



## 21 Marlborough

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### Community Overview

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Marlborough is a rural community in Hartford County covering a land area of 23.3 square miles and with an estimated population of 6,410. Elevation ranges from about 160 to 800 feet. The Town is located in the Salmon River Watershed. The Blackledge River, Dickinson Creek, and Fawn and Lyman Brooks are the principal watercourses in Marlborough. The 83 acre spring fed Lake Terramuggus is located in the center of Town. State routes 2 and 66 intersect in Town. As a chiefly residential community, local businesses are the predominant industry. According to the Town’s Plan of Conservation and Development, one-third of Marlborough’s land area is protected forest land. Continued protection of the Town’s natural resources is a focus of the Town’s Plan.

There has been no significant development or changes in population trends since adoption of the 2014-2019 Capitol Region Natural Hazards Mitigation Plan Update (“2014 HMP”). Minor developments and improvements have not taken place in the floodplain or other notable hazard areas.

### Critical Facilities

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Critical Facilities throughout the Capitol Region are listed in Appendix B. In Marlborough these include the Town hall and Fire House #2.

**Table 21-1: Critical Facilities, Marlborough**

Facility	Shelter	Generator
Town Hall		X
Fire House #2		

A new generator was installed in the Town Hall since the 2014 HMP. Marlborough is currently evaluating Fire House #2 as a potential emergency shelter site.

Marlborough currently uses Hebron’s RHAM High School and Regional Health Districts as regional shelters

### Capabilities

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Hazard mitigation is incorporated into Marlborough’s Plan of Conservation and Development (POCD). POCD actions specifically address natural hazards, including flood, wildfire, and erosion. Marlborough has Low Impact Development (LID) regulations designed to help minimize stormwater runoff. It is implementing new MS4 stormwater requirements.

There are about one dozen dry-hydrants throughout Town. Only the Town Center is served by public water, but no fire hydrants are included.

The Town's local budget for tree maintenance is \$10,000 per year. Due to devastation of Gypsy Moths and recent severe wind events on the white oak trees, Marlborough anticipates spending \$100,000 in tree removal during 2018 and 2019. The Town and Eversource collaborate regularly and effectively on tree maintenance.

## New Capabilities

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A culvert on an unnamed brook under South main Street has been upgraded since the 2014 HMP. Marlborough has also submitted permits for replacement of twin 48-inch diameter corrugated metal culverts on Finley Hill Road at Flat Brook with twin 7- by 5-foot precast concrete box culverts. The project was approved by DEEP, is in progress, and is expected to be completed by October 15, 2018.

Two bridges in Town are being improved, with new construction under design; these are Jones Hollow Bridge, over the Blackledge River, and South Main Street Bridge, over the Fawn Brook. Construction is slated for 2020-2022. The bridge decks of the North Main Street Bridge have recently been replaced.

The Marlborough Fire Department recently upgraded its brush-response vehicle.

Marlborough has hired a new Emergency Management Director (EMD) and Deputy EMD. The Deputy EMD is responsible for developing a local Community Emergency Response Team (CERT). Both the EMD and Deputy EMD are attending a CT DEMHS sponsored CERT trainer course in September 2018. Marlborough is currently served by a regional CERT team covering Hebron, Andover, and Marlborough; this team includes Marlborough residents.

## Challenges

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### Challenges Overview

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Storm damage to trees resulting in road blockages, power outages and debris accumulation is a concern for the town.

Because the Town has large tracts of forested land, wildfire is another concern; however the Town does not experience wildfires often.

### Hazard Losses

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The economic losses faced by Marlborough from natural hazards can be estimated by reviewing historic, and modeling future, loss figures. Loss estimates are summarized below.

### Historic FEMA Payments

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FEMA reimburses communities for hazard losses through programs including Public Assistance (PA) and the National Flood Insurance Program (NFIP). Combining PA and private flood insurance payments can give an estimate for total losses to a community.



The NFIP has paid eight property damage claims in Marlborough totaling \$46,648 to-date. The NFIP paid a total of \$6,401 on two claims for one repetitive loss (RL) property to-date.

