Westborough Hazard Mitigation Plan



Nichols Dam Intake and spillway, Westborough, Massachusetts

Adopted by the Select Board on February 24th, 2026

Prepared by the **Central Massachusetts Regional Planning Commission**
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&

Local Hazard Mitigation Team
Town of Westborough Massachusetts

TOWN OF WESTBOROUGH

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CERTIFICATE OF ADOPTION
SELECT BOARD
TOWN OF WESTBOROGH, MASSACHUSETTS

A RESOLUTION ADOPTING THE *WESTBOROUGH HAZARD MITIGATION PLAN*

WHEREAS, the Town of Westborough established a Committee to prepare the 2026 update of the *Westborough Hazard Mitigation Plan*; and

WHEREAS, the updated *Westborough Hazard Mitigation Plan* contains several potential future projects to mitigate potential impacts from natural hazards in the Town of Westborough; and

WHEREAS, duly-noticed public meetings were held by the LOCAL HAZARD MITIGATION PLANNING TEAM on August 20th, 2024 and February 24, 2026; and

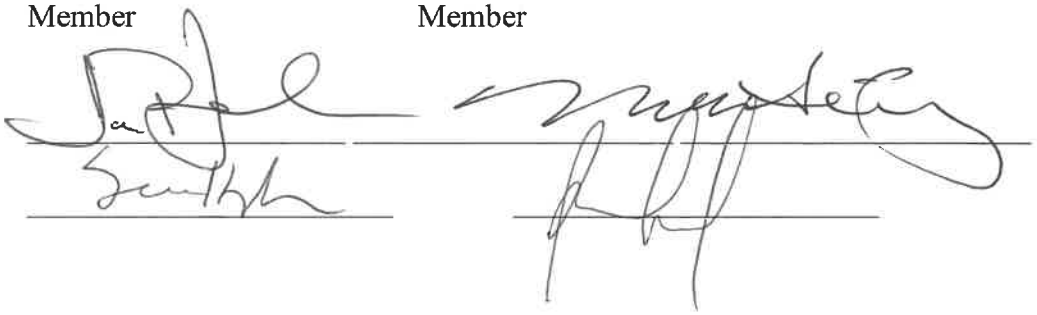
WHEREAS, the Town of Westborough authorizes responsible departments and/or agencies to execute their responsibilities demonstrated in the plan.

NOW, THEREFORE BE IT RESOLVED that the Town of Westborough SELECT BOARD adopts the 2026 update of the *Westborough Hazard Mitigation Plan*, in accordance with M.G.L. 40 or the charter and bylaws of the Town of Westborough.

ADOPTED AND SIGNED this February 24, 2026.

Name	Ian Johnson	Shelby Marshall	Sean Keogh
Title	Chair	Vice Chair	Member
Name	Mark Silverberg	Patrick Welch	
Title	Member	Member	

Signatures



This Certificate of Adoption helps meet the following FEMA local mitigation plan requirements:

- *F1. "For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance?" (Requirement 44 CFR § 201.6(c)(5)).*

ACKNOWLEDGEMENTS

This Acknowledgements section helps meet the following FEMA local mitigation plan requirements:

- *A1. "Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))"*

This Hazard Mitigation Plan (HMP) update was funded by the Federal Emergency Management Agency (FEMA) via the Massachusetts Emergency Management Agency (MEMA). This report was prepared for the community of Westborough by the Central Massachusetts Regional Planning Commission (CMRPC).

The Westborough Select Board extends its thanks to participants in the Local Hazard Mitigation Team for their time and hard work in participating in this timely project. Core Team members include:

Patrick Purcell, Fire Department, Chief and Emergency Management Director

Stephen Doucet, Fire Department, Deputy Chief

Todd Minardi, Police Department, Chief

Stephen Tompkins, Police Department, Deputy Chief

Cliff Luce, Police Department, Lieutenant

Chris Payant, Department of Public Works, Director

Derek Saari, Department of Public Works, Assistant Director

Joe Boccadoro, Department of Public Works, Assistant Town Engineer

Joshua Van Houten, Department of Public Works, Water and Sewer Operations Manager

Kim Foster, Town Manager / Select Board's Office, Assistant Town Manager

Fred Lonardo, Community Development Director

Jennifer Miller, Conservation Department, Conservation Director

Mark Zepf, Economic Development Department, Economic Development Coordinator

Jenny Gingras, Planning Department, Director

Benjamin Bowers, Sustainability Coordinator

Jennifer Sullivan, Public Health Department, Director

Ray Gauthier, Public Health Department, Sanitarian

Maria Goncalves, Public Health Department, Health Inspector

Jonathan Steinberg, Finance Department, Interim Finance Director / Chief Assessor

CMRPC would also like to thank Confidential Administrative Assistant Cela Dorr for her help throughout the HMP update process.

In addition, thanks are extended to the staff of the Central Massachusetts Regional Planning Commission for process facilitation and preparation of this document.

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Thanks are also due to the Massachusetts Emergency Management Agency (MEMA) for guidance and feedback regarding this plan.

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1.0 INTRODUCTION

1.1 DISASTER MITIGATION PLAN

Congress enacted the Disaster Mitigation Act of 2000 (DMA 2000) on October 10, 2000. Also known as the Stafford Act Amendments, this bill was signed into law by President Clinton on October 30, 2000, creating Public Law 106-390. The law established a national program for pre-disaster mitigation and streamlined the federal administration of disaster relief. Specific rules on the implementation of DMA 2000 were published in the Federal Register in February 2002 and required that all communities must have a Hazard Mitigation Plan in place in order to qualify for future federal disaster mitigation grants following a Presidential Disaster Declaration. Hazard Mitigation Plans emphasize measures that can be taken to reduce or prevent future disaster damage caused by natural hazards. In the context of natural hazard planning, Pre-Disaster Mitigation refers to any action that permanently reduces or eliminates long-term risks to human life and property.

1.2 PLAN PURPOSE

Section 1.2 helps meet the following FEMA local mitigation plan requirements:

- *A1. "Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?" (Requirement 44 CFR § 201.6(c)(1))*

This plan identifies the natural hazards facing the Town of Westborough, assesses the vulnerabilities of the Town's critical facilities, infrastructure, residents, and businesses of these hazards, and presents recommendations to mitigate the adverse effects of these hazards.

New England weather is renowned for its mercurial and dramatic nature. Late summer hurricanes, major winter blizzards, and summer droughts are all experienced in Central Massachusetts. These natural hazards occur frequently enough to be familiar scenes to residents of Westborough. The negative effects of these natural hazards on the built environment can lead these events to be classified as natural disasters. As climate change continues to progress, the severity and frequency of natural hazard risk will increase.

This planning effort has drawn on the knowledge of local municipal officials and residents. The recommendations presented in the following report are intended to be realistic and practical steps for mitigating natural hazards and preparing Westborough as best as possible for the effects of climate change. Implementation of these actions will translate into savings – fewer lives lost, less property destroyed, and less disruption to essential services and ecological systems.

1.3 PLANNING PROCESS

Section 1.3 helps meet the following FEMA local mitigation plan requirements:

- *A1. "Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?" (Requirement 44 CFR § 201.6(c)(1));*
- *A2. "Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process?" (Requirement 44 CFR § 201.6(b)(2)); and*
- *A3. "Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval?" (Requirement 44 CFR § 201.6(b)(1))*

This Plan is funded through a Fiscal Year 2021 Hazard Mitigation Grant Program grant to the Town of Westborough from the Federal Emergency Management Agency (FEMA) through the Massachusetts Emergency Management Agency (MEMA).

The planning process in Westborough was composed of two distinct but related phases:

1. data collection and technical review, and
2. public input and planning.

