developing as the Halfway joins the Housatonic.

### *Housatonic River*

The Housatonic River drains an area of 1,948 square miles from Pittsfield, Massachusetts to Milford, Connecticut where it empties into Long Island Sound. The river flows a total of 134 miles from its upper reach to the sound with 1,234 square mile of the total drainage area existing in Connecticut. After crossing into Connecticut, the river creates the border for several towns as it flows south through the northwestern part of the state. Once into the lower Housatonic Valley region, the river breaks to the southeast flowing through New Milford and cutting between Bridgewater, Southbury, Newtown and into Long Island Sound. Many of the sub-regional drainages in these towns flow into the Housatonic River along with small tributaries that flow directly into the river, which make up the Housatonic sub-regional drainage basin. The main channel of the Housatonic is lined with 1% annual chance storm floodplains that extend on either side of the river with areas that further extend making up the 0.2% annual chance floodplains.

### *Limekiln Brook*

The Limekiln Brook watershed covers a total of 8.77 square miles. The brook has its headwaters in western Newtown just south of the Dodgingtown area. The brook flows generally northwest into Bethel and is conveyed beneath Route 302 and Rockwell Road prior to reaching the confluence with Dibbles Brook just upstream of Plumtrees Road.

Dibbles Brook is a major tributary of Limekiln Brook and has its headwaters in northeastern Newtown just west of Old Hawleyville Road. This headwater area drains south beneath Route 6 and is conveyed generally south beneath Walnut Hill Road, Plumtrees Road, and Rockwell Road prior to reaching the confluence with Limekiln Brook.

The combined stream continues to flow generally west and northwest and it is conveyed beneath Plumtrees Road and Walnut Hill Road before reaching its confluence with East Swamp Brook downstream of Meckauer Park and Shelter Rock Road near the Danbury boundary. Limekiln Brook continues to flow north into Danbury where it drains into the Still River. In total, Limekiln Brook drains a total area of 8.77 square miles in Bethel, Brookfield, Danbury, and Newtown.

### *Pequonnock River*

The Pequonnock River begins just south of Newtown in Neighboring Monroe. The river flows in a southerly direction through Trumbull and Bridgeport before flowing into the Long Island Sound. Only a very small portion of this basin is located in southern Newtown.

### *Pond Brook*

Pond Brook has its headwaters near Whisconier Road in southern Brookfield. The brook flows generally southeast into Hawleyville where it turns to flow generally northeast to its confluence with the Housatonic River at Lake Lillinonah. A small area (0.38 square miles) of northeastern Bethel to the east of Old Hawleyville Road drains into unnamed tributaries to Pond Brook. The total area of the Pond Brook watershed is approximately 13.9 square miles in Bethel, Brookfield, and Newtown.

### *Pootatuck River*

The Pootatuck River basin covers an area of 20.78 square miles, with a majority of the basin lying within the Newtown boundaries. The Pootatuck is a large tributary of the Housatonic and flows from southwest Newtown to the northeast confluence with the Housatonic. Almost the entire river has a floodway designation with the exception of small headwater areas which are located in the Town of Monroe.

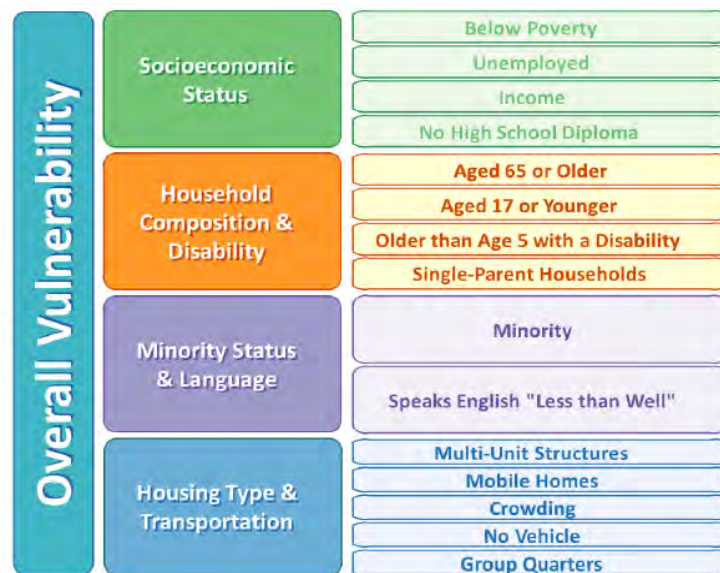
## 2.2 Society, Culture, and Government

### 2.2.1 Population and Demographic Setting

According to the 2010 U.S. Census, Newtown had a population of 27,560 with approximately 475 persons per square mile. The Census American Community Survey (ACS) 5-year summary estimated the 2014-2018 population to be 27,853.

One important aspect of natural hazard mitigation planning is to identify a community's demographic trends in relation to natural hazards. The Center for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) is used to identify vulnerable populations in Newtown. The SVI uses census data to identify populations within the town that may be more vulnerable to natural hazards. As a result of this analysis, the town is identified to have a certain level of overall social vulnerability with a rank of 0 to 1; 1 being the most vulnerable and 0 being the least.

To determine social vulnerability, the CDC incorporates 15 factors into the overall SVI calculation under four categories, or themes: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation. Figure 2-2 represents the breakdown of the SVI process. These themes and their ranking are based on census statistics. By evaluating these factors and determining a level of social vulnerability, a community can identify specific needs for before, during, and after an event. Such needs may include sheltering capacity, evacuation routes, or to decide how many emergency personnel may be required to respond after an event.



**Figure 2-2: The CDC SVI Index Factors. Graphic: svi.cdc.com**

The Town of Newtown is considered to have a low level of vulnerability, with their most vulnerable social aspect being household composition and disability, followed by minority and linguistically challenged populations, and housing type and transportation. Vulnerable age groups and disabled populations are identified in the northwestern tracts of the town, while minority



populations and those that speak English “less than well”, along with populations concerned with housing type and transportation are concentrated in the southeastern tract of Newtown. Appendix B explores the SVI for Newtown in more depth, including maps showing overall vulnerability, and theme vulnerability.

## **2.2.2 Development Trends**

The 2014 Newtown POCD notes that residential development trends in town are typically cyclical and are related to surrounding trends and economic fluctuations. Since 2007, the town has seen one of the busiest single-family construction years in 2019. In addition to this large rise of single-family homes, the town has also seen a rise in condominium/townhouse style housing with approximately 100 units constructed in 2019 and another estimated 400 to be developed within the next five to ten years.

Despite the moderate residential development, sufficient space exists for most of this development to occur outside areas of risk to natural hazards. Coupled with the substantial freeboard requirements for flood zones (discussed in section 3.1.2) and other community capabilities, vulnerabilities are not increasing over time.

## **2.2.3 Governmental Structure**

Newtown operates under a Charter adopted in 1961 and most recently revised in 2008. The Charter retains a limited Town Meeting form of government with an elected Board of Selectmen (three selectmen) supervising the administration of Town affairs. The First Selectman acts as the town’s Chief Executive and Administrative Officer and a twelve-member Legislative Council acts as the legislative body. Financial matters are supervised by a Board of Finance and an appointed Finance Director.

In addition to Board of Selectmen and the Town Meeting, there are boards, commissions and committees providing input and direction to Town administrators. Also, Town departments provide municipal services and day-to-day administration. Many of these commissions and departments play a role in hazard mitigation, including the Planning and Zoning Commission, Conservation Commission, Inland Wetlands Commission, the Building Department, the Land Use Office, the Fire Department, Emergency Management Services, and the Highway Department.

Drainage complaints are typically routed through the Land Use Department. These complaints are usually received via phone, fax, mail, or email and are recorded in a logbook. The complaints are investigated as necessary until remediation surrounding the individual complaint is concluded.

## 2.2.4 Historic and Cultural Resources

Historic and cultural resources include sites, structures, and objects that are significant in history, architecture, archaeology, engineering, and culture. Protection of these resources grows economies and enhances community character, and following a natural disaster they can help to reinforce neighborhood connections and reestablish a sense of community and normalcy. Consideration of these resources in this HMP is critical.

**Historic preservation planning** helps protect historic properties and cultural resources from demolition or alteration.

**Hazard mitigation planning** helps protect life and property from damage caused by natural and manmade hazards.

**Integrating** these two planning processes helps create safe and sustainable historic communities.

- Paraphrased from FEMA Report 386-6

Historic resources in Newtown are concentrated within the Borough of Newtown Historic District and the Hattertown Historic District. Resources also include sites associated with Rochambeau's Army encampments, the John Glover House, Fairfield Hills Hospital, and other sites around Town. See Figure 2-3 for a map of historic resources in the community.

Analysis of the State Historic Preservation Office (SHPO) database of historic resources shows that some of these resources are exposed to natural hazards, as shown in Table 2-4.

**Table 2-4: Number of Historic Assets Exposed to Different Hazards in Newtown**

Hazard	Count
Dam Failure	0
Earthquake	325
Flooding	-
1% Annual	0
0.2% Annual	4
Hurricane/Tropical Storm	325
Sea Level Rise	0
Thunderstorm	325
Tornado	325
Winter Storm	325
Wildfire	67



Historic buildings and structures may be particularly susceptible to natural hazards because they were built prior to the establishment of more recent construction standards. Additionally, some of the structural integrity of these resources may have been degraded over the decades or centuries since their original construction. Structural retrofits and hazard mitigation methods may be challenging or restricted in cases where alteration of a resource will also diminish its cultural or historical aesthetic and value. Finally, miscommunications or lack of knowledge may lead to historic resources being damaged during the disaster recovery process.

Steps to incorporate historical and cultural preservation into hazard mitigation planning include:





- Inventory and survey historic and cultural resources
- Implement appropriate mitigation measures for those resources
- Take steps to move portable resources, such as artwork or documents, to safe locations prior to the occurrence of a hazard, if possible
- Consider these resources in emergency operations plans to prevent accidental damages during recovery efforts






### LEGEND

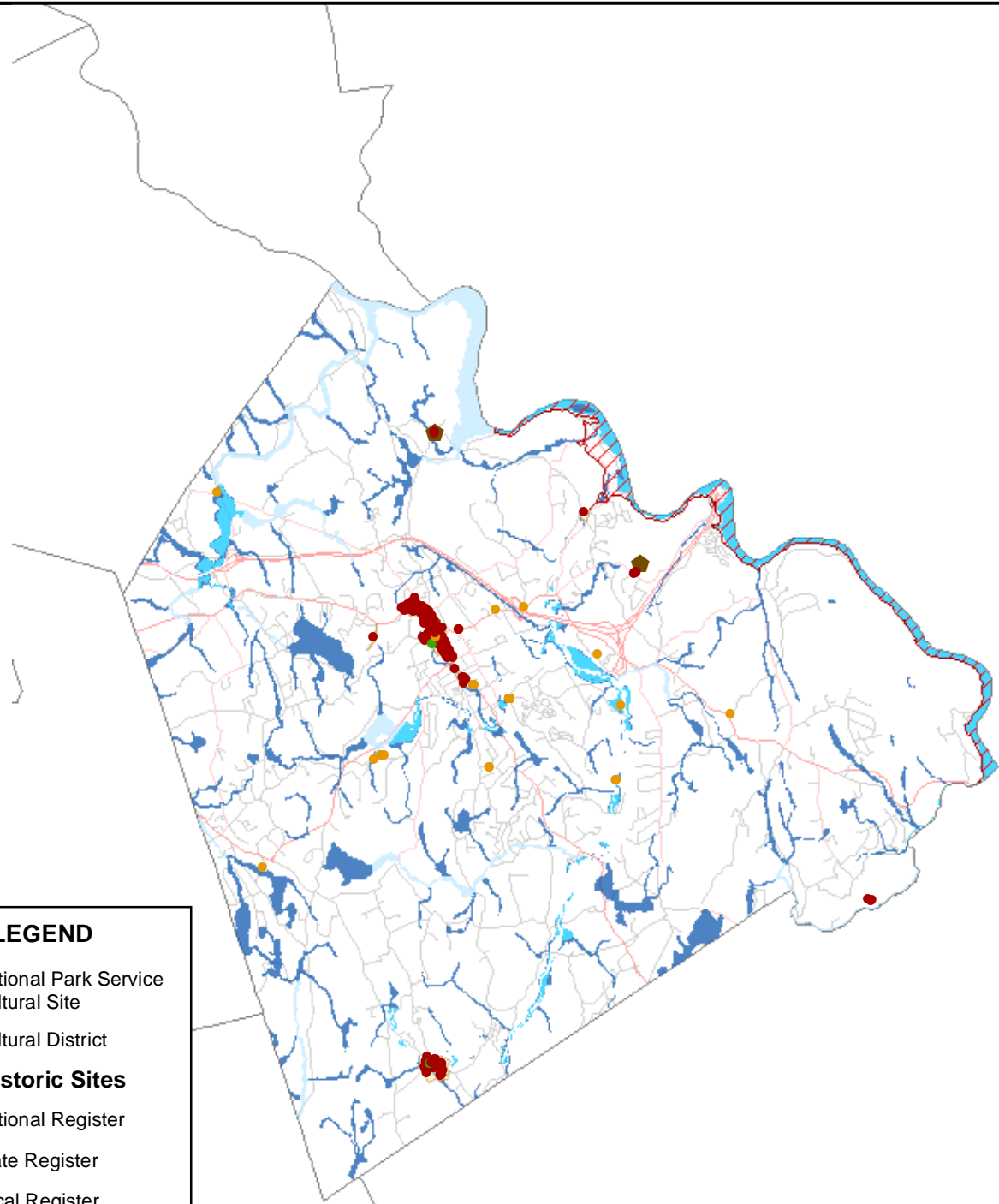
-  National Park Service Cultural Site
-  Cultural District

### SHPO Historic Sites

-  National Register
-  State Register
-  Local Register
-  Dam Failure Inundation Area

### Flood Zones

-  A
-  AE
-  0.2% Annual Chance Flood Hazard





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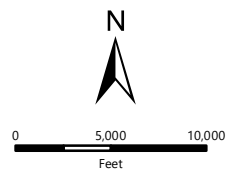
Historic Resources with Flood Zones and  
Dam Failure Inundation Areas

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WestCOG Hazard Mitigation Plan

Town of Newtown

NPS: Cultural Resources   CT DEEP: DFA   FEMA: DFRIM & Q3



SCALE	1" = 10,053'
DATE	1/6/2021
PROJ. NO.	3101-22

**FIG. 2-3**

Specific actions to mitigate natural hazard risks to historic resources are listed at the end of this Annex.