Total PA reimbursements to the community were as follows:

- Flood Events: \$35,037 (\$1,844 annually)
- Hurricane Events: \$36,629 (\$1,928 annually)
- Winter Storm Events: \$334,631 (\$17,612 annually)

These are summarized in the tables below.

**Table 21-2: Flood Event PA Reimbursements, Marlborough**

Incident	Sep 1999	Oct 2005
Declaration	9/23/1999	12/16/2005
Disaster No.	1302	1619
Entity	FEMA PA Reimbursement	
State	\$6,640	\$28,398
Municipal	\$0	\$0
Nonprofit	\$0	\$0
<b>Total</b>	<b>\$6,640</b>	<b>\$28,398</b>
<b>Annualized</b>	<b>\$349</b>	<b>\$1,495</b>

**Table 21-3: Hurricane Wind Event PA Reimbursements, Marlborough**

Incident	Aug - Sep 2011 (T.S. Irene)
Declaration	9/2/2011
Disaster #	4023
Entity	FEMA PA Reimbursement
State	\$5,242
Municipal	\$31,387
Nonprofit	\$0
<b>Total</b>	<b>\$36,629</b>
<b>Annualized</b>	<b>\$1,928</b>



**Table 21-4: Winter Storm PA Reimbursements, Marlborough**

Incident	Mar 2003	Dec 2003	Jan 2005	Feb 2006	Jan 2011	Oct 2011	Feb 2013
Declaration	3/11/03	1/15/04	2/17/05	5/2/06	3/3/11	11/17/11	3/21/13
Disaster #	3176	3192	3200	3266	1958	4046	4106
Entity	<b>FEMA PA Reimbursement</b>						
State	\$5,553	\$4,978	\$7,257	\$7,971	\$7,152	\$11,959	\$15,807
Municipal	\$18,695	\$15,939	\$31,659	\$23,675	\$50,075	\$78,429	\$55,483
Nonprofit	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$24,248</b>	<b>\$20,916</b>	<b>\$38,916</b>	<b>\$31,646</b>	<b>\$57,227</b>	<b>\$90,388</b>	<b>\$71,290</b>
<b>Annualized</b>	<b>\$1,276</b>	<b>\$1,101</b>	<b>\$2,048</b>	<b>\$1,666</b>	<b>\$3,012</b>	<b>\$4,757</b>	<b>\$3,752</b>

*National Centers for Environmental Information Losses*

The National Centers for Environmental Information (NCEI) severe storm database was reviewed to identify events that had impacted Marlborough. No events in that database were specifically noted as having impacted the Town since 2012, though they did impact Hartford County and nearby towns. NCEI losses are reported in Section II of this Plan.

*HAZUS-MH Losses*

CRCOG used FEMA’s Hazus-MH model to analyze the risks that the Town of Marlborough might face from flooding, hurricanes, and earthquakes. The model estimates economic losses to the town due to damage to buildings and building contents, as well as other economic disruptions. Both residential and commercial structures are addressed. Losses from different hazards are summarized below. Where available, estimates from the previous and current versions of the HMP are provided side-by-side; differences between the two may have been caused by a combination of the following:

- Changes in methodology: such as hazard zone mapping
- Changes in data: such as population and property values
- Changes in the model: this HMP utilized Hazus-MH version 4.0 rather than 2.1
- Other factors: inherent in a complex software like Hazus-MH

More details are available in the Multi-Jurisdictional HMP. Ultimately, changes in the loss estimates reflect the reality that small differences in hazard event features can have a significant impact on losses incurred.



**Table 21-5: Estimated Damages to Marlborough from a 1% Annual-Chance Flood**

Loss Type	2014 Results	2018 Results
Households Displaced	57	102
People Needing Shelter	30	91
Buildings at Least Moderately Damaged	2	0
<b>Residential Building &amp; Content Losses</b>		
Residential Building & Content Losses	\$3,450,000	\$6,019,027
Other Building & Content Losses	\$1,720,000	\$3,438,757
<b>Total Building &amp; Content Loss</b>	<b>\$5,170,000</b>	<b>\$9,457,784</b>
<b>Total Business Interruption Losses</b>	<b>\$0.00</b>	<b>\$112,827</b>
<b>TOTAL</b>	<b>\$5,170,000</b>	<b>\$9,570,610</b>