The identification of natural hazards impacting the Town of Westborough was accomplished through a review of available information from various sources. These sources included federal and state reports and datasets, existing plans, and in some cases engineering documents. An assessment of risks and vulnerabilities was performed primarily using geographic information systems (GIS) to identify the infrastructure (critical facilities, public buildings, roads, neighborhoods, etc.) at the highest risk of being damaged by hazards, particularly flooding. Local knowledge as imparted by Town officials, staff, emergency management volunteers, and others was a critical element of this phase.

The second phase of the planning process was focused on outreach, public participation and input, and planning. This phase was critical to fostering awareness of the process among a wide range of local officials, coordinating updates to different plan elements in ways that included important stakeholders, and providing opportunities for public comment and input from a representative base of residents and other stakeholders, including community lifelines, in Westborough. Through community engagement, CMRPC was better able to gauge community priorities for mitigation and understand local resources as well as existing policies and procedures. With information from this phase of the planning process in hand, the local planning team was able to develop an informed list of mitigation strategies for the Town.

The Hazard Mitigation Planning team, consisting of local staff, included:

Patrick Purcell, Fire Department, Chief and Emergency Management Director

Stephen Doucet, Fire Department, Deputy Chief

Todd Minardi, Police Department, Chief

Stephen Tompkins, Police Department, Deputy Chief

Cliff Luce, Police Department, Lieutenant

Chris Payant, Department of Public Works, Director

Derek Saari, Department of Public Works, Assistant Director

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Jennifer Sullivan, Public Health Department, Director

Ray Gauthier, Public Health Department, Sanitarian

Maria Goncalves, Public Health Department, Health Inspector

Jonathan Steinberg, Finance Department, Interim Finance Director / Chief Assessor

To discuss hazard areas, critical infrastructure and other assets, and plan priorities and strategies, the Hazard Mitigation Planning team met six times on July 24th, 2023, September 18th, 2023, November 13th, 2023, February 7th, 2024, April 3rd, 2024, and May 6th, 2024. CMRPC staff also met with DPW Director Payant on September 4th, 2024 and with Fire Chief Purcell on October 3rd, 2024 to discuss the finalization of the plan. Between meetings and during development of the draft and final plans, information and comments were shared among the local team and CMRPC. On January 4th, 2024, the Hazard Mitigation Planning team launched a public survey to gauge resident, worker, visitor, and business owner concerns about and experiences with natural hazards in Town. The survey was distributed on the Town's website and social media pages, and flyers for and paper copies of the survey were distributed around Town, including at the town hall, senior center, and public library. A total of 269 responses were collected. Survey responses were discussed by the local planning team at its February, April, and May 2024 meetings and helped inform the development and prioritization of the plan's mitigation strategies. Representatives from the surrounding communities of Grafton, Hopkinton, Northborough, Shrewsbury, Southborough, and Upton were invited to comment on the draft plan during the public comment period in an effort gather input from surrounding communities who might have shared interests or concerns. As planning activities progressed, a public presentation was made by CMRPC and the local planning team on August 20th, 2024 at a Westborough Select Board meeting to provide a summary of key aspects of the draft Plan report then being finalized. The presentation was televised on the local cable access channel and the opportunity for public comment was emphasized during this presentation. Materials and notes from the presentation and subsequent public discussion are included in Appendix D and Appendix E, respectively. A full draft plan was provided to the Town for distribution and made available online on the Town of Westborough's website for public comment for three weeks from August 27th, 2024 through September 17th, 2024. In addition, the final draft plan was distributed to officials in all neighboring communities for review and input regarding shared hazards. Feedback from Select Board members during the public presentation and from several town residents and community lifeline stakeholders during the public and community lifeline comment period was received. This feedback was considered and, where deemed appropriate by the local planning team, incorporated as final edits were made to the plan; public feedback informed the description of the earthquakes hazard in this plan, community lifeline feedback from

the Town of Grafton informed the descriptions of Route 30 in this plan, and feedback received from the community survey informed the descriptions of localized basement flooding.

The final draft plan was submitted to MEMA for review on February 19th, 2025, and was then relayed to FEMA for federal review. After receipt of FEMA's notice of approval pending adoption on February 13th, 2026, the plan was formally adopted by vote of the Board at the February 24th, 2026 meeting of the Select Board.

The Westborough Planning Board is the primary Town agency responsible for regulating development in town. Feedback to the Planning Board was ensured through the participation of the Town Planner on the local hazard planning team. In addition, CMRPC, which is the State-designated Regional Planning Agency (RPA) for Westborough, works with all agencies that regulate development in its region; these agencies that CMRPC works with include both the municipal entities listed above and state agencies such as the Department of Conservation and Recreation (MassDCR) and the Department of Transportation (MassDOT). The regular collaboration between CMRPC and these municipal entities and state agencies ensured that the operational policies of and any mitigation strategies or hazards identified by these entities and agencies were incorporated in this Westborough Hazard Mitigation Plan. The engagement of a diverse array of representatives, stakeholders, community lifelines, and organizations during the planning process promoted the creation of mitigation strategies for local recovery and resilience efforts in town. This hazard mitigation planning process included stakeholders from a broad range of sectors both inside and outside of local government. The inclusion of these stakeholders in the planning process is a critical step towards ensuring equitable, effective, and comprehensive risk reduction outcomes.

The following community lifelines were sent the full draft plan during the public comment period for their review and input. FEMA defines community lifelines as "the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.[1]"

Safety and Security Lifelines:

- Eversource
- National Grid
- Northstar Youth Hockey Arenas
- Coca Cola
- Cumberland Farms HQ
- Mass Fish and Wildlife
- Mass DCR
- Amazon
- Atlantic Management
- Carruth Capital
- SUASCO Cooperative Invasive Species Management Area

Food, Water, and Shelter Lifelines:

- Westborough Water

[1] FEMA, "Local Mitigation Planning Policy Guide," FEMA.gov, Federal Emergency Management Agency, April 19, 2022, https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-policy-guide_042022.pdf, page 17.

- The Willows Retirement Community (includes Beaumont and Whitney Place nursing homes)
- Arrive Westborough
- Parc Westborough Apartments
- Carlton Gardens Condos
- Westborough Public Schools
- Westborough Senior Center
- Highlands Retirement Community
- Westborough Food Pantry
- Worcester County Food Bank
- Brookhaven Hospice

Health and Medical Lifelines:

- ConvenientMD Urgent Care Westborough
- Marlborough Hospital
- UMass Memorial Medical Center
- St. Vincent Hospital
- Whittier Rehabilitation Hospital

Communications Lifelines:

- Charter / Spectrum
- Verizon
- Shrewsbury Electric and Cable Operations
- Comcast
- Community Advocate Newspaper

Transportation Lifelines:

- Keolis / MBTA
- NRT Transportation (School Bus Operator)
- MassDOT
- CSX / Transflow
- WRTA / Via Transit
- Westborough Senior Center

Hazardous Materials Lifelines:

- Westborough Wastewater Treatment Plant

Emergency Shelter Lifelines:

- Gurdwara Sahib
- Westborough Public Schools

2.0 Community Profile and Development Trends

2.1 Regional and Community Profile

The Central Massachusetts Regional Planning Commission (CMPRC) region occupies roughly 1,000 square miles in the southern two-thirds of Worcester County, Massachusetts. The City of Worcester, which is the second-largest city in Massachusetts and New England with a population of 206,518 according to the 2020 United States Census, is relatively in the central part of the region. Nearly 588,141 people live in the CMRPC Region, of whom 21,567 reside in Westborough.[2]

The CMRPC region is bordered to the west by the Central Massachusetts uplands, to the south by Rhode Island and Connecticut, to the east by the Boston metropolitan area, and to the north by the Montachusett region in northern Worcester County. The forty-community region has been divided for planning purposes into six sub-regions, as determined by shared characteristics and roadway corridors. Westborough is located in the northeast sub-region consisting of 5 towns located to the east and northeast of Worcester, including: Berlin, Boylston, Northborough, Shrewsbury, and Westborough itself.