## 2.3 Infrastructure

### 2.3.1 Transportation

Major transportation routes through Newtown are Interstate 84 and Route 6 running east-west, Route 302 running southwest to northeast, Route 25 running west to east, then turning south at Newtown center, and Route 34 running northwest to southeast.

There is no public transportation available in Newtown.

### 2.3.2 Utilities

Newtown is served by Aquarion Water Company, a number of other community water systems, and numerous non-community public water systems. Most residents and businesses outside of the Route 25 corridor and the town center rely on private wells.

Newtown sends its wastewater to the City of Danbury's Water Pollution Control Plant.

Eversource Energy is the primary electrical and natural gas utility in town.

## 2.4 Planning and Regulatory Capabilities

### 2.4.1 Review of Existing Local Plans

The Town of Newtown has a number of plans that are relevant to hazard mitigation. These are noted here:

- **Plan of Conservation and Development (POCD):** Newtown's most recent POCD was adopted in 2013. It does not explicitly address natural hazard concerns within the community, or include strategies that will mitigate risks from those hazards as the community continues to develop. This will be pursued during development of the next POCD update.
- **Stormwater Management:** Newtown maintains a Stormwater Management Plan. This document has been updated to comply with the requirements of the US EPA 2017 updated *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems* (MS4 General Permit).
- **Capital Improvement Plan (CIP):** Newtown maintains a CIP that is updated annually and lays out capital investments for a five-year period. The CIP often includes road, drainage, and other infrastructure improvement projects relevant to hazard mitigation.
- **Economic Development Plan:** Newtown is included within the Western Connecticut Economic Development Plan of 2017, developed by WestCOG. The plan aligns with the COG's other efforts to promote climate sustainability and resiliency in the region. The Town also developed the *Newtown Strategic Plan for Economic Development* in 2011, although this document's five-year planning period has expired.
- **Emergency Operations Plan (EOP):** Newtown's EOP is reviewed annually and updated as needed. Dam failure Emergency Action Plans (EAPs) for dams with failure inundation zones that may impact Newtown, and for which EAPs are available, are on file locally.

- **Watershed Management Plan:** Watershed Management Plans have been developed for the Saugatuck-Aspetuck River Watershed and the Still River Watershed. The Saugatuck River Watershed Based Plan was developed by the former South Western Regional Planning Agency (SWRPA) in 2012, while the Still River Watershed Management Plan was developed by the Housatonic valley Association with support from the Still River Partners in 2019. These plans are focused on water quality, but can help the community mitigate inland flood risks by incorporating watershed management best practices into its planning efforts.
- **Open Space:** Newtown does not maintain a stand-alone Open Space Plan; instead, open space planning is incorporated into the community's POCD.

#### 2.4.1 Review of Regulatory Structures

Newtown regulates development through a number of regulations, codes, and ordinances. These are summarized below. More detailed information about how these regulations relate to specific natural hazards are described in Section 3.

- **Building Code:** Newtown enforces the Connecticut State Building Code locally.
- **Zoning Regulations:** Adopted in 2008, amended through 2020.
- **Inland Wetlands and Watercourses Regulations:** Most recently updated in November 2012.
- **Subdivision Regulations:** Most recently updated in July 2013. Include provisions promoting control of stormwater runoff, installation of firefighting water sources, burial of utilities, and use of Low Impact Development techniques and Green Infrastructure.

#### 2.5 Emergency Services, Critical Facilities, Sheltering, and Evacuation

The Town considers its police, fire, governmental, schools, and major transportation arteries to be its most important critical facilities since these are needed to ensure that emergencies are addressed while day-to-day management of Newtown continues. The Town also considers various infrastructure and facilities (such as water and sewer pump stations) to be critical facilities

Critical facilities are listed in Table 2-5 and are depicted on Figure 2-4.

##### *Sheltering Capabilities*

Emergency shelters are an important subset of critical facilities, as they are needed in many emergency situations. There are three designated shelters in the town that are also considered critical facilities: The Emergency Operations Center on Primrose Street, the Newtown Middle School on Queen Street and the Newtown High School on Berkshire Road. The High School is the primary shelter for the town. Each of these facilities have back-up power.

**Table 2-5: Critical Facilities**

Facility	Address or Location	Comment	Emergency Power	Shelter	In 1% Chance Floodplain
<b>Newtown Municipal Center</b>	3 Primrose St	Multiple Municipal Buildings Emergency Operations Center Shelter	✓	✓	No
<b>Police Department</b>	3 Main St	Emergency Response	✓	✓	No
<b>New Ambulance Facility</b>	Primrose St	Emergency Response	✓		No
<b>Newtown Middle School</b>	11 Queen St	School and Shelter	✓	✓	No
<b>Reed Intermediate School</b>	3 Trades Ln	School			No
<b>Fraser Woods Montessori School</b>	173 S Main St	School			No
<b>St. Rose School</b>	40 Church Hill Rd	School			No
<b>Housatonic Valley Waldorf School</b>	40 Dodgingtown Rd	School			No
<b>Hawley School</b>	29 Church Hill Rd	School			No
<b>Head O'Meadow School</b>	94 Boggs Hill Rd	School			No
<b>Middle Gate School</b>	7 Cold Spring Rd	School			No
<b>Sandy Hook School</b>	375 Fan Hill Rd	School			No
<b>Newtown High School</b>	12 Berkshire Rd	School and Shelter	✓	✓	No
<b>Wastewater Treatment Plant</b>	Commerce Rd	Critical Infrastructure			-
<b>Electrical substations</b>	Various Locations	Critical Infrastructure			-
<b>Sandy Hook Volunteer Fire and Rescue Company</b>	18-20 Riverside Rd	Emergency Response Backup EOC			No
<b>Hawleyville Fire Company</b>	34 Hawleyville Rd	Emergency Response			No
<b>Botsford Fire Rescue</b>	315 South Main St	Emergency Response			
<b>Newtown Hook and Ladder</b>	45 Main St	Emergency Response			
<b>Dodgingtown Fire Company</b>	55 Dodgingtown Rd	Emergency Response			
<b>All wellheads located in town</b>	Various Locations	Critical Infrastructure			Yes
<b>Aquarion Public Water System</b>	Various Locations	Critical infrastructure			Partial
<b>Community Center</b>	8 Simpson St	Emergency Response			No

### LEGEND

#### Dams

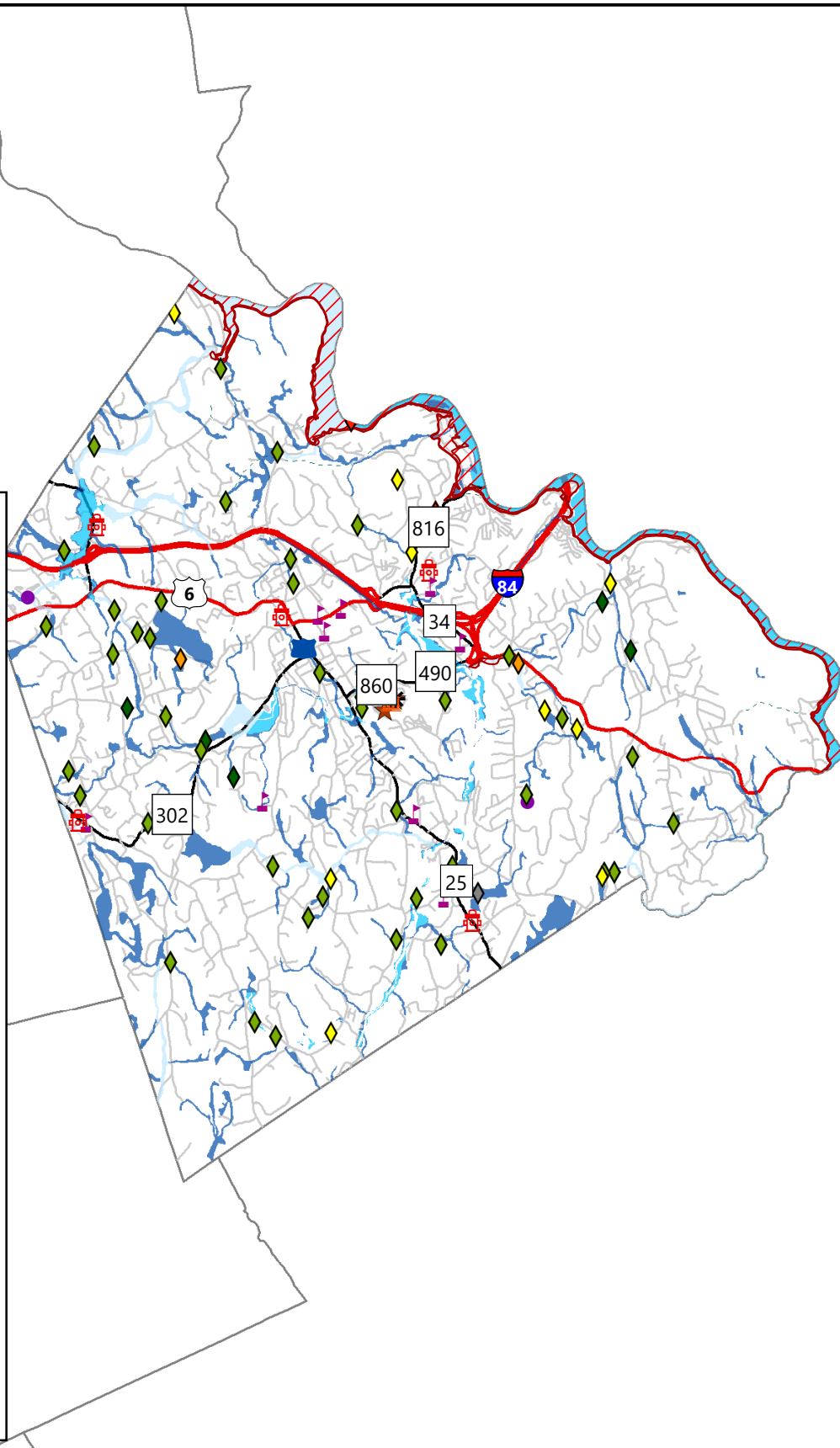
- Unclassified
- AA
- A
- BB
- B
- C
- Dam Failure Inundation Area
- Ambulance
- Care Facility
- Municipal
- EOC
- Fire
- Police
- School
- Dam Failure Inundation Area

#### Flood Zones

- A

#### Flood Zones

- A
- AE
- 0.2% Annual Chance Flood Hazard



### *Emergency Response Capabilities*

The Police Department and Emergency Management Services coordinates emergency preparedness in the Town of Newtown. The Town's Emergency Operations Center (EOC) is a stand-alone facility. The EOC's goal is to provide citizens with the highest level of emergency preparedness before, during, and after disasters or emergencies. Emergency management coordinates with all departments internally to develop plans, protocols, and procedures that assure the safety of Newtown's citizens. It also provides technical assistance to state and local emergency response agencies and public officials. A backup EOC is located at the Sandy Hook Firehouse.

In Connecticut, the Department of Emergency Services and Public Protection (DESPP) added a regional focus. DESPP has divided Connecticut into five emergency planning regions and as part of this new view, the DEMHS subsection (Division of Emergency Management and Homeland Security) of DESPP has been partnering with HVCEO and other regional planning organizations to strengthen emergency response. Newtown is located in Region 5, consisting of forty-three towns in western Connecticut.

The Town's EOP guides its response to emergencies arising from both natural and anthropogenic hazards. The Town utilizes a program known as "CodeRED" to direct geographically specific emergency notification telephone calls into affected areas. The local radio station is also utilized for notifications purposes.

The Town's Highway Department performs tree and shrub removal and trimming on Town-owned lands and rights-of-way. During emergencies and following storms, the Public Works Department, in conjunction with the Parks Department, responds to calls related to downed trees. Public transportation is also available to move residents into and out of the town. HARTransit operates regular bus service in the town that may be available for use to move people and supplies. In addition, Town school buses and vans may be available for transportation during emergency situations.

### *Communications*

In Connecticut, the Department of Emergency Services and Public Protection (DESPP) has a regional focus. DESPP has divided Connecticut into five emergency planning regions and as part of this new view, the DEMHS subsection of DESPP has been partnering with HVCEO and other regional planning organizations to strengthen emergency response. Newtown is located in Region 5, consisting of 43 towns in western Connecticut.

The Town utilizes a CodeRED and Smart911 to direct geographically specific emergency notification telephone calls into affected areas.