**Table 21-6: Estimated Damages to Marlborough from a 1% Annual-Chance Hurricane**

Loss Type	2014 Results (1938 event)	2018 Results (1% track)
Buildings at Least Moderately Damaged	228	1
Buildings Completely Damaged	13	0
Total Debris Generated (tons)	45,503	8,450
Truckloads (at 25 tons/truck) of building debris	90	338
<b>Economic Losses</b>		
Residential Building & Content Losses	\$24,955,000	\$2,837,693
Other Building & Content Losses	\$2,213,000	\$124,158
<b>Total Building &amp; Content Loss</b>	<b>\$27,168,000</b>	<b>\$2,961,851</b>
<b>Total Business Interruption Losses</b>	<b>\$2,489,000</b>	<b>\$170,657</b>
<b>TOTAL</b>	<b>\$29,657,000</b>	<b>\$3,132,508</b>

Losses were calculated from a modeled probabilistic earthquake (1% annual-chance of occurrence), as well as for four specific scenarios with epicenters around Connecticut.

**Table 21-7: Estimated Damages to Marlborough from a Probabilistic Earthquake**

Loss Type	2018 Results
Wage Loss	\$864
Rent Loss	\$587
Relocation Loss	\$1,064
Income Loss	\$619
Inventory Loss	\$50
<b>Total Business Disruption</b>	<b>\$3,184</b>
Structural Loss	\$2,294
Non-Structural Loss	\$8,342
<b>Total Building Loss</b>	<b>\$10,637</b>
<b>Total Content Loss</b>	<b>\$3,340</b>
<b>TOTAL LOSSES</b>	<b>\$17,160</b>



**Table 21-8: Estimated Damages to Marlborough from Modeled Earthquake Scenarios**

Epicenter Location	Magnitude	Estimated Total Losses
East Haddam	6.4	\$423,483.86
Haddam	5.7	\$187,285.25
Portland	5.7	\$295,011.88
Stamford	5.7	\$1,594.55

*Average Annualized Losses*

Average Annualized Loss (AAL) figures are useful tools for comparison of the risks faced from different hazards with different likelihoods of occurring in a given time period. AAL estimates were prepared for Marlborough based on the methodologies discussed in Section II of the Multi-Jurisdictional HMP. Dam failure, drought, tornado, and wildfire losses were sourced from the 2014 Connecticut Natural Hazard Mitigation Plan Update, with dam failure data supplemented by the National Performance of Dams Program and the Connecticut Department of Energy & Environmental Protection. Earthquake and hurricane losses were calculated in HAZUS-MH. Losses for flooding came from NFIP claims, for winter storms from Public Assistance Reimbursements, and for thunderstorms from the NCEI database. These are presented in the table below in dollars per year. Note that Hurricanes and Tropical Storms represent the largest share of total annualized losses.

**Table 21-9: Average Annualized Losses, Marlborough**

Dam Failure	Drought	Earthquakes	Flooding	Hurricanes and Tropical Storms	Severe Winter Storms	Thunderstorms	Tornadoes	Wildfires	Total
\$11	\$0	\$17,160	\$3,072	\$401,458	\$17,612	\$851	\$93,959	\$4,340	\$538,462

*Losses Summary*

A review of the above loss estimates demonstrates that the community has experienced significant expenses as a result of natural hazards, and is at risk for additional losses if some of the less-frequent events were to occur. These actual and potential losses justify hazard mitigation actions to reduce losses in the future.

*Mitigation Strategies and Actions*

*Status of Previous Mitigation Strategies and Actions*

The Town of Marlborough reviewed the mitigation actions proposed in the 2014 HMP and determined the status of each. That information is included in the table below.