Massachusetts has a humid continental climate, with maritime influences increasing from northwest to southeast. According to the National Oceanic and Atmospheric Association's National Weather Service, between 2000 and 2024, the Worcester, MA area saw monthly mean temperatures ranging from 15.1 degrees Fahrenheit in January to 74.7 degrees Fahrenheit in July.[3] According to this same source, between 2003 and 2023, average annual precipitation in the Worcester, MA area has been relatively high at 51.43 inches,[4] and, between 1999-2000 and 2023-2024, average annual snowfall has been 70.7 inches.[5] Approximately 30 miles from the Atlantic coast, Westborough and its neighboring communities are subject to a variety of types of severe storms, including hurricanes, nor'easters, thunderstorms, and blizzards.

The Town of Westborough, Massachusetts was incorporated in 1717. Westborough is situated along several major corridors which help connect the Town to other Massachusetts communities, including Boston and Worcester. Interstate 495 runs north-south across the east side of town, and State Route 9 crosses east-west in the north of town. In addition, State Route 135 runs northwest-

[2] "P1: Race," Data.Census.gov, United States Census Bureau, accessed July 3, 2024, https://data.census.gov/table?q=westborough%20town%20Massachusetts.

[3] These Worcester area temperature estimates are based on data recorded at a weather station at Worcester Regional Airport.
"Monthly Mean Avg Temperature for Worcester Area, MA (ThreadEx)," Weather.gov, National Oceanic and Atmospheric Association National Weather Service, accessed September 11, 2024, https://www.weather.gov/wrh/Climate?wfo=box.

[4] These Worcester area precipitation estimates are based on data recorded at a weather station at Worcester Regional Airport. The calculation of this average does not incorporate data from the year 2021, as precipitation data for January 2021 is missing for this station.
"Monthly Total Precipitation for Worcester Area, MA (ThreadEx)," Weather.gov, National Oceanic and Atmospheric Association National Weather Service, accessed September 11, 2024, https://www.weather.gov/wrh/Climate?wfo=box.

[5] These Worcester area snowfall estimates are based on data recorded at a weather station at Worcester Regional Airport.
"Monthly Total Snowfall for Worcester Area, MA (ThreadEx)," Weather.gov, National Oceanic and Atmospheric Association National Weather Service, accessed September 11, 2024, https://www.weather.gov/wrh/Climate?wfo=box.

southeast through town and State Route 30 runs northeast-southwest through town; these two routes intersect in the town center. Westborough is known in the region for its quality schools and large, desirable businesses. Its employment base is healthy: as of May 2024, 10,455 Westborough residents were employed[6] and, as of 2021, 24,645 people were employed in Westborough.[7] Westborough is bordered by Northborough to the north, Shrewsbury and Grafton to the west, Upton to the south, and Southborough and Hopkinton to the east.

Westborough has a total area of 21.6 square miles and a population of 21,567.[8] According to CMRPC's Long Range Transportation Plan (LRTP), Westborough's population is projected to continue growing.[9] Westborough is expected to grow by approximately 13% between 2020 and 2050, reaching 24,327 residents. The number of residents in town grew by over 70% from 7,378 to 12,594 between 1950 and 1970; The Town's population has grown at varying rates each decade since 1970, and notably grew by around 18% from 18,272 to 21,567 between 2010 and 2020.[10] According to the 2020 US Census, 61.1% of Westborough's population identifies as white, 25.9% of the Town's population identifies as Asian, 2.2% of the Town's population identifies as Black or African American, 0.2% of the Town's population identifies as American Indian or Alaska Native, 3.4% of the Town's population identifies as some other race, and 7.2% of the town's population identifies as belonging to two or more races.[11] In addition, according to the 2020 Census, about 6.0% of Westborough residents identify Latino or Hispanic. According to the 2020 US Census, 24.7% of the Town's population is under 18 years old, while 15.1% of the population is 65 years and over.[12]

The median age in town, according to the 2020 US Census, is 39.1 years old, which is slightly lower than the State's median age of 39.9.[13] At $133,145, median household annual income in Westborough (according to 2022 American Community Survey 5-year estimates) is significantly higher than the State's median household annual income of $96,505 and Worcester County's median household annual income of $88,524.[14] The poverty rate in town (according to 2022 ACS

[6] Massachusetts Department of Economic Research, "Municipal Employment Data: Westborough - 2010," lmi.dua.eol.mass.gov, May 2024, https://lmi.dua.eol.mass.gov/lmi/MunicipalEmploymentData/LmiTown?A=000518.

[7] "Work Area Profile Analysis: Workers: Employed in Westborough town (Worcester, MA)," Onthemap.ces.census.gov, United States Census Bureau, accessed July 22, 2024, https://onthemap.ces.census.gov/.

[8] "P1: Race," Data.Census.gov

[9] Central Massachusetts Metropolitan Planning Organization. "2050 Connections: 2024 Long Range Transportation Plan for the Central Massachusetts Metropolitan Planning Organization," Cmrpc.org, Central Massachusetts Regional Planning Commission, July 19, 2023, page III-5, https://cmrpc.org/wp-content/uploads/2024/05/2050-Connections-Endorsed-Document.pdf.

[10] "Westborough," Cmrpc.org, Central Massachusetts Regional Planning Commission, accessed July 3, 2024, https://cmrpc.org/data-center/community-snapshots/westborough/.

[11] "DP1: Profile of General Population and Housing Characteristics," Data.Census.gov, United States Census Bureau, accessed July 3, 2024, https://data.census.gov/table/DECENNIALDP2020.DP1?q=dp1%20massachusetts%20state%20westborough%20town%20ma&g=050XX00US25027.

[12] Ibid

[13] Ibid

[14] "S1903: Median Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)," Data.Census.gov, United States Census Bureau, accessed July 3, 2024, https://data.census.gov/table/ACSST5Y2022.S1903?q=ACS%20Massachusetts%20s1903&g=050XX00US25027_060XX00US2502775015.

5-year estimates) is 4.6%, slightly less than half of the State's and Worcester County's poverty rates of, respectively, 9.9% and 10.0%.[15] With a median value of owner-occupied housing units of $601,900 according to 2022 ACS 5-year estimates, housing costs in Town are higher compared to in the State and to Worcester County, whose comparable numbers are $483,900 and $363,200, respectively.[16] According to 2022 ACS 5-year estimates, 59.6% of occupied homes in town are single-family homes (detached or attached), and 40.4% are multi-unit structures.[17] With a 4.8% vacancy rate according to the 2020 US Census, the vacancy rate in Westborough is relatively lower than the comparable rates in the State and Worcester County, which are 8.3% and 5.7%, respectively.[18] Most homes in town are relatively new, with only 11.5% of them being built before 1940 according to 2022 ACS 5-year estimates.[19]

[15] "S1701: Poverty Status in the Past 12 Months," Data.Census.gov, United States Census Bureau, accessed July 3, 2024, https://data.census.gov/table/ACSST5Y2022.S1701?q=ACS%20Massachusetts%20s1701&g=050XX00US25027_060XX00US2502775015.

[16] "DP04: Selected Housing Characteristics," Data.Census.gov, United States Census Bureau, accessed July 3, 2024, https://data.census.gov/table/ACSDP5Y2022.DP04?q=ACS%20Massachusetts%20dp04&g=050XX00US25027_060XX00US2502775015.

[17] "S2504: Physical Housing Characteristics for Occupied Housing Units," Data.Census.gov, United States Census Bureau, accessed July 3, 2024, https://data.census.gov/table/ACSST5Y2022.S2504?q=ACS%20Massachusetts%20s2504&g=050XX00US25027_060XX00US2502775015.

[18] "DP1: Profile of General Population and Housing Characteristics," Data.Census.gov.