## 3.0 HAZARD ASSESSMENT

### 3.1 FLOODING (COASTAL, INLAND, AND ICE JAMS)

#### 3.1.1 Setting

According to FEMA, most municipalities in the United States have at least one clearly recognizable floodprone area around a river, stream, or large body of water. These areas are outlined as SFHAs and delineated as part of the NFIP. Floodprone areas are addressed through a combination of floodplain management criteria, ordinances, and community assistance programs sponsored by the NFIP and individual municipalities.

Many communities also have localized flooding areas outside the SFHA. These floods tend to be shallower and chronically reoccur in the same area due to a combination of factors. Such factors can include ponding, poor drainage, inadequate storm sewers, clogged culverts or catch basins, sheet flow, obstructed drainageways, sewer backup, or overbank flooding from minor streams.

In general, the potential for flooding is widespread across Newtown, with the majority of major flooding occurring along established SFHAs. The areas impacted by overflow of river systems are generally limited to river corridors and floodplains. Indirect flooding that occurs outside floodplains and localized nuisance flooding along tributaries are also common problems in the town. This type of flooding occurs particularly along roadways as a result of inadequate drainage and other factors. The frequency of flooding in Newtown is considered likely for any given year, with flood damage potentially having significant effects during extreme events.

#### 3.1.2 Capabilities

##### *Floodplain Management, NFIP and CRS*

The NFIP administrator for the Town oversees the enforcement of NFIP regulations. The degree of flood protection established by the variety of regulations in the Town exceeds the minimum reasonable for regulatory purposes under the NFIP with four feet of freeboard for residential properties and ten feet for non-residential properties.

The Town is currently enrolled in the Community Rating System (CRS) program and has been since October 1, 1991. The CRS program is a voluntary program for National Flood Insurance Program (NFIP) participating communities. The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. The CRS has been developed to provide incentives in the form of premium discounts for communities to go beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding.

##### *Ordinances, Regulations, and Plans*

Regulations, codes, and ordinances that apply to flood hazard mitigation in conjunction with and in addition to NFIP regulations include:

- ❑ **Zoning Regulations:** The Town of Newtown Zoning Regulations were most recently updated in 2020 and have been enacted to accomplish the following purposes: “to lessen congestion in the streets; to secure safety from fire, panic, flood and other dangers; to promote health



and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate adequate provision for transportation, water, sewage, schools, parks and other public requirements; to conserve the value of the buildings and land; to encourage the most appropriate use of land throughout the Town of Newtown consistent with soil types, terrain and infrastructure capacity and to further such other purposes as may be authorized by statutes."

- ❑ **Chapter 136 of the Town Code – Flood Damage Ordinance:** Amended in 2010, the Town's Flood Damage Prevention Ordinance is essentially the local articulation of the NFIP requirements. The purpose of this Ordinance is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to; a) restrict or prohibit uses which are dangerous to health safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities; b) require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; c) Control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of floodwaters; d) Control filling, grading, dredging and other development which may increase erosion or flood damage; and e) Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.
  - Section 136.8 states that a flood hazard development permit shall be required in conformance with the provisions of this chapter prior to the commencement of any development activities.
  - Section 136-14 outlines permit requirements.
  - Section 136-18 outlines specific standards and requires the following in SFHA's A and AE:
    - 1) residential construction, new construction or substantial improvement of any residential structure shall have the lowest floor, including basement, elevated at least to four feet above the base flood elevation; 2) New construction or substantial improvement of any commercial, industrial, or nonresidential structure located in Zone A or AE shall have the lowest floor, including basement, elevated at least to 10 feet above the level of the base flood elevation.
  - Section 136-18 also discusses floodways and states that Since the floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and has erosion potential, the following provisions shall apply: prohibit encroachments, including fill, new construction, substantial improvements and other developments, unless certification (with supporting technical data) by a registered professional engineer is provided demonstrating, through hydrologic and hydraulic analyses performed in accordance with standard engineering practice, that encroachments shall not result in any increase in flood levels during occurrence of the base flood discharge.
- ❑ **Inland Wetlands and Watercourse Regulations:** The purpose of the 2012 inland wetlands and watercourses regulations is to protect the quality of the inland wetlands and watercourses within the Town of Newtown by making provisions for the protection, preservation, maintenance, and use of inland wetlands and watercourses, including deterring and inhibiting the danger of flood and pollution.



- Section 2.1 defines "Regulated Activity" as any operation within or use of a wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution, of said wetland or watercourses, but shall not include the specified activities in Section 22a-40 of the Connecticut General Statutes. Furthermore, any clearing, grubbing, filling, grading, paving, excavating, construction, depositing or removal of material and discharging of stormwater in the following areas is a regulated activity:
    - Within two hundred feet measured horizontally from the ordinary high-water mark of Taunton Pond, Lake Zoar, or Lake Lillinonah.
    - On the land within one hundred feet measured horizontally from the boundary of any wetland or watercourse.
  - Section 4.1 states that no residential homes will be permitted "as of right" in wetlands and watercourses after July 1, 1987.
  - Section 4.4 states that no person may conduct or maintain a regulated activity without obtaining a permit. Section 7 outlines the permit application requirements.
- ❑ **Plan of Conservation and Development:** Updated in 2014, this document is the Town vision statement for future development.
- Section VI (page 161) identifies certain natural resource issues, goals and strategies such as:
    - The need to develop and maintain effective stormwater management systems for the protection of streams, watercourses and wildlife.
    - Prevent flooding and degradation of water quality through regulations and stormwater improvements.
    - Conservation and protection of natural systems.
    - Open space initiatives and public awareness.
- ❑ **Subdivision Regulations:** Amended in 2013, the Town's Subdivision Regulations establish minimum acceptable standards of street construction; regulate the layout and development of lots and streets; and outline measures to prevent degradation of potable water sources, control erosion and siltation, preserve adequate and convenient open spaces, and retain the natural features of the land.
- Section 20.3 states: The land to be subdivided shall be of such character that it can be used for building purpose without danger to public health, safety or welfare. The land shall not be subdivided if the subdivision will endanger historical, archeological, natural or scenic resources. Land subject to periodic flooding, poor drainage, steep slopes or other hazardous conditions shall not be subdivided.
  - Section 3.01.113 states that Any subdivision of land five acres or more in area which has areas of special flood hazard shall provide the base flood elevation data and engineering analysis necessary for compliance with the Flood Damage Prevention Ordinance of the Town of Newtown. Any such application shall include the opinion of the designated Town staff and/or agency responsible for administration of the Flood Damage Prevention Ordinance that the proposal is in compliance with the ordinance.

- Section 3.09.110 indicates that No subdivision plan shall be approved unless each lot, and roadway shown thereon complies with the Newtown Subdivision Regulations, the Zoning Regulations of the Town or Borough as applicable, the Newtown Road Ordinance and the Newtown Flood Damage Ordinance.

Overall, the intent of these plans and regulations is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas of the Town of Newtown by the establishment of standards designed to:

- ❑ Protect human life and public health
- ❑ Minimize expenditure of money for costly flood control projects
- ❑ Minimize the need for rescue and relief efforts associated with flooding
- ❑ Minimize prolonged business interruptions
- ❑ Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone, and sewer lines; and streets and bridges located in floodplains
- ❑ Maintain a stable tax base by providing for the sound use and development of floodprone areas in such a manner as to minimize flood blight areas
- ❑ Ensure that purchasers of property are notified of special flood hazards
- ❑ Ensure the continued eligibility of owners of property in Newtown for participation in the NFIP

#### Drainage and Street Flooding

There are areas of street flooding throughout the town, and these are addressed by the Highway Department as necessary. The Town Highway Department oversees the maintenance of the town's drainage systems and performs clearing of bridges and culverts and other maintenance as needed. Drainage complaints are routed to the Town Highway Department. The Town uses these reports to identify potential problems and plan for maintenance and upgrades. The town is currently developing a system to monitor the capacity and capability of the present drainage system.

#### *Communications*

The National Weather Service issues a flood watch or a flash flood watch for an area when conditions in or near the area are favorable for a flood or flash flood, respectively. A flash flood watch or flood watch does not necessarily mean that flooding will occur. The National Weather Service issues a flood warning or a flash flood warning for an area when parts of the area are either currently flooding, highly likely to flood, or when flooding is imminent.

The Departments of Fire and Emergency Services are responsible for monitoring local flood warnings. The Town can access the National Weather Service website at <http://www.weather.gov/> to obtain the latest flood watches and warnings before and during precipitation events.

The Town receives regular weather updates through Division of Emergency Management and Homeland Security (DEMHS) Region 5 email alerts as well as watches and warnings through the National Weather Service.

#### *Actions Completed and New Capabilities*

In summary, the Town primarily attempts to mitigate future flood damage and flood hazards by restricting building activities in floodprone areas. This process is carried out through both the Planning and Zoning and the Conservation Commission. All watercourses are to be encroached

The town recently updated evacuation routes, which may be utilized during a flood event.

The town has upgraded three bridges in town along Turkey Hill Road, Walnut Tree Hill Road, and Toddy Hill Road, and also conducted drainage evaluations along Turkey Hill Road and Nearbrook Drive. An evaluation is currently underway at Meadow Brook Road. Several drainage related projects along these roadways have been complete as a result of the evaluations.

### **3.1.3 Vulnerabilities and Risk Assessment**

Flooding can impact a variety of river corridors and cause severe damages in the Town of Newtown. There are several river corridors in town that may flood and cause severe damages in town. In addition, flooding due to poor drainage and streambank erosion are other hazards in the town and can cause minor infrastructure damage and create nuisance flooding of yards and basements.

Flood zones are depicted on Figure 2-4.

#### *Vulnerability Analysis of Repetitive Loss Properties*

Based on correspondence with the State of Connecticut NFIP Coordinator at the Connecticut DEEP, there are three Repetitive Loss Properties (RLPs) in Newtown. All of these properties are residential, and it is thought that none are currently mitigated. It should be noted that two of these properties are located adjacent to the Housatonic River so riverine flooding could be a concern, as well as drainage related flooding.

#### *Vulnerability Analysis of Critical Facilities*

The list of critical facilities provided by the Town (Section 2.5) was used with the parcel data to accurately locate each critical facility throughout the town. None of the critical facilities were found to lie within the 1% annual chance floodplains with the exception of water-related facilities such as the wastewater treatment plant and wellheads.

#### *Vulnerability Analysis of Areas Along Watercourses*

The primary waterways in the town are the Pootatuck River and the Housatonic River. The remaining waterways in Newtown are mostly smaller streams and brooks. Lake Lillinonah and a variety of smaller lakes and ponds are significant recreational resources. Recall from Section 2.5 that floodplains with and without elevations are delineated for the majority of the floodprone brooks in the town. The majority of the brooks in the town are prone to flooding. Specific areas susceptible to flooding are identifiable by the FEMA defined special flood hazard areas.

The most frequently flooded areas in town are adjacent to the Pootatuck River. Town officials indicated that flooding occasionally requires the town to close portions of Turkey Hill Road and

Nearbrook Drive, as both roads become impassable during flood events. Flooding also occurs along Meadow Brook Road.

Flooding also occurs along the Housatonic River and Cutis Pond Brook. Halfway River experiences flooding but it does not affect any development. Pond Brook experiences scour damage and the bank is failing. Pond Brook Road and Edge Lake Road are at risk due to the failing banks.

Town officials indicated that development is highly restricted in SFHAs. The town requires four feet of freeboard for single-family residential and ten feet for commercial uses.

#### *Vulnerability of Other Areas*

There are other areas around the town that suffer from street flooding due to undersized culverts. These are addressed on a case-by-case basis through system maintenance and/or upgrades as necessary. Scouring and washouts around undersized culverts have occasionally occurred. Minor repairs and replacements with larger pipe diameters have been completed; however, Newtown could encourage the CT DOT to apply for funding to remediate these areas, since State agencies may apply for grants.

## 3.2 DAM FAILURE

### 3.2.1 Setting

Dam failures can be triggered suddenly, with little or no warning, and often from other natural disasters such as floods and earthquakes. Dam failures often occur during flooding when the dam breaks under the additional force of floodwaters. In addition, a dam failure can cause a chain reaction where the sudden release of floodwaters causes the next dam downstream to fail. While flooding from a dam failure generally has a moderate geographic extent, the effects are potentially catastrophic. Fortunately, a major dam failure is considered only a possible hazard event in any given year.

The Connecticut DEEP administers the statewide Dam Safety Program and designates a classification to each state-inventoried dam based on its potential hazard.

- *Class AA*: negligible hazard potential
- *Class A*: low hazard potential
- *Class BB*: moderate hazard potential
- *Class B*: significant hazard potential
- *Class C*: high potential hazard

DEEP inventory (2013) documents 69 dams within Town limits. Additionally, high hazard dams located in surrounding municipalities have the potential to affect the Town of Newtown in a failure event. Table 3-1 shows the high hazard dams that can potentially impact the town during an event.

**Table 3-1: High Hazard Dams with Potential to Affect the Town of Newtown**

Dam Number	Name	Location	Class	Owner
9701	Rocky Glen Dam	Pootatuck River, Newtown	C	Sandy Hook Hydro, LLC
9703	Curtis Pond Dam	Curtis Pond Brook, Newtown	B	Town of Newtown
9715	Carp Road Dam	Unnamed Watercourse, Newtown	B	Cullens Youth Association
13001	Shepaug Dam	Housatonic River, Southbury	C	First Light Power Resources

### 3.2.2 Capabilities

The Dam Safety Section of the Connecticut DEEP Inland Water Resources Division is charged with the responsibility for administration and enforcement of Connecticut's dam safety laws. The existing statutes require that permits be obtained to construct, repair, or alter dams and that existing dams be inventoried and periodically inspected to assure that their continued operation does not constitute a hazard to life, health, or property.