**Table 21-10: Status of Previous Mitigation Strategies and Actions, Marlborough**

Action #	Action	Notes	Status
<b>GOAL: ENSURE CAPACITY OF TOWN TO REMOVE SNOW</b>			
<b>Objective 1: Maintain an adequate fleet of trucks and equipment, and staff.</b>			
1.1	Fund and perform routine maintenance on and replacement of public works fleet.	One more truck was replaced in 2018. This is a capability	Completed
1.2	Fund adequate staff and private labor.	Staff levels have not increased since the previous HMP.	Carry Forward with Revisions
<b>GOAL: REDUCE POWER OUTAGES AND ENSURE SAFETY OF PROPERTY AND LIFE AS A RESULT OF NATURAL HAZARDS</b>			
<b>Objective 1: Establish effective tree maintenance program for town right-of-way.</b>			
1.1	Fund and institute routine maintenance of trees in town right-of-way either through town staff or private contractor.	Funding remains at \$10K per year; this is a capability.	Capability
1.2	Investigate opportunities for cost savings through sharing tree maintenance services with neighboring communities through CROG service sharing initiatives or otherwise.	Marlborough now has an arrangement to share a bucket truck with Hebron. The Town will participate in other opportunities as they arise.	Capability
1.3	Monitor utility right-of-way maintenance.	Eversource has not kept up with this activity and the Town will coordinate with them to re-up the effort.	Carry Forward with Revisions
<b>Objective 2: Ensure access to power for residents in emergency situations.</b>			
2.1	Pursue opportunities, through CREPC and otherwise, to obtain a generator for the Town Hall Emergency Operations Center.	This has been completed.	Completed
2.2	Educate residents on emergency preparedness and services available in the event of an emergency through town website, print media and other means.	Action has not yet been completed due to staffing limitations. Town has hired a new Emergency Management Director who will continue this activity.	Carry Forward
<b>GOAL: EXPAND CAPACITY OF THE COMMUNITY TO DEAL WITH NATURAL DISASTERS</b>			
<b>Objective 1: Develop programs to educate and involve residents.</b>			
1.1	Establish a local CERT team.	The Town now has a new Deputy EMD responsible for CERT Development.	Carry Forward
1.2	Expand citizen volunteers available to manage the town shelter.	This will be completed with the establishment of a local CERT team.	Drop
1.3	Expand citizen registration in Marlborough Alerts/Everbridge Program	Marlborough uses the Chatham sponsored Everbridge system before and during weather emergencies and encourages citizens to add their cell phone numbers to the system.	Capability
<b>Objective 2: Undertake studies and analyses to assess risks.</b>			
2.1	Prepare a forest fire suppression study.	This action has not yet been completed due to staff and funding limitations.	Carry Forward.

### Active Mitigation Strategies and Actions

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.



Each of the following actions has been prioritized based on FEMA guidelines, listed from highest to lowest priority, and numbered.

**Action #1**

**Enter the Sustainable CT program through Registration and review actions that can be undertaken to pursue Certification. Make progress with the actions related to hazard mitigation.**

<b>Goal</b>	4. Increase the use of natural, “green,” or “soft” hazard mitigation measures, such as open space preservation and green infrastructure.
<b>Category</b>	Natural Resources Protection
<b>Lead</b>	Planning
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	01/2019 - 12/2019
<b>Priority</b>	High

**Action #2**

**Develop prioritized list of needed culvert and bridge replacements and upgrades and apply for funding to pursue that work.**

<b>Goal</b>	5. Improve the resilience of local and regional utilities and infrastructure using strategies including adaptation, hardening, and creating redundancies.
<b>Category</b>	Structural Projects
<b>Lead</b>	Public Works
<b>Cost</b>	\$10,000 - \$25,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2019 - 06/2021
<b>Priority</b>	High

**Action #3**

**Replace one Public Works truck.**

<b>Goal</b>	7. Improve the emergency response capabilities of the region and its communities
<b>Category</b>	Preparedness & Emergency Response
<b>Lead</b>	Public Works
<b>Cost</b>	More than \$100,000
<b>Funding</b>	Grants
<b>Timeframe</b>	07/2022 - 06/2023
<b>Priority</b>	High





**Action #4**

**Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.**

<b>Goal</b>	6. Improve public outreach, education, and warning systems
<b>Category</b>	Education & Awareness
<b>Lead</b>	Planning, in coordination with DEEP
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Materials & Resources Provided by CT DEEP
<b>Timeframe</b>	01/2019 - 12/2019
<b>Priority</b>	Medium