[19] "S2504: Physical Housing Characteristics for Occupied Housing Units," Data.Census.gov.

2.2 Development Trends

Section 2.2 helps meet the following FEMA local mitigation plan requirements:

- *C1. "Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?" (Requirement 44 CFR § 201.6(c)(3)); and*
- *E1. "Was the plan revised to reflect changes in development?" (Requirement 44 CFR § 201.6(d)(3))*

Table 1: Town of Westborough Development Projects between 2017 - 2024

Name	Status	Year	Housing Units	Commercial SQ Feet	Project Type
Zaara Drive	Complete	2022	12	0	Single Family Homes
Daania Drive	Complete	2022/23	12	0	Single Family Homes
Olympus, 800 West Park Drive	Complete	2019	0	100,000	Office and Research and Development Building
Amazon, 64 Otis Street	Complete	2023	0	170,000	Same Day Amazon
Amazon, 54 Otis Street	Complete	2023	0	120,000	Undetermined Use
Amazon Robotics, 50 Otis Street	Complete	2022	0	350,000	Office, Research and Development, and Manufacturing Facility
Cold Harbor Brewery, 66 Otis Street	Complete	2023	0	12,400	Brewery
Westborough Fulfillment Center, Otis Street	Complete	2023	0	170,000	Fulfillment Center

Table 2: Town of Westborough Potential Future Development

Name	Status	Year	Housing Units	Commercial SQ Feet	Project Type
Village Commons, Gleason Street	Planning	In planning as of 2024	15	0	Single-Family Homes
Verizon Communications Building, Friberg Parkway	Projected	Projected as of 2023	0	12,527	Telecommunications Switching Facility
Amazon Last Mile Delivery Station, 4400 Computer Drive	Planning	In planning as of 2021	0	156,000	Last Mile Delivery Station
25 Research Drive Properties LLC	Projected	Projected completion in 2025 or later	0	715,000	Innovation Campus

Mt. Pleasant, Housing Project	On-going	Completion expected in 2025	26	0	Single Family Homes
Pulte, off Lyman Street	On-going	Completion expected in 2027	700	0	Condominiums
Rugged Trails	TBD	TBD	3	0	Single-Family Houses

The Town of Westborough is a suburban town with large business districts along the several major highways that cross the Town. These features of the Town's character contribute to ongoing development and redevelopment patterns throughout the Town. There are multiple industrial and commercial development projects that are currently underway in Town. All subdivisions and new developments in town are rigorously reviewed by the Planning Board, Fire Department, and Police Department, as well as any other applicable departments, boards, and commissions, to ensure that new construction complies with bylaws and ensures emergency vehicle access.

Table 3: Number of New Construction Residential Building Permits Issued by Year in Westborough[20]

Year	Single Family Permits	Attached Single-family Permits	Multi-family / Mixed Use	All Permits
2017	23	0	0	23
2018	24	0	0	24
2019	23	0	0	23
2020	24	0	0	24
2021	28	0	0	28
2022	9	0	200	209
2023	6	0	50	56
2024	12	0	104	116
2017-2024 Total	121	0	354	475

Recent development in Westborough has affected and minimally increased the Town's overall vulnerability to natural hazards, as 1 of the 97 properties which have been developed since 2017 has a building located in a locally identified flooding hazard area.

If a development is formally approved by the appropriate boards and departments, due consideration should be given to the protection of newly constructed residences as well as natural resources. If resilience measures are implemented in construction, new development can decrease the Town's vulnerability to natural hazards or prevent an increase in the Town's vulnerability to natural hazards. The clearing of brush and trees lessens the chance of wildfires near new development, buried powerlines can reduce risk of power loss from storm events, and the usage of flood control measures such as drainage structures, rain gardens, swales and berms can reduce flood hazard risks in an area. However, new development built without the inclusion of hazard mitigation and resiliency in mind can increase the Town's vulnerability to natural hazards; Building within the floodplain or close to the wildland interface, removing native plants, and draining wetlands can all greatly exacerbate natural hazard risks to life and property. Standardizing the

[20] "Housing Unit Building Permits for: WESTBOROUGH TOWN, MA," Socds.huduser.gov, United States Department of Housing and Urban Development, accessed July 23, 2025, https://socds.huduser.gov/permits/.

incorporation of resilience measures in new development will be especially important in Westborough as climate change leads to increased natural hazard risk in town and new residential developments as well as commercial, industrial, office/research and development, and warehouse/distribution facilities continue to be built in town. According to the Executive Office of Housing and Livable Communities, this would mean taking into account hazards more intentionally at the local and state level when considering housing or community investments and creating new initiatives that invest in adaptive measures. In addition, the state and municipalities must consider seriously the option of relocation or retreat from the areas of highest vulnerability.[21]

An increase in storm runoff in specific areas of town caused by new development is possible, and proper drainage infrastructure is necessary to mitigate disruption to surrounding properties, wetlands, streams, and aquifers caused by development-induced runoff. During the modern construction process, erosion control infrastructure is constructed to prevent sediment from forming along surface water resources, stormwater drainage infrastructure is constructed to replicate undeveloped conditions and help cleanse pollutants, trees are trimmed back from structures and power lines, utility lines are installed underground, roads are built wide enough to allow emergency vehicles to enter, modern building codes are followed, and setbacks from wetlands are required.

The Town, including various responsible boards and commissions, should ensure that new development processes take potential and known hazards into account and ensure mitigation of hazards occurs when needed. Westborough utilizes various methods to ensure new development conforms with current Massachusetts General Laws as well as the Town's Bylaws. The Planning Board, Conservation Commission, and Zoning Board of Appeals (ZBA) in town consider water resource and open space preservation in decision making and, in the case of the ZBA, when hearing and deciding on appeals. This consideration includes specific evaluation criteria that are relevant to natural hazards – including requirements for preventing and mitigating flooding and stormwater impacts. The Town's Bylaws are amended and updated on an as needed basis to adapt to the needs of and the shifting forces that affect the Town.

New development in Westborough needs to be in line with the state building code. In addition, on July 1st, 2018, Westborough codified a Stretch Energy Code, based on the International Energy Conservation Code (IECC) 2009 building code created by the International Code Council.[22] This Stretch Energy Code provides a more energy efficient alternative to the base energy code for both new construction and existing buildings in Westborough, strengthening the town's climate resilience and hazard mitigation capabilities.

As the population of Westborough continues to grow and additional development occurs, officials should seek to further integrate hazard mitigation practices into the Town's planning and development processes. In 2021, the Town of Westborough updated its Master Plan; this was a process which gave the Town an opportunity to identify threats and prioritize strategies to address them. Climate change, according to current predictions, will lead to an increase in extreme storm events, including more rain in shorter amounts of time. Planning for the future impacts of climate change is imperative to protecting the citizens of Westborough.

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[21] HOUSING ADVISORY COUNCIL, "A HOME FOR EVERYONE: A Comprehensive Housing Plan for Massachusetts 2025 – 2029," Mass.gov, Executive Office of Housing and Livable Communities, 2025, https://www.mass.gov/doc/a-home-for-everyone/download.

[22] "Massachusetts Building Energy Code Adoption by Municipality," Mass.gov, Massachusetts Department of Energy Resources, May 28, 2024, https://www.mass.gov/doc/building-energy-code-adoption-by-municipality/download.

3.0 Critical Facilities and Vulnerable Populations

A Critical Facility is defined as a building, structure, or location which:

- is vital to hazard response efforts,
- currently helps protect the community from hazards, and/or
- would create a secondary disaster if a hazard were to impact it.

3.1 Critical Facilities Within Westborough

This Critical Facilities List for the Town of Westborough has been created through the utilization of several online sources, several planning documents, and the knowledge and expertise of the local HMP planning team in town.