The dam safety requirements are codified in Sections 22a-401 through 22a-411 inclusive of the Connecticut General Statutes. Sections 22a-409-1 and 22a-409-2 of the Regulations of

Connecticut State Agencies have been enacted and set requirements for the registration, classification, and inspection of dams. Dams must be inventoried by the owner with the Connecticut DEEP according to Connecticut Public Act 83-38.

Effective October 1, 2013, the owner of any high or significant hazard dam (Class B and C) must develop and implement an EAP after the Commissioner of DEEP adopts regulations. The EAP shall be updated every two years, and copies shall be filed with DEEP and the chief executive officer of any municipality that would potentially be affected in the event of an emergency. New regulations shall establish the requirements for such EAPs, including but not limited to (1) criteria and standards for inundation studies and inundation zone mapping; (2) procedures for monitoring the dam or structure during periods of heavy rainfall and runoff, including personnel assignments and features of the dam to be inspected at given intervals during such periods; and (3) a formal notification system to alert appropriate local officials who are responsible for the warning and evacuation of residents in the inundation zone in the event of an emergency.

Dams regulated by the Connecticut DEEP must be designed to pass the 1% annual chance rainfall event with one foot of freeboard, a factor of safety against overtopping.

Significant and high hazard dams are required to meet a design standard greater than the 1% annual chance rainfall event.

The CT DEEP also administers the Flood and Erosion Control Board program, which can provide noncompetitive state funding for repair of municipality-owned dams. Funding is limited by the State Bond Commission. State statute Section 25-84 allows municipalities to form Flood and Erosion Control Boards, but municipalities must take action to create the board within the context of the local government such as by revising the municipal charter. The Town's Planning and Zoning Commission is responsible for reviewing all development activities that occur within flood hazard or flood-prone areas.

The Town uses the CT Alert system for emergency notification. The dam failure inundation mapping discussed in the next section can be used to help streamline the geographic contact areas if the failure of a major dam is imminent.

#### *Actions Completed and New Capabilities*

Newtown continues to maintain and improve its dam failure mitigation capabilities.

### **3.2.3 Vulnerabilities and Risk Assessment**

As of 2013, there were 69 DEEP-inventoried dams within the Town of Newtown. The primary dam failure concern relates to upstream dams located in adjacent municipalities. Failure of these structures would have an impact on Newtown. Dams and dam failure zones, where available, are depicted on Figure 2-4.

This section primarily discusses the possible effects of failure of high hazard (Class B and C) dams. Failure of a Class C dam has a high potential for loss of life and extensive property and infrastructure damage.

### *Class B and C Dams*

Dam failure analyses have been prepared for many of the high hazard dams, and these are included in the EAPs. The inundation limits portrayed in the dam failure analysis maps represent a highly unlikely, worst-case scenario (1,000-year) flood event and should be used for emergency action planning only. As such, they are appropriate for use in the CodeRED emergency notification database. These analyses should not be interpreted to imply that the dams evaluated are not stable, that the routine operation of the dams presents a safety concern to the public, or that any particular structure downstream of the dam is at imminent risk of being affected by a dam failure.

#### **Rocky Glen Dam (Dam No. 9701) - Pootatuck River, Newtown**

The Rocky Glen Dam is a run-of-the river dam on the Pootatuck River and impounds a storage volume of 70 acre-feet from a contributing watershed of 25.5 square miles. The concrete dam was constructed in 1870 and is 38 feet in height and 130 feet in length. It is owned by Sandy Hook Hydro, LLC and used to impound a reservoir for hydropower. Flow is monitored with a transducer sensor in the canal tied to the computer that controls flow control.

The 1980 USACE Phase I inspection report noted that the dam was unsafe, it was reconstructed in 1989. An EAP for the Rocky Glen Dam was prepared by Milone & MacBroom, Inc. in June 1987 addressing actions to be taken during an emergency. In 1993, a CT DEEP inspection requested that the owner remove trees, fix deteriorated concrete at right spillway training wall/low level outlet pipe/downstream spillway face.

Failure of the structure and impacts from floodwaters are discussed in the 1987 EAP. The report notes that six houses are in the possible downstream impact area. Early warning procedures include contacting the Police and Fire Departments to alert residents in designated areas of the need for evacuation.

#### **Curtis Pond Dam (Dam No. 9703) - Curtis Pond Brook, Newtown**

The Curtis Pond Dam is located at the northern end of Curtis Pond and impounds a storage volume of 80 acre-feet from a contributing watershed of 1.73 square miles. It is owned by the Town of Newtown and used to impound a reservoir for recreation. The structure is an earthen dam with concrete weir spillway, and was constructed in 1856. It is 15 feet in height and 240 feet in length.

The Town received an order from the CT DEEP in 1998 to repair the structure. It was renovated in 2004, and included raising the embankment by two feet (total height of 15'), rebuilt low level outlet and control, install toe drains, drained/backfilled raceway and replaced with 18" RCP with concrete headwall and sluice gate.

The dam was inspected by the CT DEEP on April 11, 2013 and the inspection report noted that the structure was in need of maintenance including: reseeding the crest and mowing, addressing erosion gulleys on the left downstream embankment, reconstituting the left upstream embankment at the training wall, filling in eroded areas behind the right upstream wall, monitoring horizontal cracks on training walls, clearing woody debris, and submitting the required EAP.

An EAP is currently on file at the DEEP for the Curtis Pond Dam, and it addresses actions to be taken during an emergency. The dam discharges to Curtis Pond Brook, which is impounded again by the Curtis Pond Brook Dam located approximately 800 feet downstream. The brook flows alongside Route 34 and under Toddy Hill Road before joining the Pootatuck River. Floodwaters from a dam failure have the potential to affect five houses and a large commercial building. Town officials noted that this dam was recently replaced.

***Carp Road Dam (Dam No. 9715) - Newtown (unnamed watercourse)***

The Carp Road Dam is located at the northern end of Carp Pond. The earthen dam is 3 feet in height and 175 feet in length. It is owned by Cullens Youth and used to impound a reservoir for recreation. The dam discharges through an unnamed watercourse that flows northward under Taunton Lake Road, and into Taunton Pond located approximately 960 feet downstream. A number of residences located along the edge of Taunton Pond, and one house located directly downstream of the dam could potentially be affected by failure floodwaters.

***Shepaug Dam (Dam No. 13001) - Housatonic River, Southbury***

The Shepaug Dam is located at the southern end of Lake Lillinonah and impounds a storage volume of 156,145 acre-feet from a contributing watershed of 1,392 square miles. The dam is a concrete gravity structure anchored into bedrock, with a length of 1,412 feet. It is owned by First Light Power Resources and used to impound a reservoir for hydropower. The Shepaug Hydroelectric Station has a hydraulic capacity of 6,200 cfs.

The inundation area for the failure of the Shepaug Dam extends into Newtown. An EAP for the Shepaug Dam was prepared in 2012 addressing actions to be taken during an emergency. Notifications include Newtown local police and the First Selectman.

Overall, the Rocky Glen Dam and the Lower Rocky Glen Dam, along the Pootatuck are the two dams that the town has the most concern with respect to maintenance. Town officials have also indicated that they would like to remove the 27 Glen Road dam in order to reduce the amount of water and material behind it.

In addition, as noted in as noted in Section 1.7, the Stevenson Dam is also of concern for the Town of Newtown. Newtown should pursue improved communications with the Town of Oxford and First Light regarding emergency response along Lake Zoar.

***Other Dams***

- The Paparazzo dam, a low hazard dam located on Clapboard Oak Brook, had repairs reportedly accomplished about three years ago yet is still considered a concern of maintenance and observation because any failure could have significant results.
- The Johnsons Pond Dam, located on a northern branch of the Clapboard Oak Brook, is one of only two dams considered to have moderate hazard.

***Changes and Improvements***

Newtown continues to be at low risk of dam failure.



### **3.3 HURRICANES AND TROPICAL STORMS**

#### **3.3.1 Setting**

Several types of hazards may be associated with tropical storms and hurricanes including heavy or tornado winds, heavy rains, and flooding. While only some of the areas of Newtown are susceptible to flooding damage caused by hurricanes, wind damage can occur anywhere in the town. Hurricanes, therefore, have the potential to affect any area within the Town of Newtown. A hurricane striking Newtown is considered a possible event each year and could cause critical damage to the town and its infrastructure.

#### **3.3.2 Capabilities**

Wind loading requirements are addressed through the state building code. The 2005 Connecticut State Building Code was amended in 2011, and again in 2018, with an effective date of October 1, 2018. The code specifies the design wind speed for construction in all the Connecticut municipalities. The design wind speed for Newtown has been identified in the State code to be 110 mph for a Category 1 event, 120 for a Category 2, and 130 for a Categories 3 to 5.

Connecticut is located in FEMA Zone II regarding maximum expected wind speed. The maximum expected wind speed for a three-second gust is 160 mph. This wind speed could occur as a result of either a hurricane or a tornado in western Connecticut and southeastern New York. The American Society of Civil Engineers recommends that new buildings be designed to withstand this peak three-second gust.

The town has a proactive approach to tree trimming and has two tree wardens – one for the borough and one for the town. Over the years the town has increased its trimming efforts. The tree trimming budget is estimated around \$200,000 with an emergency budget of \$75,000. The town plans around Eversource's trimming but the town desires better communication with Eversource about when and where they are planning to trim.

During emergencies, the Town currently has three designated emergency shelters available for residents as discussed in Section 2.5. During past events, the Town used the emergency notification system CodeRED to notify all residents in the SFHA that they may evacuate and use one of the shelters. The Board of Education also used its notification system to notify people on its list of emergency procedures. Since 2010 there have been seven emergency declarations covering town, with the most challenging aspect of those events having been downed trees and associated power loss.

Prior to severe storm events, the Town ensures that warning/notification systems and communication equipment are working properly and prepares for the possible evacuation of impacted areas.

#### *Actions Completed and New Capabilities*

The town regularly tracks events and information on Crisis Track, the damage assessment software. Also, the town continues to maintain a good relationship with Eversource which plays an important role in tree trimming activities.

### 3.3.3 Vulnerabilities and Risk Assessment

The Town of Newtown is vulnerable to hurricane damage from wind and flooding and from any tornadoes accompanying the storm. In fact, most of the damage to the town from historical tropical cyclones has been due to the effects of flooding.

The Town of Newtown is vulnerable to hurricane damage from wind and flooding and from any tornadoes accompanying the storm. In fact, most of the damage to the town from historical tropical cyclones has been due to the effects of flooding. Fortunately, Newtown is less vulnerable to hurricane damage than coastal towns in Connecticut because it does not need to deal with the effects of storm surge. Factors that influence vulnerability to tropical cyclones in the town include building codes currently in place, local zoning and development patterns, and the age and number of structures located in highly vulnerable areas of the community.

Newtown's housing stock consists of historic buildings greater than 50 and sometimes 100 years old, relatively younger buildings built before 1990 when the building code changed to address wind damage, and relatively recent buildings that utilize the new code changes. Since most of the existing housing stock in the town predates the recent code changes, many structures are highly susceptible to roof and window damage from high winds. Homes located within SFHAs are also at risk from flooding as a result of the heavy rainfall that typically occurs during tropical storms and hurricanes.

#### *Changes and Improvements*

The Town is using the Code RED emergency notification to the fullest extent for event notification distribution.

### **3.4 SUMMER STORMS AND TORNADOES**

#### **3.4.1 Setting**

Heavy wind (including tornadoes and downbursts), lightning, heavy rain, hail, and flash floods are the primary hazards associated with summer storms. Like hurricanes and winter storms, summer storms and tornadoes have the potential to affect any area within the Town of Newtown.

Furthermore, because these types of storms and the hazards that result (flash flooding, wind, hail, and lightning) might have limited geographic extent, it is possible for a summer storm to harm one area within the town without harming another. The entire Town of Newtown is therefore susceptible to summer storms (including heavy rain, flash flooding, wind, hail, and lightning) and tornadoes.

Based on the historic record, it is considered highly likely that a summer storm that includes lightning will impact the Town of Newtown each year although lightning strikes have a limited effect. Strong winds and hail are considered likely to occur during such storms but also generally have limited effects. A tornado is considered a possible event in Litchfield County each year that could cause significant damage to a small area.

#### **3.4.2 Capabilities**

Warning is the primary method of existing mitigation for tornadoes and thunderstorm-related hazards. The NOAA National Weather Service (NWS) issues watches and warnings when severe weather is likely to develop or has developed, respectively. Emergency management personnel have specific actions they take under different NWS watches and warnings to prepare for summer storms and tornado impacts.

Aside from warnings, several other methods of mitigation for wind damage are employed in Newtown as explained in Section 3.3. In addition, the Connecticut State Building Code includes guidelines for the proper grounding of buildings and electrical boxes.

Eversource trims trees along powers lines. The town tree warden can remove dead and diseased trees in rights-of-way or Town land, working through the Public Works Department. Town-owned equipment is used except for complex situations, which would call for the use of a contractor.

Municipal responsibilities relative to summer storm and tornado mitigation and preparedness include:

- Developing and disseminating emergency public information and instructions concerning tornado, thunderstorm wind, lightning, and hail safety, especially guidance regarding in-home protection and evacuation procedures and locations of public shelters;
- Designating appropriate shelter space in the community that could potentially withstand lightning and tornado impact;
- Periodically testing and exercising tornado response plans; and
- Putting emergency personnel on standby at tornado "watch" stage.

For municipal property, the Town budget is generally adequate to handle summer storm damage.

#### *Actions Completed and New Capabilities*

The Town is using the Code RED emergency notification to the fullest extent for event notification distribution.