**Action #5**

**Coordinate with NEMO and CRCOG to share resources and gain technical support for hazard mitigation actions involving stormwater management and public outreach, which have parallel benefits related to MS4 stormwater permit compliance.**

<b>Goal</b>	1. Minimize the impact of natural hazards on physical buildings and infrastructure
<b>Category</b>	Prevention
<b>Lead</b>	Public Works
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	01/2020 - 12/2020
<b>Priority</b>	Medium

**Action #6**

**Participate in EMI courses or the seminars and annual conference held by the Connecticut Association of Flood Managers.**

<b>Goal</b>	3. Improve institutional awareness and understanding of natural hazard impacts and mitigation within municipal governments and other decision-making bodies
<b>Category</b>	Education & Awareness
<b>Lead</b>	Planning
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2019 - 06/2024
<b>Priority</b>	Medium



**Action #7**

**Review the LID Manual developed by the Northwest Hills Council of Governments and determine whether LID can be incorporated locally to increase rural resiliency.**

<b>Goal</b>	1. Minimize the impact of natural hazards on physical buildings and infrastructure
<b>Category</b>	Prevention
<b>Lead</b>	Planning
<b>Cost</b>	\$10,000 - \$25,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2021 - 06/2022
<b>Priority</b>	Medium

**Action #8**

**Increase Public Works staff numbers.**

<b>Goal</b>	7. Improve the emergency response capabilities of the region and its communities
<b>Category</b>	Preparedness & Emergency Response
<b>Lead</b>	Public Works
<b>Cost</b>	\$50,000 - \$100,000
<b>Funding</b>	0
<b>Timeframe</b>	07/2023 - 06/2024
<b>Priority</b>	Medium

**Action #9**

**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>Goal</b>	1. Minimize the impact of natural hazards on physical buildings and infrastructure
<b>Category</b>	Property Protection
<b>Lead</b>	Planning
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget / DEMHS
<b>Timeframe</b>	07/2021 - 06/2022
<b>Priority</b>	Low



**Action #10**

**Coordinate with CT SHPO to conduct historic resource surveys to support identification of vulnerable historic properties and preparation of resiliency plans across the state. This action leverages existing resources and best practices for protection of historic and cultural resources through an ongoing statewide initiative by CT SHPO.**

<b>Goal</b>	8. Ensure community character and social equity are addressed in mitigation activities
<b>Category</b>	Property Protection
<b>Lead</b>	Planning, in coordination with SHPO
<b>Cost</b>	\$10,000 - \$25,000
<b>Funding</b>	SHPO
<b>Timeframe</b>	07/2021 - 06/2023
<b>Priority</b>	Low

**Action #11**

**Prepare a forest fire suppression study.**

<b>Goal</b>	7. Improve the emergency response capabilities of the region and its communities
<b>Category</b>	Preparedness & Emergency Response
<b>Lead</b>	Fire Department
<b>Cost</b>	\$25,000 - \$50,000
<b>Funding</b>	Grants / CT DEEP
<b>Timeframe</b>	07/2023 - 06/2024
<b>Priority</b>	Low












# Capitol Region Natural Hazards Mitigation Plan Update




## Marlborough, Connecticut

Flood Plains, Dams & Critical Facilities




### Critical Facilities

-  Fire Station
-  Police Station
-  School
-  Healthcare Facility
-  State Facility
-  Town Facility
-  Waste Water Facility
-  Emergency Center
-  NRHP Buildings/Sites

### Dam Hazard Class

-  BB, A, AA OR Unclassified
-  Class B - Significant Hazard
-  Class C - High Hazard

### FEMA Flood Hazard Area

-  100 Year Flood Zone
-  500 Year Flood Zone
-  NRHP Districts/Areas

Data Sources: FEMA, National Register of Historic Places, CT DEEP, CRCOG, ESRI



99 Realty Drive Cheshire, CT 06410  
 (203) 271-1773 Fax: (203) 272-9733  
[www.miloneandmacbroom.com](http://www.miloneandmacbroom.com)