Planning documents and online resources which inform this plan include:

- Westborough's Comprehensive Emergency Management Plan
- MassGIS data on dams
- Massachusetts Department of Early Education and Care data on childcare facilities
- Massachusetts Historical Commission data on historic sites
- Employment data from the Massachusetts Department of Economic Research and the Massachusetts Department of Education
- Critical infrastructure mapping undertaken by CMRPC under contract with the Central Region Homeland Security Advisory Council, which is charged by the Executive Office of Public Safety and Security to administer and coordinate the State Homeland Security Grant for central Massachusetts.

Westborough's Local Hazard Mitigation Planning Team has broken up this list of critical facilities into four categories:

- Emergency response facilities needed in the event of a disaster,
- Non-emergency response facilities that have been identified by the local HMP planning team (these facilities are not required in an emergency response event, but are considered essential for the everyday operation of Westborough),
- Dams, and
- Facilities that serve vulnerable populations and/or which the Town wishes to protect in the event of a disaster.

Critical infrastructure and facilities are mapped in Appendix A.

3.2 Category 1 – Emergency Response Facilities

The Town has identified emergency response facilities and services as the highest priority facilities and services to protect in instances of natural and man-made hazards.

Table 4: Emergency Response Facilities in Westborough

Type	Name	Address	Details	Has Emergency Generator?
Emergency Operations Center / Fire Station	Fire / EMS Station / EOC	42 Milk Street	There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
Police Station	Police Station	45 West Main Street	The generator at the Forbes Municipal Building (which the police station is in) was struck by lightning on October 1st, 2022, and the station was therefore noted as vulnerable by the local HMP team in town and CMRPC's GIS analysis.	Yes
Communications Facilities	Fire / EMS Station / EOC	42 Milk Street	There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Fay Mountain Repeater Site	Isaac Miller Road	Shortly before the 2017 HMP plan update for the Town, this repeater was switched from copper wire to fiber optic, increasing both its capability and resilience.	Yes
	Friberg Parkway Repeater Site	300 Friberg Parkway	Shortly before the 2017 HMP plan update for the Town, this repeater was switched from copper wire to fiber optic, increasing both its capability and resilience. This repeater is located above Westborough Behavioral Healthcare Hospital.	Yes

Type	Name	Address	Details	Has Emergency Generator?
Communications Facilities (cont.)	MEMA repeater site	Oak Street	Shortly before the 2017 HMP plan update for the Town, this repeater was switched from copper wire to fiber optic, increasing both its capability and resilience. A locally identified microburst hazard path also crosses this facility; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	Yes
	Regional Emergency Communication Center	20 Phillips Street	This facility is not expected to open until July of 2026. There are no noteworthy concerns regarding natural hazard impacts on this facility.	No
Department of Public Works	DPW Yard and Office	131 Oak Street	The local HMP planning team reports that the water system has not seen serious impacts from natural hazards in recent years. Several well houses with flat roofs in town had to be shoveled off following heavy snow in 2015 to prevent roof damage; however, no notable damage occurred, and these roofs have not needed to be shoveled off since this date. A locally identified microburst hazard path also crosses this facility; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	Yes
Emergency Shelters	Westborough High School	90 West Main Street	This school was noted as vulnerable to locally identified flooding hazards by CMRPC's GIS analysis.	Yes
	Westborough Inn	4 Boardman Street	This hotel is a temporary emergency shelter.	No
	Extended Stay America	180 East Main Street	This hotel is a temporary emergency shelter. This shelter is located near but not in a locally identified flood zone.	No

Type	Name	Address	Details	Has Emergency Generator?
Emergency Shelters (cont.)	Extended Stay America	19 Connector Road	This hotel is a temporary emergency shelter.	No
	Extended Stay America	1800 Computer Drive	This hotel is a temporary emergency shelter.	No
	Gurdwara Sahib	168 Flanders Road	This religious institution is a temporary emergency shelter. This shelter is located near but not in locally identified flooding, dam failure, and invasive species hazard areas.	Yes
	Sharp Building	290 Lyman Street	This building is a state-run emergency assistance shelter.	Yes
Primary Evacuation Routes	Interstate 90	Interstate 90	This route has been noted as vulnerable by CMRPC's GIS analysis because the stretch of it in the southern part of town lies along a locally identified severe snowstorm / ice storm / nor'easter hazard area and the stretch of it in the east of town crosses locally identified flooding hazard areas as well as the FEMA 100-year flood zone. A locally identified microburst hazard path also crosses this route; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path. This route also runs near to locally identified dam failure and invasive species hazard areas as well as another locally identified severe snowstorm ice storm / nor'easter hazard area.	N/A

Type	Name	Address	Details	Has Emergency Generator?
Primary Evacuation Routes (cont.)	Interstate 495	Interstate 495	This route has been noted as vulnerable by CMRPC's GIS analysis because it crosses a locally identified flooding hazard area. A locally identified microburst hazard path also crosses this route; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path. This route also runs near to locally identified dam failure hazard areas as well as the FEMA 100-year and 500-year flood zones.	N/A
	Route 9	Route 9 (aka Boston-Worcester Turnpike, Turnpike Road)	This route has been noted as vulnerable by CMRPC's GIS analysis because it crosses locally identified flooding hazard areas and the FEMA 100-year flood zone. A locally identified microburst hazard path also crosses this route; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	N/A
	Route 135	Route 135 (aka Milk Street, South Street, Hopkinton Road)	This route has been noted as vulnerable by CMRPC's GIS analysis because it crosses locally identified flooding and wildfire hazard areas as well as the FEMA 100-year flood zone.	N/A
	Route 30	Route 30	This route has been noted as vulnerable by CMRPC's GIS analysis because it crosses locally identified flooding hazard areas and the FEMA 100-year and 500-year flood zones.	N/A

Type	Name	Address	Details	Has Emergency Generator?
Primary Evacuation Routes (cont.)	Otis Street	Otis Street	This route has been noted as vulnerable by CMRPC's GIS analysis because it crosses a locally identified wildfire hazard area as well as the FEMA 100-year flood zone.	N/A
	Flanders Road	Flanders Road	This route has been noted as vulnerable by CMRPC's GIS analysis because it lies along locally identified flooding hazard areas. A locally identified microburst hazard path also lies along this route; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path. This route also crosses locally identified dam failure and invasive species hazard areas as well as the FEMA 100-year flood zone.	N/A
	Connector Road	Connector Road (aka New Flanders Road)	This route has been noted as vulnerable by CMRPC's GIS analysis because it crosses the FEMA 100-year flood zone at its northern terminus. A locally identified microburst hazard path also crosses the southern terminus of this route; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	N/A
Critical Bridges and Intersections	Bridge – Interstate 90 at Interstate 495	Southeast of 30 Walkup Drive	This bridge is near the FEMA 100-year and 500-year flood zones.	N/A
	Bridge – 50 East Main Street	50 East Main Street	This bridge has been noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also near but not in the FEMA 100-year and 500-year flood zones.	N/A

Type	Name	Address	Details	Has Emergency Generator?
Critical Bridges and Intersections (cont.)	Bridge – Route 135 (Milk Street) at Route 9 (Turnpike Road)	Northwest of 232 Turnpike Road	This bridge has been noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also near but not in the FEMA 100-year flood zone. In addition, a locally identified microburst hazard path also intersects with this bridge; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	N/A
	Bridges – Route 9 (Turnpike Road) at Interstate 495	Northwest of 50 Washington Street	There are no noteworthy concerns regarding natural hazard impacts on these bridges.	N/A
	Intersection – Route 135 (Milk Street and South Street) at Route 30 (East Main Street and West Main Street), Rotary	Southeast of 5 Milk Street	There are no noteworthy concerns regarding natural hazard impacts on this intersection.	N/A
	Intersection – Route 9 (Turnpike Road) at Lyman Street	Southwest of 139 Turnpike Road	This intersection is near a locally identified flooding hazard area and the FEMA 100-year flood zone.	N/A
	Intersection – Route 9 (Turnpike Road) at Otis Street	Southwest of 297 Turnpike Road	A locally identified microburst hazard path crosses this intersection; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	N/A

3.3 Category 2 – Non-Emergency Response Facilities

The Town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Westborough.