### **3.4.3 Vulnerabilities and Risk Assessment**

The entire Town of Newtown is at relatively equal risk for experiencing damage from summer storms and tornadoes.

According to the 2019 State Natural Hazard Mitigation Plan Update, Fairfield County has a moderate to high risk of tornado activity based on historical occurrences. Therefore, by virtue of its location in Fairfield County, the Town of Newtown has moderate to high potential to experience tornado damage. In general, thunderstorms and hailstorms in Connecticut are more frequent in the western and northern parts of the state and less frequent in the southern and eastern parts. The majority of these events do not cause any measurable damage. Although lightning is usually associated with thunderstorms, it can occur on almost any day. The likelihood of lightning strikes in the Newtown area is very high during any given thunderstorm although no one area of the town is at higher risk of lightning strikes. The risk of at least one hailstorm occurring in Newtown is considered moderate in any given year.

Most thunderstorm damage is caused by straight-line winds exceeding 100 mph. Straight-line winds occur as the first gust of a thunderstorm or from a downburst from a thunderstorm and have no associated rotation. The risk of downbursts occurring during such storms and damaging the Town of Newtown is believed to be low for any given year. All areas of the town are susceptible to damage from high winds although more building damage is expected in the town center while more tree damage is expected in the less densely populated areas.

Secondary damage from falling branches and trees is more common than direct wind damage to structures. Heavy winds can take down trees near power lines, leading to the start and spread of fires.

NOAA states that climate change has the potential to increase the frequency and intensity of tornadoes, so it is possible that the pattern of occurrence in Connecticut could change in the future.

Town officials indicate while all areas of town are at risk of power outages, some areas seem to experience outages more often and for longer periods of time due to a lack of redundancy in the system.

#### *Changes and Improvements*

Newtown continues to maintain its capabilities for mitigating and responding to summer storms and tornadoes, including tree limb inspection and maintenance.

### **3.5 WINTER STORMS AND NOR'EASTERS**

#### **3.5.1 Setting**

Winter events and the hazards that result (wind, snow, and ice) have widespread geographic extents, and have the potential to affect any area of the Town of Newtown. Due to its variable elevation, the Town can have higher amounts of snow in the outskirts of the town than in the town center. In general, winter storms are considered highly likely to occur each year (although major storms are less frequent), and the hazards that result (nor'easter winds, snow, and blizzard conditions) can potentially have a significant effect over a large area of the town.

Most winter weather events occur between December and March. Winter weather may include snow, sleet, freezing rain, and cold temperatures. Most deaths from winter storms are indirectly related to the storm, such as from traffic accidents on icy roads and hypothermia from prolonged exposure to cold. Damage to trees and tree limbs and the resultant downing of utility cables are a common effect of these types of events. Secondary effects include loss of power and heat, and flooding as a result of snowmelt.

#### **3.5.2 Capabilities**

Programs that are specific to winter storms are generally those related to preparing plows and sand and salt trucks, tree trimming to protect power lines, and other associated snow removal and response preparations. The Town budget is generally adequate to handle winter storm damage although the plowing budget is often depleted. The heavy snowfalls associated with the winter of 2010-2011 drained the Town's plowing budget and raised a high level of awareness of the danger that heavy snow poses to roofs.

The amended Connecticut Building Code specifies that a pressure of 30 pounds per square foot (psf) be used as the base "ground snow load" for computing snow loading for different types of roofs. The International Building code specifies the same pressure for habitable attics and sleeping areas, and specifies a minimum pressure of 35 psf for all other areas.

The town owns eleven trucks for plowing which cover four plowing districts and six routes per district. Newtown has over 260 miles of local roads that are plowed and many private roads that are plowed as well due to Town Ordinance.

Prior to a winter weather event, the Town ensures that all warning/notification and communications systems are ready and ensures that appropriate equipment and supplies, especially snow removal equipment, are in place and in good working order. In some known problem areas, pre-storm treatment is applied to roadways to reduce the accumulation of snow. The Town also prepares for the possible evacuation and sheltering of some populations that could be impacted by the upcoming storm (especially the elderly and special needs persons).

#### *Actions Completed and New Capabilities*

The town has posted snow plowing routes in municipal buildings to increase public awareness. In addition, town staff and emergency personnel have identified areas that may be difficult to access during a winter event and developed plans to access these areas during an emergency.

### 3.5.3 Vulnerabilities and Risk Assessment

The entire Town of Newtown is at relatively equal risk for experiencing damage from winter storms although some areas (such as icing trouble spots and neighborhoods with a high concentration of flat roofs) are more susceptible. Many damages are relatively site specific and occur to private property, while repairs for power outages are often widespread.

Based on the historic record, Connecticut experiences at least one major nor'easter every four years, along with a variety of minor and moderate snow and ice storms that occur nearly every winter. According to the 2019 Connecticut Natural Hazard Mitigation Plan Update, Connecticut residents can expect at least two or more severe winter weather events per season, including heavy snowstorms, potential blizzards, nor'easters, and potential ice storms, with an average of up to 14 events per winter season, major or minor.

After a storm, snow piled on the sides of roadways can inhibit sight lines and reflect a blinding amount of sunlight. When coupled with slippery road conditions, poor sightlines and heavy glare create dangerous driving conditions. Stranded motorists, especially senior and/or handicapped citizens, are at particularly high risk of injury or death from exposure during a blizzard. The elderly population in Newtown, in particular, is susceptible to the impacts created by winter storms due to resource needs (heat, electricity loss, safe access to food, etc.).

The structures and utilities in the Town of Newtown are vulnerable to a variety of winter storm damage. Tree limbs and some building structures may not be suited to withstand high wind and snow loads. Ice can damage or collapse power lines, render steep gradients impassable for motorists, undermine foundations, and cause "flood" damage from freezing water pipes in basements.

Icing causes difficult driving conditions along Route 53 in the western portion of town. The Town's standard of presalting has been helpful in controlling ice in these problem areas. The town engineer is currently developing a list of drainage projects to address this area and has made good progress to date. Drifting snow can occur after large storms, but the effects are generally mitigated through municipal plowing efforts.

According to the 2019 Connecticut Natural Hazard Mitigation Plan Update, recent climate change studies predict a shorter winter season for Connecticut with an increased amount of rain in comparison to snow. This increase of rain could mean more ice storms for the state. It is likely that climate change will result in significant changes in winter storm patterns.

#### *Changes and Improvements*

The town is confident municipal buildings are in adequate shape to withstand snow loads, and have also worked to develop plans on reaching potentially hard to access areas in town during an event.

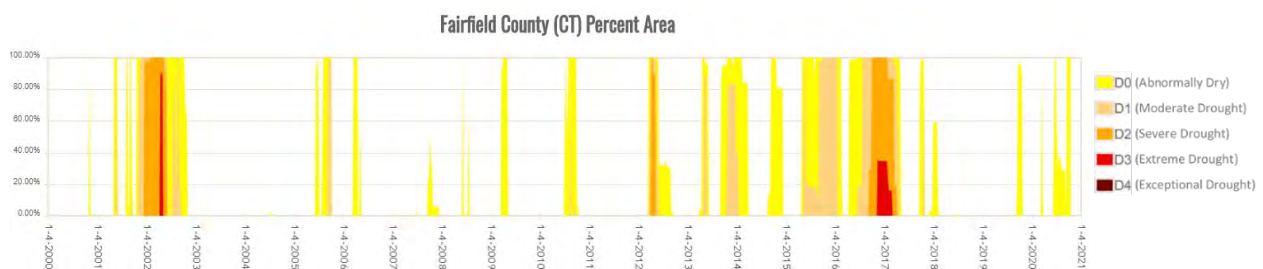
## 3.6 WILDFIRES AND DROUGHT

### 3.6.1 Setting

The ensuing discussion about wildfires is generally focused on the undeveloped wooded and shrubby areas of Newtown, along with low-density suburban type development found at the margins of these areas known as the wildland interface.

The Town of Newtown is generally considered a high-risk area for small wildfires but a low risk area for large wildfires. Wildfires are of particular concern in outlying areas with poor access for fire-fighting equipment. Hazards associated with wildfires include property damage and loss of habitat. Wildfires of any type are considered a likely event each year but, when one occurs, it is generally contained to a small range with limited damage to non-forested areas.

In addition, Newtown, and Fairfield County overall, has experienced drought challenges over recent years. The U.S. Drought Monitor (USDM), which has been monitoring nationwide drought conditions since 2000, estimates that over the past two decades Connecticut experienced its longest drought of 46 weeks beginning June 21, 2016 and lasting until May 2, 2017. It was also estimated that the most intense period of this extended drought occurred the week of November 15, 2016, where approximately 44.5% of Connecticut lands were impacted. Figure 3-1 depicts the various drought conditions in Fairfield County since 2000, where the warmer colors represent more advanced drought stages.



**Figure 3-1: USDM Drought Time Series for Fairfield County**

The 2019 Connecticut Natural Hazard Mitigation Plan assumes that the State of Connecticut has a medium probability of future drought events. This assumption is based on climate change projections anticipating hotter and wetter conditions in the near future. Climate forecasts often suggest that while precipitation may increase, the overall pattern will generally be higher intensity storms, with longer than average dry periods between events. The State Plan also identifies that Fairfield County accounts for roughly 7.34% of the state's total number of farms, with a market value of over \$34 million in product sold from these farms.

### 3.6.2 Capabilities

The town also has regulations that require any development with more than three houses to include a 30,000-gallon cistern for fire protection. In addition, the town has approximately 800 hydrants throughout Newtown and a number of dry hydrants as well. The town Fire Department also has verbal mutual aid agreements with surrounding towns.

Newtown is served by the following five volunteer Fire Departments: Sandy Hook (which has two firehouses), Dodgingtown, Botsford, Hawleyville and Newtown Hook and Ladder. These fire departments are typically the first to respond to incidents in the State forest.

Finally, the DEEP Forestry Division uses rainfall data from a variety of sources to compile forest fire probability forecasts. This allows the DEEP and the Town to monitor the drier areas of the state to be prepared for forest fire conditions.

Regulations regarding fire protection are outlined in the Zoning Regulations and the Subdivision Regulations.

- Zoning Regulations, Article VIII, Section 14 – Initial Attack Fire Suppression Water Supply. Specifically, the purpose of this section is to establish criteria and requirements for the installation of an initial attack fire suppression water supply for commercial, industrial and residential developments. The intent of this section is to assure that an initial supply of water is available and accessible for the immediate use by the Fire Department in the case of an emergency.
- Subdivision Regulations, Section 3.01.542 requires the location of water storage tanks for fire suppression required pursuant to Article VIII, Section 14 of the Zoning Regulations.
- Subdivision Regulations, Section 4.03.110 states that in subdivisions to which public water, public sanitary sewers or public storm sewers are available, and all mains, conduits, laterals to the street are available, each building lot, branch offsets, fire hydrants or facilities of like nature necessary to a complete utility system shall be installed by the subdivider without expense to the Town.

#### *Actions Completed and New Capabilities*

Town fire departments have coordinated with Aquarion Water Company to identify areas where firefighting capacity may be limited due to lack of pressure or storage.

### **3.6.3 Vulnerabilities and Risk Assessment**

The most common causes of wildfires are arson, lightning strikes, and fires started from downed trees hitting electrical lines. Thus, wildfires have the potential to occur anywhere and at any time in both undeveloped and lightly developed areas. The extensive forests and fields covering the state are prime locations for a wildfire. In many areas, structures and subdivisions are built abutting forest borders, creating areas of particular vulnerability.

Wildfires are more common in rural areas than in developed areas as most fires in populated areas are quickly noticed and contained. The likelihood of a severe wildfire developing is lessened by the vast network of water features in the state, which create natural breaks likely to stop the spread of a fire. During long periods of drought, these natural features may dry up, increasing the vulnerability of the state to wildfires.

Wildfire risk areas are shown in Figure 3-2.



According to the Connecticut DEEP, the overall forest fire risk in Connecticut is low due to several factors. First, the overall incidence of forest fires is very low According to the 2019 State Hazard Mitigation Plan, and average of 109 fires per year occurred in Connecticut from 2013 to 2017 Secondly, as the wildfire/forest fire prone areas become fragmented due to development, the local fire departments have increased access to those neighborhoods for firefighting equipment. Third, the problematic interface areas such as driveways too narrow to permit emergency vehicles are site specific. Finally, trained firefighters at the local and state level are readily available to fight fires in the state, and inter-municipal cooperation on such instances is common.

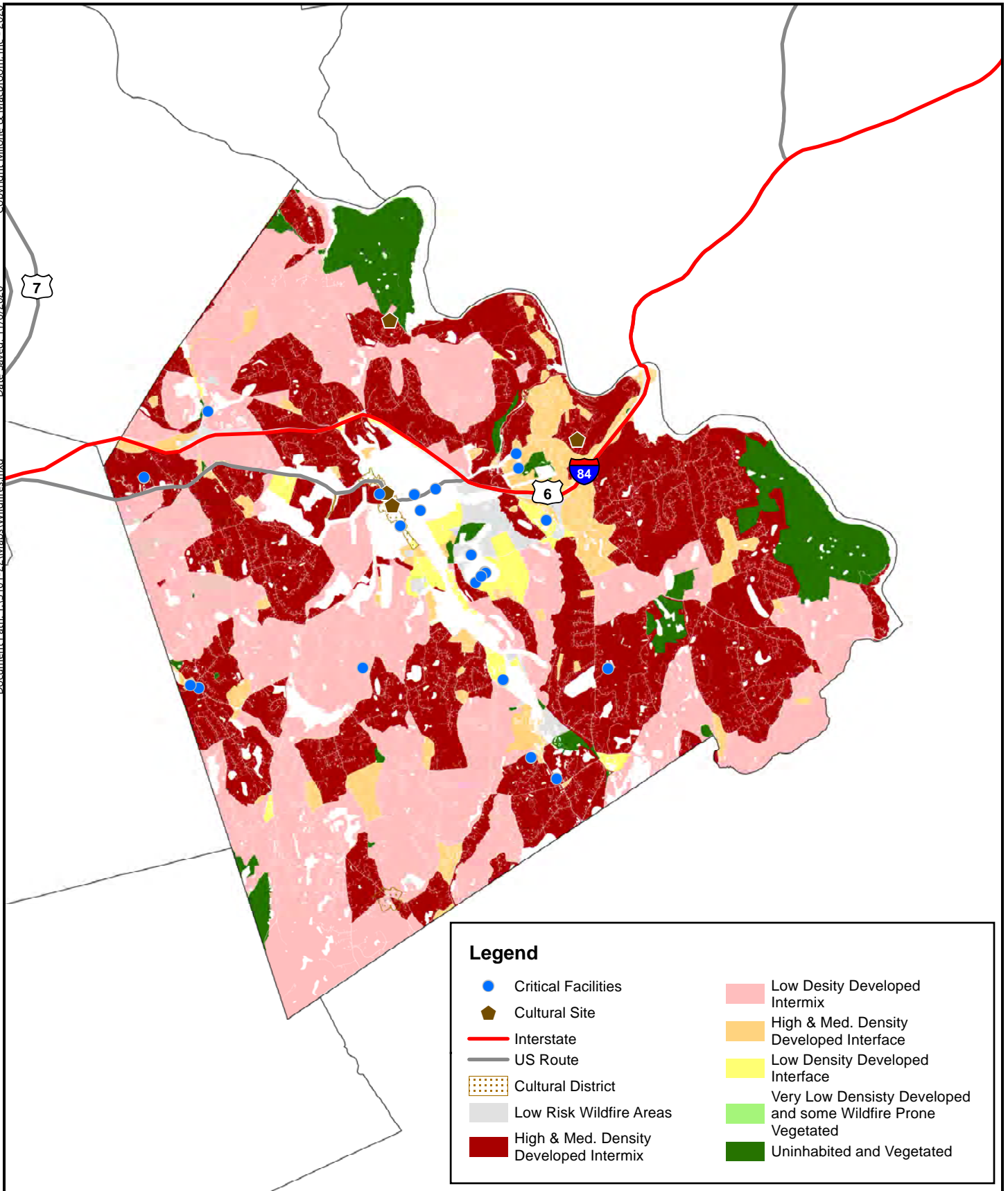
However, local risk is not necessarily the same as the overall statewide risk. Newtown town officials believe that the fuels are present in the forested parts of the town, and thus believe that the risk is present.

Most wildfires in Connecticut are relatively small. Given the availability of firefighting water in the town, including the use of nearby water bodies, it is believed the average wildfire burned area of five acres for a drought year is applicable to Newtown.

Newtown has experienced brush fires in the past and has areas vulnerable to wildfires. The Paugussett State Forest may be considered a high-risk area due to the amount of wooded areas.

#### *Changes and Improvements*

The town continues to mitigate wildfires where possible and improve firefighting capabilities.



### **3.7 EARTHQUAKES AND LANDSLIDES**

#### **3.7.1 Setting**

The entire Town of Newtown is susceptible to earthquake damage. However, even though earthquake damage has the potential to occur anywhere both in the town and in the northeastern United States, the effects may be felt differently in some areas based on the type of geology. In general, earthquakes are considered a hazard that may possibly occur but that may cause significant effects to a large area of the town.

#### **3.7.2 Capabilities**

The Connecticut Building Codes include design criteria for buildings specific to each municipality as adopted by the Building Officials and Code Administrators (BOCA). These include the seismic coefficients for building design in the Town of Newtown. The Town has adopted these codes for new construction, and they are enforced by the Building Official. Due to the infrequent nature of damaging earthquakes, land use policies in the Town do not directly address earthquake hazards. However, various documents do indirectly discuss areas susceptible to earthquake damage and regulations that help to minimize potential earthquake damage.

##### *Actions Completed and New Capabilities*

The town have ensured backup facilities and capabilities in the event an earthquake results in damage to a municipal building. In addition, development in areas prone to collapse are reviewed and evaluated on a case by case basis.

#### **3.7.3 Vulnerabilities and Risk Assessment**

Some areas in Newtown are underlain by sand and gravel. Structures in these areas are at increased risk from earthquakes due to amplification of seismic energy and/or collapse. The best mitigation for future development in areas of sandy material may be application of the most stringent building codes or possibly the prohibition of new construction. However, many of these areas occur in floodplains associated with the various streams and rivers in Newtown, so they are already regulated. The areas that are not at increased risk during an earthquake due to unstable soils are the areas underlain by glacial till, which includes most of the town.

Areas of steep slopes can collapse during an earthquake, creating landslides. Seismic activity can also break utility lines such as water mains, electric and telephone lines, and stormwater management systems. Damage to utility lines can lead to fires, especially in electric and gas mains. Dam failure can also pose a significant threat to developed areas during an earthquake. For this Plan, dam failure has been addressed separately.

##### *Changes and Improvements*

The Town has increased remote and backup working capabilities for municipal staff.

## 4.0 MITIGATION STRATEGIES AND ACTIONS

### 4.1 Goals and Objectives

Municipal goals and objectives have been made consistent regionally and are presented in the Multi-Jurisdictional Plan document.

### 4.2 Status of Mitigation Strategies and Actions from Previous HMP

The table below lists the mitigation actions developed in the previous HMP and the status of each. Actions to be carried forward are noted as such. Actions that have been institutionalized as capabilities are not carried forward.

Description	Status	Notes
Utilize the Code RED emergency notification system to its fullest capabilities	Capability	Capability – town uses this system regularly
Encourage residents to purchase and use NOAA weather radios with alarm features	Drop	Has not been addressed, priorities have shifted to other technology. Omit action
Disseminate informational pamphlets regarding natural hazards to public locations	Carry Forward with Revisions	Condense #3, 4, 5, and 6 (and other outreach) town is continuously conducting outreach
Review potential evacuation routes to ensure timely migration of people seeking shelter in all areas of town.	Drop	Review was conducted last fall
Post a list of town sheltering facilities on the Town Hall and on the Town's website so residents can be prepared during a hazard event	Drop	On the website – evacuation routes are part of GIS layer system and need to be shared with WestCOG
Add pages to the town website dedicated to citizen education and preparation for hazard events	Completed	Town has Public Safety, Emergency Management, and other relevant pages on the website.
Pursue improved communications with the Town of Oxford and First Light regarding emergency response along Lake Zoar.	Complete	Previous action had to do with cell towers and communications, entire emergency communication system is being replaced, Newtown is part of annual planning process with First Light
Prepare status memo that describes objectives and policies from this hazard mitigation plan that may be considered for incorporation into the Plan of Conservation and Development when it is updated in 2024; and provide the memo to the Planning and Zoning Commission.	Carry Forward	Over next few years, moving into POCD phase, 2024,
Require developers to demonstrate whether detention or retention of stormwater is the best option for reducing peak flows downstream of a project and provide a design for the appropriate alternative.	Completed / Capability	Part of engineers' stormwater report
Encourage property owners to purchase flood insurance under the NFIP.	Ongoing	Educational – part of CRS outreach
Conduct drainage evaluations along Turkey Hill Road, Nearbrook Drive, Meadow Brook Road and in the vicinity of the five lakeside communities to determine appropriate measures for improved drainage and flood mitigation.	Partially Completed / Carry Forward with Revisions	Nearbrook and Turkey Hill are complete – Meadow Brook is underway, and needs to be approved by army corps. Some projects in the five lakeside communities some have been completed. new action: address remaining issues in 5 lakeside communities

Description	Status	Notes
Pursue elevation of residential properties that suffer flood damage. Properties may be classified as repetitive loss or not classified as repetitive loss, but RLPs should be prioritized.	Drop	The town has received numerous elevation certificates due to changing regulations. The RL properties are not candidates for elevation currently, and the overall need for elevation is minimal.
Compile a checklist that cross-references the bylaws, regulations, and codes related to flood damage prevention that may be applicable to a proposed project and make this list available to potential applicants.	Carry Forward	
Provide outreach regarding home elevation and relocation, flood barriers, dry floodproofing, wet floodproofing, and other home improvement techniques (Section 3.6.2) to private homeowners and businesses with flooding problems.	Ongoing	Part of CRS
Hold workshops involving all Town departments to provide training for dealing with widespread flooding damage.	Carry Forward with Revisions	Develop and hold an annual workshop with town departments to provide training for dealing with widespread flooding damage.
Evaluate scour damage along Pond Brook and develop mitigation measures	Carry Forward	Still need to continue – some sections of Pond Brook are dirt road, suffers badly during storms. Not achieved due to lack of funding.
Develop a priority list of areas identified (during stream reconnaissance work) that are in need of stabilization and implement corrective actions	Carry Forward	List has not been developed yet. The responsible party may need to be shifted.
Pursue acquisition of additional municipal open space in SHFAs and set it aside for greenways, parks, etc.	Carry Forward with Revisions	Continued – New action Acquisitions focused within the Halfway River watershed. Least developed, highest quality river in town.
Consider conducting a town wide drainage analysis to determine appropriate mitigation measures such as stormwater retrofits.	Capability	As part of MS4 only for critical areas - capability
Review culvert conveyances based on Northeast Regional Climate Center guidance for increasing precipitation [regional analysis of rainfall extremes ( <a href="http://precip.eas.cornell.edu/">http://precip.eas.cornell.edu/</a> ) for engineering design]	Carry Forward with Revisions	Working on this system Develop into a standard operating procedure.
Develop a plan to stabilize low-lying roads, especially in the lakeside communities	Carry Forward	Ownership is changing – new legal guidance, carry forward
Complete necessary improvements of town bridges. Specifically, Turkey Hill Bridge and Meadow Brook Bridge which are due for replacement.	Partially Completed / Carry Forward with Revisions	Complete –Meadow Brook bridge is not finished – Carry over Meadowbrook improvements
Ensure adequate barricades are available to block flooded streets in floodprone areas	Completed	Capability
Continue town wide tree limb inspection and maintenance programs to ensure that the potential for downed power lines is diminished.	Carry Forward	Capability
Pursue funding to place utilities underground in existing developed areas	Carry Forward	
The Building Department should provide literature regarding appropriate design standards for wind.	Capability	Capability; Town administers the State Building Code

Description	Status	Notes
Encourage the use of structural techniques related to mitigation of wind damage in new residential and commercial structures to protect new buildings to a standard greater than the minimum building code requirements. Require such improvements for new municipal critical facilities.	Capability	
Improve communications with CL&P, particularly with respect to trimming times and locations within Newtown.	Capability	An appropriate relationship has been maintained
Work with CL&P to determine the feasibility of placing non-conducting steel cables above power lines to protect them from falling branches and trees.	Carry Forward with Revisions	Work with Eversource to identify municipal actions to improve grid resiliency.
Develop a plan to prioritize snow removal from the roof of critical facilities and other municipal buildings each winter. Ensure adequate funding is available in the Town budget for this purpose.	Drop	Not a concern – omit
Provide information on the dangers of cold-related hazards to people and property.	Capability	Educational – capability
Consider posting the snow plowing routes in Town buildings each winter to increase public awareness.	Drop	Will not increase mitigation capabilities
Emergency personnel should continue to identify areas that are difficult to access during winter storm events and devise contingency plans to access such areas during emergencies.	Capability	Capability
Address icing along Route 53 through the development and implementation of appropriate drainage projects.	Carry Forward with Revisions	Icy conditions prevent resident and emergency access during storm events; one residence is extraordinarily difficult to get to during storms. An evaluation needs to be done to identify and reduce the risk of icing
The Building Department should provide literature regarding appropriate design standards for mitigating icing, insulating pipes, and retrofits for flat-roofed buildings such as heating coils.	Completed	Capability
Consider the protection/hardening of utilities to minimize power outages during storm events	Drop	Merge with action #29 to address electric system vulnerabilities.
Consider preventing new residential development in areas prone to collapse.	Capability	The town reviews this on a case by case basis.
Ensure that municipal departments have adequate backup facilities in case earthquake damage occurs to municipal buildings.	Capability	This is addressed for all storms/events.
The town may consider bracing systems and assets inside critical facilities. This could help protect IT systems, important records and files.	Completed	Town has developed a redundant system (IT)
File EOPs/EAPs with town departments and emergency personnel	Completed	
Include dam failure inundation areas in the CodeRED emergency notification system contact database	Completed	
Work with the owner of 27 Glen Road Dam to determine the feasibility of removing the dam to reduce the amount of water and material behind it.	Carry Forward	Continuous effort



Description	Status	Notes
Continue to require the installation of fire protection water in new developments where municipal water service is unavailable, and sprinkler systems where access is limited for fire apparatus.	Capability	Capability
Provide outreach programs on how to properly manage burning and campfires on private property.	Capability	Capability
Revise and enhance the town's website concerning local regulatory requirements concerning Open Burning.	Capability	Capability
Patrol Town-owned open space and parks to prevent unauthorized campfires.	Capability	Capability
The Fire Departments should coordinate with Aquarion Water Company to identify areas where fire-fighting capacity may be limited due to lack of water pressure or storage.	Completed	

### 4.3 Prioritization of Strategies and Actions

The STAPLEE method, described in the Multi-Jurisdictional document, was used to score mitigation activities. The STAPLEE matrix in Appendix A provides the total scores. Actions have been further prioritized based on implementation cost, project urgency, and municipal and public input. The strategies below are presented in priority order, with qualitative priority levels listed for each.