Table 5: Non-Emergency Response Facilities in Westborough

Type	Name	Address	Details	Has Emergency Generator?
Water Supply	Well Site #1		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Water Pump Station #1		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Booster Station #1		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Well Site #2		This well is currently offline due to PFAS contamination and was therefore noted as vulnerable by the local HMP team in town and CMRPC's GIS analysis.	Yes
	Water Pump Station #2		This water pump station is currently offline due to PFAS contamination and was therefore noted as vulnerable by the local HMP team in town and CMRPC's GIS analysis. It is also located near but not in the FEMA 100-year flood zone.	Yes
	Water Tank #1		There are no noteworthy concerns regarding natural hazard impacts on this facility.	No
	Water Purification Plant		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Water Pump Station #3		This facility was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located in the FEMA 100-year flood zone.	Yes

Type	Name	Address	Details	Has Emergency Generator?
Water Supply (cont.)	Water Pump Station #4		This water pump station is currently offline due to PFAS contamination and was therefore noted as vulnerable by the local HMP team in town and CMRPC's GIS analysis. It is also located near but not in the FEMA 100-year flood zone.	Yes
	Water Pump Station #5		This water pump station has been isolated by flood waters on occasion, most recently in 2024, but the station itself has not been impacted by flooding. This facility was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located in the FEMA 100-year flood zone.	Yes
	Water Treatment Plant		A locally identified microburst hazard path crosses this facility; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	Yes
	Well Site #3		This facility is located near but not in the FEMA 100-year flood zone.	No
	Water Tank #2 (3,300,000 gallons)		There are no noteworthy concerns regarding natural hazard impacts on this facility.	No
	Water Tank #3		There are no noteworthy concerns regarding natural hazard impacts on this facility.	No
	Impoundment		This facility is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis. It is also located near a locally identified severe snowstorm / ice storm / Nor'easter hazard area.	No
	Water Pump Station #6		This facility is located in the 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis.	No

Type	Name	Address	Details	Has Emergency Generator?
Water Supply (cont.)	Pressure-Sustaining Vault		There are no noteworthy concerns regarding natural hazard impacts on this facility.	No
Sewer	Sewer Pump Station #1		This facility is located near but not in a locally identified flooding hazard area.	Yes
	Sewer Pump Station #2		A locally identified microburst hazard path crosses this facility; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	Yes
	Sewer Pump Station #3		This facility is located near but not in the FEMA 100-year and 500-year flood zones.	Yes
	Sewer Pump Station #4 (private)		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Sewer Pump Station #5 (private)		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Sewer Pump Station #6		This facility is located near but not in the FEMA 100-year and 500-year flood zones.	Yes
	Sewer Pump Station #7		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #8		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #9		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #10		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #11		This facility is located near but not in the FEMA 500-year flood zone.	Yes
	Sewer Pump Station #12		A locally identified microburst hazard path crosses this facility; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path. This facility is also located near but not in the FEMA 100-year flood zone as well as locally identified flooding and invasive species hazard areas.	Yes

Type	Name	Address	Details	Has Emergency Generator?
Sewer (cont.)	Sewer Pump Station #13		This facility was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located along a locally identified microburst hazard path; other critical facilities in town are likely to have a similar level of risk to potential future microbursts in town as critical facilities along this path. This facility is also located in the FEMA 100-year flood zone and near locally identified dam failure and invasive species hazard areas.	Yes
	Sewer Pump Station #14		This facility was noted as vulnerable by the HMP team in town during the previous HMP planning process because it experienced overflow during heavy rains which occurred in July of 2009.	Yes
	Sewer Pump Station #15		This facility was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis.	Yes
	Grinder / Sewer Pump Station #1		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #16		This facility is located near but not in the FEMA 500-year flood zone.	Yes
	Sewer Pump Station #17		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Grinder / Sewer Pump Station #2		A locally identified microburst hazard path crosses this facility; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path.	Yes
	Sewer Pump Station #18		This facility is located near but not in a locally identified dam failure hazard area.	Yes
	Sewer Pump Station #19		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Sewer Pump Station #20		This facility is located near but not in the FEMA 100-year flood zone.	No, this sewer pump station is equipped with an auxiliary motor rather than a generator.

Type	Name	Address	Details	Has Emergency Generator?
Sewer (cont.)	Sewer Pump Station #21		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #22		A locally identified microburst hazard path crosses this facility; other areas of town are likely to have a similar level of risk to potential future microbursts in town as areas along this path. This facility is also near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #23		This facility was noted as vulnerable by the HMP team in town during the previous HMP planning process because it experienced overflow during heavy rains which occurred in July of 2009. It was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis and is also near but not in the FEMA 100-year and 500-year flood zones.	Yes
	Sewer Pump Station #24		This facility was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located along a locally identified microburst hazard path; other critical facilities in town are likely to have a similar level of risk to potential future microbursts in town as critical facilities along this path.	Yes
	Sewer Pump Station #25		This facility is located near but not in the FEMA 100-year flood zone and a locally identified flooding hazard area.	Yes; however, this generator is no longer operational and needs to be replaced. An article to replace this generator was passed at the Fall 2024 Special Town Meeting.
	Sewer Pump Station #26		This facility is located near but not in the FEMA 100-year and 500-year flood zones.	Yes
	Sewer Pump Station #27		This facility is located near but not in the FEMA 100-year and 500-year flood zones.	Yes
	Sewer Pump Station #28		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes

Type	Name	Address	Details	Has Emergency Generator?
Sewer (cont.)	Sewer Pump Station #29		This facility is located near but not in the FEMA 100-year flood zone.	Yes
	Sewer Pump Station #30		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Sewer Pump Station #31		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Sewer Pump Station #32		This facility is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis.	Yes
	Sewer Pump Station #33		There are no noteworthy concerns regarding natural hazard impacts on this facility.	Yes
	Sewer Pump Station #34		There are no noteworthy concerns regarding natural hazard impacts on this facility.	No, this sewer pump station is equipped with an auxiliary motor rather than a generator.
	Waste Water Treatment Plant		The Westborough DPW has a plan in place for the long-term replacement of sewer facility generators and switch gear. The Town's Waste Water Treatment Plant flooded in 1978 and 1985 and abuts the Assabet River and its FEMA 100-year flood zone. Renovations since the 1980s have improved the facility's resilience to flooding. The HMP team in town noted that this facility is vulnerable because it occasionally experiences inflow of stormwater during severe weather, generally from illicit connections and home sump pumps discharged to storm drains; they also noted that this facility experiences infiltration problems.	Yes

Type	Name	Address	Details	Has Emergency Generator?
Town Facilities	Town Hall	34 West Main Street	A lightning strike has struck the pump station near this facility; therefore, this facility was noted as vulnerable by both the HMP Team in town and CMRPC's GIS analysis.	Yes
	Forbes Municipal Building	45 West Main Street	This facility houses the Town's schools department, buildings department, and police station. A lightning strike struck this facility's generator on October 1st, 2022, and therefore this facility was noted as vulnerable by both the HMP Team in town and CMRPC's GIS analysis.	Yes, this facility received a new generator in 2019.
	Senior Center	4 Rogers Road	This facility is a heating / cooling center and is being replaced. It is located adjacent to the FEMA 100-year flood zone associated with Rutters Brook; the facility's access road is more vulnerable than the senior center itself.	Yes
	Public Library	55 West Main Street	This facility is a heating / cooling center.	No
	New Senior Center / Recreation Center	1500 Union Street	The senior center portion of this project is on hold at the time of this plan's writing. There are no noteworthy concerns regarding natural hazard impacts on this facility.	No, but the Town has plans to install a generator here.