### 4.4 Mitigation Strategies and Actions Implementation Table

The Town proposed to initiate several new mitigation actions for the upcoming five years. Additionally, a number of actions from the previous planning period are being carried forward or replaced with revised actions. These are listed below.

Action NTN-01	
<b>Prepare status memo that describes objectives and policies from this hazard mitigation plan that may be considered for incorporation into the Plan of Conservation and Development when it is updated in 2024; and provide the memo to the Planning and Zoning Commission.</b>	
<b>Lead</b>	P&Z
<b>Cost</b>	\$0 - \$25,000
<b>Funding</b>	Operating Budget
<b>Timeframe</b>	2021
<b>Priority</b>	High

Action NTN-02	
<b>Provide information on the Town website about CT DEEP training and information around small business chemical management for hazard resilience.</b>	
Lead	EM, BOS
Cost	\$0 - \$25,000
Funding	Operating Budget, CT DEEP
Timeframe	2021
Priority	High

Action NTN-03	
<b>Use the CT Toxics Users and Climate Resilience Map to identify toxic users located in hazard zones within your community. Contact those users to inform them about the CT DEEP small business chemical management initiative.</b>	
Lead	EM, BOS
Cost	\$0 - \$25,000
Funding	Operating Budget, CT DEEP
Timeframe	2021
Priority	High

Action NTN-04	
<b>Host a CT DEEP presentation for municipal staff and local businesses about business chemical management for hazard resilience.</b>	
Lead	EM, BOS
Cost	\$0 - \$25,000
Funding	Operating Budget, CT DEEP
Timeframe	2021
Priority	High

Action NTN-05	
<b>Register as a Sustainable CT community and make progress with the hazard mitigation goals associated with registration.</b>	
Lead	BOS
Cost	\$0 - \$25,000
Funding	Operating Budget
Timeframe	2021
Priority	High



Action NTN-06	
<b>Coordinate with CT SHPO to conduct outreach to owners of historic properties to educate them on methods of retrofitting historic properties to be more hazard-resilient while maintaining historic character.</b>	
Lead	Planning
Cost	\$0 - \$25,000
Funding	Operating Budget
Timeframe	2022
Priority	High

Action NTN-07	
<b>Identify properties for future acquisition within the Halfway River watershed.</b>	
Lead	P&Z
Cost	\$0 - \$25,000
Funding	Operating Budget, FEMA Grant
Timeframe	2022
Priority	Med

Action NTN-08	
<b>Compile a checklist that cross-references the bylaws, regulations, and codes related to flood damage prevention that may be applicable to a proposed project and make this list available to potential applicants.</b>	
Lead	P&Z
Cost	\$0 - \$25,000
Funding	Operating Budget
Timeframe	2022
Priority	Med

Action NTN-09	
<b>Develop and hold an annual workshop with town departments to provide training for dealing with widespread flooding damage.</b>	
Lead	P&Z
Cost	\$0 - \$25,000
Funding	Operating Budget
Timeframe	2022
Priority	Med

Action NTN-10	
<b>Work with Eversource to identify municipal actions to improve electric grid resiliency.</b>	
Lead	PW
Cost	\$0 - \$25,000
Funding	Operating Budget
Timeframe	2023
Priority	Low

Action NTN-11	
<b>Compare local floodplain regulations with Revised State Model Flood Regulations to identify any remaining opportunities for improvement</b>	
Lead	Planning
Cost	\$0 - \$25,000
Funding	Operating Budget
Timeframe	2023
Priority	Low

Action NTN-12	
<b>Require consideration of the most recent Northeast Regional Climate Center rainfall statistics (<a href="http://precip.eas.cornell.edu">precip.eas.cornell.edu</a>) when developing alternatives for culvert and bridge replacement designs and sizes.</b>	
Lead	PW
Cost	\$0 - \$25,000
Funding	Operating Budget
Timeframe	2023
Priority	Low

Action NTN-13	
<b>Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.</b>	
Lead	EM, BOS
Cost	\$0 - \$25,000
Funding	Operating Budget, FEMA Grant
Timeframe	2023
Priority	Low

Action NTN-14	
<b>Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (flood zones, wildfire hazard zones, steep slopes) to identify historic resources at risk and support the preparation of resiliency plans across the state.</b>	
Lead	Planning
Cost	\$25,000 - \$50,000
Funding	CT SHPO
Timeframe	2024
Priority	High

Action NTN-15	
<b>Conduct drainage evaluations along Turkey Hill Road to determine appropriate measures for improved drainage and flood mitigation.</b>	
Lead	PW
Cost	\$25,000 - \$50,000
Funding	Capital Improvement Plan, FEMA Grant
Timeframe	2024
Priority	Med

Action NTN-16	
<b>Conduct drainage evaluations along Nearbrook Drive to determine appropriate measures for improved drainage and flood mitigation.</b>	
Lead	0
Cost	\$25,000 - \$50,000
Funding	Capital Improvement Plan, FEMA Grant
Timeframe	2024
Priority	Med

Action NTN-17	
<b>Conduct drainage evaluations along Meadow Brook Road to determine appropriate measures for improved drainage and flood mitigation.</b>	
Lead	0
Cost	\$25,000 - \$50,000
Funding	Capital Improvement Plan, FEMA Grant
Timeframe	2024
Priority	Med

Action NTN-18	
<b>Conduct drainage evaluations in the vicinity of the five lakeside communities to determine appropriate measures for improved drainage and flood mitigation.</b>	
Lead	0
Cost	\$25,000 - \$50,000
Funding	Capital Improvement Plan, FEMA Grant
Timeframe	2024
Priority	Med

Action NTN-19	
<b>Develop a comprehensive natural hazards public outreach and education program.</b>	
Lead	EMS
Cost	\$25,000 - \$50,000
Funding	Operating Budget
Timeframe	2024
Priority	Med

Action NTN-20	
<b>Evaluate the feasibility of designating the new Community Center as the new primary shelter</b>	
Lead	EMS
Cost	\$25,000 - \$50,000
Funding	Operating Budget, Grant
Timeframe	2024
Priority	Med

Action NTN-21	
<b>Work with CT DEEP to validate and/or correct the RL list and update the mitigation status of each listed property.</b>	
Lead	Planning
Cost	\$25,000 - \$50,000
Funding	FEMA Grant
Timeframe	2024
Priority	Low

Action NTN-22	
Develop a plan to stabilize low-lying roads, especially in the lakeside communities	
Lead	PW
Cost	\$25,000 - \$50,000
Funding	Capital Improvement Plan, FEMA Grant
Timeframe	2024
Priority	Low

Action NTN-23	
Conduct an evaluation of Route 53 to identify causes of, and mitigate risks caused by, winter icing of the road.	
Lead	PW
Cost	\$25,000 - \$50,000
Funding	Operating Budget, Grant
Timeframe	2024
Priority	Low

Action NTN-24	
Annually conduct an emergency operations exercise for a local terrorism, sabotage, or mass casualty event.	
Lead	EMD
Cost	\$25,000 - \$50,000
Funding	Operating Budget
Timeframe	2024
Priority	Low

Action NTN-25	
Pursue acquisition of additional municipal open space in SHFAs and set it aside for greenways, parks, etc.	
Lead	First Selectman
Cost	\$100,000 - \$500,000
Funding	Capital Improvement Plan, FEMA Grant, Other Grant
Timeframe	2025
Priority	High

Action NTN-26	
Develop a priority list of areas along streams that are in need of stabilization and implement corrective actions	
Lead	P&Z
Cost	\$50,000 - \$100,000
Funding	Capital Improvement Plan, FEMA Grant
Timeframe	2025
Priority	Low

Action NTN-27	
Evaluate scour damage along Pond Brook and develop mitigation measures	
Lead	DPW, IWC
Cost	\$50,000 - \$100,000
Funding	Operating Budget, Grant
Timeframe	2025
Priority	Low

Action NTN-28	
Complete necessary improvements of town bridges. Specifically, Turkey Hill Bridge and Meadow Brook Bridge which are due for replacement.	
Lead	PW
Cost	More than \$1 million
Funding	Capital Improvement Plan, FEMA Grant, Other Grant
Timeframe	2026
Priority	Low

Action NTN-29	
Complete the Meadow Brook Bridge replacement project.	
Lead	DPW
Cost	More than \$1 million
Funding	Capital Improvement Plan, FEMA Grant, Other Grant
Timeframe	2026
Priority	Low

Action NTN-30	
Pursue funding to place utilities underground in existing developed areas, targeting at least two in the lifespan of this plan	
Lead	P&Z
Cost	More than \$1 million
Funding	Capital Improvement Plan, Other Grant
Timeframe	2026
Priority	Low

Action NTN-31	
Relocate utilities underground town wide where feasible; especially in the riverside communities.	
Lead	EMS, PW
Cost	More than \$1 million
Funding	Capital Improvement Plan, Other Grant
Timeframe	2026
Priority	Low

Action NTN-32	
Work with the owner of 27 Glen Road Dam to determine the feasibility of removing the dam to reduce the amount of water and material behind it.	
Lead	EMS, PW
Cost	More than \$500,000
Funding	Capital Improvement Plan, Other Grant
Timeframe	2026
Priority	Low





## APPENDIX A

### Appendix A: STAPLEE Matrix



#	Action Description	Regional Theme	Lead Department	Cost Estimate	Potential Funding Sources	Timeframe for Completion	Weighted STAPLEE Criteria														Total STAPLEE Score
							Benefits							Costs							
							Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	
NTN-01	Prepare status memo that describes objectives and policies from this hazard mitigation plan that may be considered for incorporation into the Plan of Conservation and Development when it is updated in 2024; and provide the memo to the Planning and Zoning Commission.	Integrate with other Planning	P&Z	\$0 - \$25,000	Operating Budget	2021	1	1	1	1	1	1	1	0	0	0	0	0	0	0	9
NTN-02	Provide information on the Town website about CT DEEP training and information around small business chemical management for hazard resilience.	CT DEEP Small Business Chem	EM, BOS	\$0 - \$25,000	Operating Budget, CT DEEP	2021	1	1	1	0	1	1	1	0	0	0	0	0	0	0	8
NTN-03	Use the CT Toxics Users and Climate Resilience Map to identify toxic users located in hazard zones within your community. Contact those users to inform them about the CT DEEP small business chemical management initiative.	CT DEEP Small Business Chem	EM, BOS	\$0 - \$25,000	Operating Budget, CT DEEP	2021	1	1	1	0	1	1	1	0	0	0	0	0	0	0	8
NTN-04	Host a CT DEEP presentation for municipal staff and local businesses about business chemical management for hazard resilience.	CT DEEP Small Business Chem	EM, BOS	\$0 - \$25,000	Operating Budget, CT DEEP	2021	1	1	1	0	1	1	1	0	0	0	0	0	0	0	8
NTN-05	Register as a Sustainable CT community and make progress with the hazard mitigation goals associated with registration.	Sustainable CT	BOS	\$0 - \$25,000	Operating Budget	2021	1	1	1	1	0	1	1	0	0	0	0	0	0	0	8
NTN-06	Coordinate with CT SHPO to conduct outreach to owners of historic properties to educate them on methods of retrofitting historic properties to be more hazard-resilient while maintaining historic character.	SHPO	Planning	\$0 - \$25,000	Operating Budget	2022	1	1	1	1	0	1	0	0	0	0	0	0	0	0	7
NTN-07	Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (flood zones, wildfire hazard zones, steep slopes) to identify historic resources at risk and support the preparation of resiliency plans across the state.	SHPO	Planning	\$25,000 - \$50,000	CT SHPO	2024	1	1	1	1	0	1	0	0	0	0	0	0	0	0	7
NTN-08	Pursue acquisition of additional municipal open space in SHFAs and set it aside for greenways, parks, etc.	Open Space	First Selectman	\$100,000 - \$500,000	Capital Improvement Plan, FEMA Grant, Other Grant	2025	1	1	1	1	1	1	1	0	0	0	0	0	-1	0	7
NTN-09	Identify properties for future acquisition within the Halfway River watershed.	Open Space	P&Z	\$0 - \$25,000	Operating Budget, FEMA Grant	2022	1	1	1	1	1	1	1	-1	0	0	0	0	-1	0	6
NTN-10	Compile a checklist that cross-references the bylaws, regulations, and codes related to flood damage prevention that may be applicable to a proposed project and make this list available to potential applicants.	Floodplain Management Regulations	P&Z	\$0 - \$25,000	Operating Budget	2022	1	1	1	0	1	1	1	-1	0	0	-1	0	0	0	6
NTN-11	Develop and hold an annual workshop with town departments to provide training for dealing with widespread flooding damage.	Municipal Capacities	P&Z	\$0 - \$25,000	Operating Budget	2022	0	1	1	1	1	0	1	0	0	0	0	0	0	0	6
NTN-12	Conduct drainage evaluations along Turkey Hill Road to determine appropriate measures for improved drainage and flood mitigation.	Drainage	PW	\$25,000 - \$50,000	Capital Improvement Plan, FEMA Grant	2024	1	1	0	1	1	1	1	0	0	0	0	0	-1	0	6
NTN-13	Conduct drainage evaluations along Nearbrook Drive to determine appropriate measures for improved drainage and flood mitigation.	Drainage		\$25,000 - \$50,000	Capital Improvement Plan, FEMA Grant	2024	1	1	0	1	1	1	1	0	0	0	0	0	-1	0	6
NTN-14	Conduct drainage evaluations along Meadow Brook Road to determine appropriate measures for improved drainage and flood mitigation.	Drainage		\$25,000 - \$50,000	Capital Improvement Plan, FEMA Grant	2024	1	1	0	1	1	1	1	0	0	0	0	0	-1	0	6
NTN-15	Conduct drainage evaluations in the vicinity of the five lakeside communities to determine appropriate measures for improved drainage and flood mitigation.	Drainage		\$25,000 - \$50,000	Capital Improvement Plan, FEMA Grant	2024	1	1	0	1	1	1	1	0	0	0	0	0	-1	0	6
NTN-16	Develop a comprehensive natural hazards public outreach and education program.	Outreach and Education	EMS	\$25,000 - \$50,000	Operating Budget	2024	1	0	1	1	0	1	1	0	0	0	0	0	0	0	6
NTN-17	Evaluate the feasibility of designating the new Community Center as the new primary shelter	Emergency Response	EMS	\$25,000 - \$50,000	Operating Budget, Grant	2024	1	1	1	1	1	1	0	0	-1	0	0	0	0	0	6