Type	Name	Address	Details	Has Emergency Generator?
Utilities	CSX/MBTA/AMTRAK railroad	East-west through town	This railroad occupies a raised bed passing through flood-prone areas and wetlands throughout much of its route, but serious flooding along its route that impacts rail service has not been reported in many years. It has been noted as vulnerable by CMRPC's GIS analysis because the stretch of it in the western part of town lies along a locally identified wildfire hazard area and the stretch of it in the east of town crosses locally identified flooding hazard areas as well as the FEMA 100-year flood zone. It also crosses locally identified flooding hazard areas and the FEMA 500-year flood zone.	No
	Westborough MBTA station	Smith Parkway	This facility was noted as vulnerable to a locally identified wildfire hazard by CMRPC's GIS analysis. It is also adjacent to but not within the FEMA 100-year flood zone.	No
	EL Harvey Transfer Station	68 Hopkinton Road	EL Harvey has a private contract with the Town for this transfer station to serve as a waste and recycling materials drop-off facility for the Town.	Yes
	National Grid Substation	95 Milk Street	This substation is located near a locally identified wildfire hazard area.	Yes
	National Grid Substation	East Main Street (east of Granger Road)	This substation is located immediately upgradient from a wetland.	Yes

3.4 Category 3 – Dams[23]

The third category of critical infrastructure sites in this plan is a listing of dams in Westborough.

Table 6: Dams in Westborough

National ID	Dam Name	Owner	Regulatory Authority	Hazard Code	Notes
MA00939	Lower Sandra Pond Reservoir Dam	Public – Town of Westborough	Office of Dam Safety	Significant Hazard	This dam was upgraded during 2005-2007 for $360,000. Further upgrades to this dam have been planned; the Town has applied for a FEMA BRIC Grant to fund these upgrades and is waiting to hear back from FEMA to see if they have received this grant. It is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis. It is also located near a locally identified severe snowstorm / ice storm / nor'easter hazard area. The Combined Emergency Action Plan for this dam and the Upper Sandra Pond Reservoir Dam was completed in March 2018; the Operations and Maintenance Plan for these two dams was completed in 2017/2018. This dam was most recently inspected in December of 2023. Additional inspections of the portions of the water supply components of the dam need to be completed; Pending the results of these additional inspections, repairs or improvements to the dam should be completed as they are required.
MA00940	Upper Sandra Pond Reservoir Dam	Public – Town of Westborough	Office of Dam Safety	Significant Hazard	This dam was upgraded during 2005-2007 for $360,000. Further upgrades for this dam were funded by the Town and were completed in 2023. It is located near the FEMA 100-year flood zone and a locally identified severe snowstorm / ice storm / nor'easter hazard area. The Combined Emergency Action Plan for this dam and the Lower Sandra Pond Reservoir Dam was completed in March 2018; the Operations and Maintenance Plan for these two dams was completed in 2017/2018. This dam was most recently inspected in December of 2023.

[23] "MassGIS Data: Dams," Mass.gov, Massachusetts Bureau of Geographic Information, February 2012, https://www.mass.gov/info-details/massgis-data-dams.

National ID	Dam Name	Owner	Regulatory Authority	Hazard Code	Notes
MA01000	George H. Nichols Multipurpose Dam	Public – Massachusetts Department of Conservation and Recreation	Office of Dam Safety	High Hazard	This dam was upgraded during 2010-12 using $2.5 million in USDA and state funds. It is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis.
MA02926	Farm Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis.
MA02927	Old Cider Mill Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam is located near but not in the FEMA 100-year flood zone.
MA02928	Quick Pond Dam	Private	Non-Jurisdictional – Other	N/A	There are no noteworthy concerns regarding natural hazard impacts on this dam.
MA02929	Whittemore Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam has been noted as vulnerable to failure by the local HMP team in town, is in the FEMA 100-year flood zone, and is in locally identified flooding and invasive species hazard areas; therefore, it was noted as vulnerable by CMRPC's GIS analysis. It is also located along a locally identified microburst hazard path; other critical facilities in town are likely to have a similar level of risk to potential future microbursts in town as critical facilities along this path.
MA02930	Leombruno Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam is in rough shape and there is currently not being regularly maintained. It has been noted as vulnerable to failure by the local HMP team in town, so therefore it was noted as vulnerable by CMRPC's GIS analysis. A failure of this dam could cause damage to infrastructure in town.

Inundation areas for these dams cover less than 10% of the town, or a "small" portion of its area.

For additional information on dams and the dam failure hazard in Westborough, also see Chapter 4.

3.5 Category 4 – Facilities/Populations to Protect

The fourth category of critical infrastructure sites in this plan is facilities that serve vulnerable populations and/or which the Town wishes to protect in the event of a disaster.

Table 7: Facilities and Populations to Protect in Westborough

Type	Name	Address	Details
Facilities for People with Special Needs, Apartment Complexes, Assisted Living Facilities, and Housing Authority Properties	Beaumont Rehabilitation and Skilled Nursing Center	3 Lyman Street	This rehabilitation and nursing center is located along a locally identified microburst hazard path; other critical facilities in town are likely to have a similar level of risk to potential future microbursts in town as critical facilities along this path.
	Whittier Rehabilitation Hospital	150 Flanders Road	This rehabilitation hospital was noted as vulnerable to flooding by the HMP team in town. It is also located along a locally identified microburst hazard path; other critical facilities in town are likely to have a similar level of risk to potential future microbursts in town as critical facilities along this path.
	New England Center for Autism	170 Flanders Road	This center was noted as vulnerable to flooding by the HMP team in town and was noted as vulnerable to locally identified flooding and dam failure hazards by CMRPC's GIS analysis. It is also located along a locally identified microburst hazard path; other critical facilities in town are likely to have a similar level of risk to potential future microbursts in town as critical facilities along this path.
	Westborough Healthcare	8 Colonial Drive	This center was noted as vulnerable to flooding by the HMP team in town and was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located near but not in the FEMA 100-year and 500-year flood zones.
	Highlands Gracious Living	129 East Main Street	This center was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located near but not in the FEMA 100-year flood zone.

Type	Name	Address	Details
Facilities for People with Special Needs, Apartment Complexes, Assisted Living Facilities, and Housing Authority Properties (cont.)	Westborough Housing Authority (elderly / disabled)	2 Rogers Road (aka Cedar Estates)	There are no noteworthy concerns regarding natural hazard impacts on this housing complex.
	Westborough Housing Authority (elderly / disabled)	20 Mayberry Drive	This housing complex is located near but not in the FEMA 100-year flood zone.
	Westborough Housing Authority (special needs)	83 East Main Street	This housing complex was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located near but not in the FEMA 100-year flood zone.
	Zara Cisco Brough Center	288 Lyman Street Suite 2	There are no noteworthy concerns regarding natural hazard impacts on this center.
	Park Village	135 East Main Street	This housing complex was noted as vulnerable to flooding by the HMP team in town and was noted as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. Much of the complex is also in the FEMA 100-year flood zone.
Schools/Daycares[24]	Westborough High School	90 West Main Street	This school is the designated primary emergency shelter in town. Flooding (usually fairly minor) occurs at its access road off Ruggles Street where an unnamed brook passes under the road. It was identified as vulnerable to locally identified flooding hazards by CMRPC's GIS analysis. All schools in town have backup power generators. All of the Town's schools also have flat roofs which may be susceptible to snow load damage, but no damage has been sustained to date.
	Sarah W. Gibbons Middle School	20 Fisher Street	There are no noteworthy concerns regarding natural hazard impacts on this school.
	Armstrong Elementary School	18 Fisher Street	There are no noteworthy concerns regarding natural hazard impacts on this school.