#	Action Description	Regional Theme	Lead Department	Cost Estimate	Potential Funding Sources	Timeframe for Completion	Weighted STAPLEE Criteria														Total STAPLEE Score
							Benefits							Costs							
							Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	
NTN-18	Work with Eversource to identify municipal actions to improve electric grid resiliency.	Energy Resiliency & Backup Power	PW	\$0 - \$25,000	Operating Budget	2023	1	1	1	1	1	1	0	0	-1	-1	0	0	0	0	5
NTN-19	Compare local floodplain regulations with Revised State Model Flood Regulations to identify any remaining opportunities for improvement	Floodplain Management Regulations	Planning	\$0 - \$25,000	Operating Budget	2023	0	1	1	0	1	1	0	0	0	0	-1	0	0	0	5
NTN-20	Require consideration of the most recent Northeast Regional Climate Center rainfall statistics (precip.eas.cornell.edu) when developing alternatives for culvert and bridge replacement designs and sizes.	NRCC	PW	\$0 - \$25,000	Operating Budget	2023	0	1	0	0	0	1	1	0	0	-1	0	0	0	0	4
NTN-21	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	RLPs	EM, BOS	\$0 - \$25,000	Operating Budget, FEMA Grant	2023	0	1	1	0	1	1	0	0	0	-1	0	0	0	0	5
NTN-22	Work with CT DEEP to validate and/or correct the RL list and update the mitigation status of each listed property.	RLPs	Planning	\$25,000 - \$50,000	FEMA Grant	2024	0	0	1	0	1	1	0	0	0	0	0	0	0	0	4
NTN-23	Develop a plan to stabilize low-lying roads, especially in the lakeside communities	Roadways	PW	\$25,000 - \$50,000	Capital Improvement Plan, FEMA Grant	2024	1	1	0	1	0	1	0	0	0	0	0	-1	0	0	5
NTN-24	Conduct an evaluation of Route 53 to identify causes of, and mitigate risks caused by, winter icing of the road.	Roadways	PW	\$25,000 - \$50,000	Operating Budget, Grant	2024	0	1	1	1	1	1	0	0	-1	0	0	0	0	0	5
NTN-25	Annually conduct an emergency operations exercise for a local terrorism, sabotage, or mass casualty event.	Terrorism & Mass Casualty	EMD	\$25,000 - \$50,000	Operating Budget	2024	1	1	1	1	1	0	0	0	0	-1	0	0	0	0	5
NTN-26	Develop a priority list of areas along streams that are in need of stabilization and implement corrective actions	Structural Protection	P&Z	\$50,000 - \$100,000	Capital Improvement Plan, FEMA Grant	2025	0	1	0	0	0	1	1	0	0	0	0	0	0	0	5
NTN-27	Evaluate scour damage along Pond Brook and develop mitigation measures	Flood Study	DPW, IWC	\$50,000 - \$100,000	Operating Budget, Grant	2025	0	1	1	1	1	1	0	0	-1	0	0	0	0	0	5
NTN-28	Complete necessary improvements of town bridges. Specifically, Turkey Hill Bridge and Meadow Brook Bridge which are due for replacement.	Bridge & Culvert	PW	More than \$1 million	Capital Improvement Plan, FEMA Grant, Other Grant	2026	0	1	0	1	1	1	1	0	0	0	0	0	-1	0	5

#	Action Description	Regional Theme	Lead Department	Cost Estimate	Potential Funding Sources	Timeframe for Completion	Weighted STAPLEE Criteria														Total STAPLEE Score
							Benefits							Costs							
							Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	
NTN-29	Complete the Meadow Brook Bridge replacement project.	Bridge & Culvert	DPW	More than \$1 million	Capital Improvement Plan, FEMA Grant, Other Grant	2026	0	1	0	1	1	1	1	0	0	0	0	0	-1	0	5
NTN-30	Pursue funding to place utilities underground in existing developed areas, targeting at least two in the lifespan of this plan	Energy Resiliency & Backup Power	P&Z	More than \$1 million	Capital Improvement Plan, Other Grant	2026	1	1	1	1	1	1	0	0	-1	-1	0	0	0	0	5
NTN-31	Relocate utilities underground town wide where feasible; especially in the riverside communities.	Energy Resiliency & Backup Power	EMS, PW	More than \$1 million	Capital Improvement Plan, Other Grant	2026	1	1	1	1	1	1	0	0	-1	-1	0	0	0	0	5
NTN-32	Work with the owner of 27 Glen Road Dam to determine the feasibility of removing the dam to reduce the amount of water and material behind it.	Dam Safety	EMS, PW	More than \$500,000	Capital Improvement Plan, Other Grant	2026	0	1	0	0	1	1	1	0	0	-1	-1	0	0	0	4



## **APPENDIX B**

### **Appendix B: SVI Summary**





# **Town of Newtown**

## **Climate Vulnerability Assessment**

### **A Component of Sustainable CT Action 5.4**

The Town of Newtown, for this Climate Vulnerability Assessment (CVA) is considered a suburban inland town, resulting in various climate change vulnerabilities. Inland flooding, extreme heat, and winter storms may impact the community the most as many issues have been identified.

#### **Hazards**

##### ***Inland Flooding***

With FEMA flood zones in town along several streams and rivers, such as along the Housatonic River and the Pootatuck River, there is continuously concern for riverine flooding. Some areas are of higher concern, including along Glenn Road where flooding has caused issues in the past. The larger rivers, along with the smaller streams in town, pose a flood risk to adjacent properties, whether it is a larger storm event or a short intense rainstorm. With precipitation expected to increase due to climate change, flooding events may occur more frequently. Overall, flooding may continue, or become a larger issue with future shifts in precipitation.

##### ***Winter Storms***

Newtown is largely residential, with commercial areas in close proximity to Interstate 84. Suburban communities are often impacted by strong winter storms in several ways; power outages from downed trees, accessibility issues, and icing concerns. Anticipated shifts in winter precipitation may bring more freezing rain events, which can result in an increase of downed trees during a winter storm event. Downed trees can result in power outage, and lack of emergency access and egress.

##### ***Drought and Extreme Temperatures***

Most of the town relies on private wells for drinking water, with the exception of a public water system in the center of the town and a few other very small systems. Therefore, impacts to water supply may be an issue to the town as temperatures rise in the near future, resulting in isolated issues with water scarcity. With increased temperatures, and high pumping levels, private wells may be impacted during times of drought.

In addition to private wells, many suburban communities have high levels of agricultural activity, whether it be crop production or livestock, these operations are heavily water dependent for healthy growing and revenue generation.

When considering these impacts from climate change, the primary vulnerabilities for the town of Newtown include:

- Private well owners
- Emergency access
- Agricultural operations

## Secondary Impacts

### *Economic Impacts*

With areas vulnerable to flooding and winter storm events, the town faces an economic challenge of addressing the flooding concerns and increasing snow and debris removal capacity. There is also a potential economic impact to local businesses during flooding events, and heavy winter storms. Businesses may incur expenses related to flood mitigation or clean-up efforts, or experience loss of income if there is no site access during a storm.

Winter storm snow removal or icing also presents financial responsibility to the town by way of roadway treatment. As precipitation events may increase during winter months, the town may seek to increase sand or salt stockpiles to account for increased icing events.

Private property owners who rely on private drinking water wells may also be impacted economically during droughts or periods of extreme heat. With increasing heat, typically comes increased water demand. This demand would be placed upon local aquifers, potentially resulting in the need for new well construction, or deepening of an existing well.

The many impacts of climate change can result in economic impacts to many citizens, business owners, and municipal budgets as the impacts can be felt on a town level, down to building level.

### *Social Impacts*

To identify social impacts to the town, the Center for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) was used to identify any vulnerable populations within the town. This index was developed to supplement a community's natural hazard preparation actions. To evaluate social vulnerability, the CDC incorporates 15 factors (Fig. 1) into the overall calculation under the categories, or themes, of: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation. These themes and their ranking are based on census statistics. By evaluating these factors and determining a level of social vulnerability, a community can identify specific needs for before, during, and after an event. Such needs may include sheltering capacity, evacuation routes, or to decide how many emergency personnel may be required to respond after an event.

Each municipalities' census tracts were ranked for overall vulnerability, and theme vulnerability, in comparison to other Connecticut municipalities. This rank, 0 to 1, is based on the percentile rank among all tracts within the State of Connecticut. A value closer to 0 indicates a lower vulnerability, while a value closer to

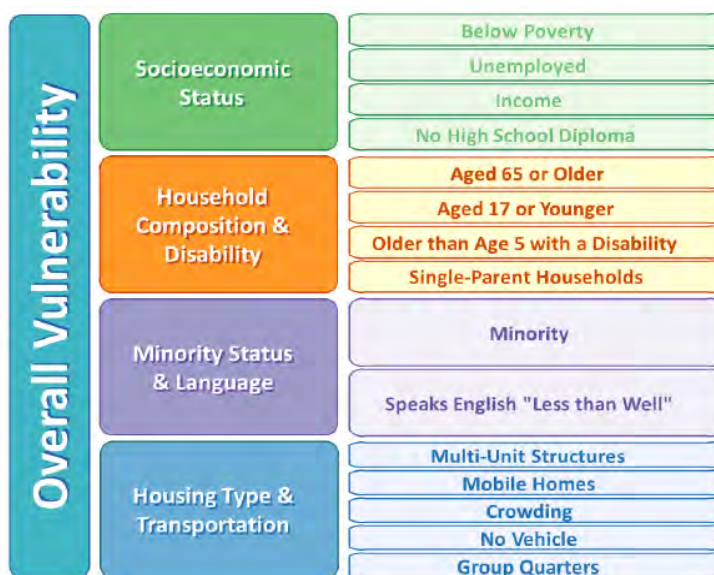


Figure 1: The CDC SVI Index Factors. Graphic: svi.cdc.com

1 indicates a higher vulnerability. Table 1 presents the overall vulnerability and theme rankings for Newtown.

Table 1: Newtown SVI Factor Rankings

	Overall SVI	Socioeconomic	Household Composition & Disability	Minority Status & Language	Housing Type & Transportation
NEWTOWN	.22	.20	.48	.28	.27

The Town of Newtown is considered to have a low level of vulnerability, with their most vulnerable social aspect being household composition and disability, followed by minority and linguistically challenged populations, and housing type and transportation. Vulnerable age groups and disabled populations are identified in the northwestern tracts of the town, while minority populations and those that speak English “less than well”, along with populations concerned with housing type and transportation are concentrated in the southeastern tract of Newtown.

These populations may be vulnerable to impacts from drought, flooding and storm events based on the geographic concentrations.

#### ***Public Health Considerations***

Of the primary vulnerabilities identified, drought and flooding can potentially have public health repercussions. During hot summer months, or drought, if private wells were to be impacted, certain populations may find themselves without adequate drinking water supply, resulting in health problems. Also, when considering the environmental shifts occurring during drought periods, drinking water contamination may become an issue as aquifers become stressed due to excessive pumping.

Food scarcity is another consideration when discussing the impacts of drought and extreme temperatures. Agricultural operations that are impacted by water shortages may find that crop or livestock yields are below average, ultimately resulting in food scarcity concerns. Depending on the size of an operation, the impacts can be on a small or large scale.

Flooding also presents the concern of pollution into nearby water bodies as commercialized and impervious areas drain, they collect pollutants and excess sediment. Depending upon the drainage areas, this runoff can have environmental impacts in associated ecosystems, or public health impacts if water bodies are used for recreational activities.

#### **Vulnerable Populations**

The SVI identified the presence of certain populations within the town that may be more vulnerable to climate change hazards. Communities, including Newtown, should pay special attention to elderly or disabled populations, linguistically challenged population, and those that may need evacuation assistance due to lack of transportation. In addition to the SVI populations identified, the Connecticut

Department of Public Health (DPH)<sup>1</sup> has identified at least four assisted living facilities and two convalescent homes in Newtown.

Some populations often need additional time for hazard response, so evacuation or preparation, and may find it more challenging to recover due to financial constraints or health concerns. These populations should be considered more vulnerable for the reasons that emergency response and preparation may be more challenging, health issues may be of higher concern, and language barriers may exist when working to communicate with the community on risks, response, and recovery efforts.

In addition to the populations, it is important to identify the facilities that can provide different types of assistance to the populations, and others, during or after an event. These facilities, and their proximity to flood zones, can be found in Figure 2-4.

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<sup>1</sup> <https://www.elicense.ct.gov/Lookup/LicenseLookup.aspx>