[24] "Licensed Child Care Search," Childcare.Mass.gov, Massachusetts Department of Early Education and Care, accessed July 5, 2024, https://childcare.mass.gov/findchildcare.

Type	Name	Address	Details
Schools/Daycares (cont.)	Fales Elementary School	50 Eli Whitney Street	There are no noteworthy concerns regarding natural hazard impacts on this school.
	Hastings Elementary School	111 East Main Street	This school abuts the FEMA 100-year and 500-year flood zones, though impacts are generally confined to the school's ballfields.
	Mill Pond School	6 Olde Hickory Path	There are no noteworthy concerns regarding natural hazard impacts on this school.
	eBridge Montessori School	57 East Main Street	This school is near but not in a locally identified flood zone as well as the FEMA 100-year and 500-year flood zones.
	Knowledge Beginnings	95 East Main Street	This daycare is near but not in the FEMA 100-year and 500-year flood zones.
	Miss Tanya's Woodland School	7 Washington Street	This daycare is near but not in the FEMA 100-year flood zone.
	Next Generation Children's Center	4600 Computer Drive	There are no noteworthy concerns regarding natural hazard impacts on this daycare.
	The Methodist Preschool	120 West Main Street	There are no noteworthy concerns regarding natural hazard impacts on this daycare.
	YMCA Center for Child Development	4 Valente Drive	There are no noteworthy concerns regarding natural hazard impacts on this daycare.
	YWCA of Central Massachusetts	15 Grove Street	There are no noteworthy concerns regarding natural hazard impacts on this daycare.
	Little Reflections at Westborough	800 West Park Drive	There are no noteworthy concerns regarding natural hazard impacts on this daycare.
	Miss Tanya's Longmeadow School	25 Longmeadow Road	This daycare was identified as vulnerable to a locally identified flooding hazard by CMRPC's GIS analysis. It is also located near but not in the FEMA 100-year flood zone.
	Miss Tanya's Nursery School	64 West Main Street	There are no noteworthy concerns regarding natural hazard impacts on this daycare.

Historic Buildings/Sites[25]	According to the Massachusetts Cultural Resources Information System (MACRIS) online database accessed in November 2024, there are 16 Areas, 679 Buildings, 3 Burial Grounds, 4 Objects, and 40 Structures listed for Westborough. 11 of these historic areas, 51 of these buildings, 0 of these burial grounds, 0 of these objects, and 8 of these structures lie within regulated or locally identified flood areas within town. The following historic sites were identified by the Westborough HMP Core Team as critical facilities or infrastructure: the YWCA of Central Massachusetts (formerly the Eli Whitney School), Westborough Town Hall, Westborough Public Library, Regional Emergency Communication Center (formerly the Harvey Elementary School), Forbes Municipal Building (formerly the Forbes Public High School), and Miss Tanya's Nursery School (which is at the Unitarian Universalist Congregational Society of Westborough building).

[25] "Search Results," Mhc-macris.net, Massachusetts Historical Commission, accessed June 21, 2024, https://mhc-macris.net/queryresults.

Employment Centers

Based on data obtained from the Massachusetts Executive Office of Labor and Workforce Development (EOLWD)[26] and the Massachusetts Department of Elementary and Secondary Education[27] as well as the knowledge of local HMP committee members, the largest employers in Westborough are listed in the following table:

Table 8: Employment Centers in Westborough

Company name	Address	Number of Employees	NAICS Code
Integrated Genetics	Computer Dr	1,000-4,999	5413
Coghlin Companies	Otis St	500-999	4236
Eclinicalworks LLC	Technology Dr	500-999	5132
Amazon Robotics	Otis St	250-499	3341
Beaumont Rehabilitation	Lyman St	250-499	6231
Cafe Services	Flanders Rd	250-499	5611
Town of Westborough	West Main St	250-499	9993
Whittier Rehabilitation Hospital	Flanders Rd	250-499	6221
YMCA	Valente Dr	250-499	6241
Aafcpas	Washington St # 1000	100-249	5412
Amazon Same Day Service Center	Otis St	100-249	4599
Booz Allen Hamilton	W Park Dr # 205	100-249	5416
Booz Allen Hamilton	Technology Dr # 8	100-249	5416
Carmax	Turnpike Rd	100-249	4411
CJ Affiliate by Conversant	Technology Dr # 200A	100-249	5416
Clearplan LLC	Turnpike Rd # 225	100-249	5413
Doubletree By Hilton Hotel	Computer Dr	100-249	7211
EL Harvey & Sons Inc	Hopkinton Rd	100-249	5621
Eversource Gas of MA	Technology Dr # 250	100-249	2212
Health Plan Inc	W Park Dr # 330	100-249	5242

[26] "Largest 100 Employers in Westborough," Lmi.dua.eol.mass.gov, Massachusetts Department of Economic Research, accessed July 5, 2024, https://lmi.dua.eol.mass.gov/LMI/LargestEmployersArea/LEAResult?A=05&GA=000518.

[27] "School and District Profiles: Search Results – Westborough," Profiles.doe.mass.edu, Massachusetts Department of Education, accessed October 23, 2024, https://profiles.doe.mass.edu/search/map.aspx?mode=g&county=Worcester&town=441.

Company name	Address	Number of Employees	NAICS Code
Herb Chambers Honda – Westborough	Turnpike Rd # 9	100-249	4411
Inteplast Group	Otis St	100-249	3261
Kopin Corp	North Dr	100-249	3344
Lineage Logistics	Otis St	100-249	5416
Lowe's Home Improvement	Turnpike Rd	100-249	4441
Massachusetts Division of Fish and Wildlife	Rabbit Hill Rd	100-249	1142
Middlesex Savings Bank	Flanders Rd	100-249	5221
New England Copy Specialists	Bellows Rd	100-249	4234
Sotax Corp	Computer Dr # 3	100-249	4239
Stop & Shop Supermarket	Lyman St	100-249	4451
Target	Turnpike Rd	100-249	4551
Transitional Data Services	W Park Dr # 350	100-249	5415
Westborough Behavioral Healthcare Hospital	Friberg Parkway	100-249	6221
Westborough Healthcare	Colonial Dr	100-249	6231
Westborough High School	W Main St	100-249	6111
Zensar Technologies Ltd	Technology Dr # 1	100-249	5415
ZRG Partners Inc	Milk St # 304	100-249	5613

Environmental Justice and Vulnerable Populations

The Massachusetts Executive Office of Energy and Environmental Affairs (EEA) Environmental Justice (EJ) Policy sets the state's definition for Environmental Justice areas. The policy states that EJ populations are groups within the larger populace that EEA has determined to be most at risk of being unaware of or unable to participate in environmental decision-making, to be most at risk of being unable to gain access to state environmental resources, or to be especially vulnerable. The policy also states that EJ areas are defined as U.S. Census Bureau census block groups (which are often the size of neighborhoods) that meet one or more of the following criteria:

- The annual median household income is not more than 65% of the statewide annual median household income (according to American Community Survey 2020 5-year estimate data);
- Minorities comprise 40% or more of the population (according to 2020 US Census data);
- 25% or more of households lack English language proficiency (according to American Community Survey 2020 5-year estimate data); or
- Minorities comprise 25% or more of the population and the annual median household income of the municipality in which the block group is located does not exceed 150% of the statewide annual median household income (according to 2020 US Census data and 2020 5-year estimate American Community Survey data, respectively).

According to the EEA, the following eight block groups in Westborough have been designated as Environmental Justice areas.[28]

- Block group 5 of Census Tract 7423 in the north of downtown Westborough has been identified as an EJ area due to its relatively high minority population. As of the 2020 US Census, the minority population in this block group was 48%.
- Block group 1 of Census Tract 7424.01 in the southeast of town has been identified as an EJ area due to its relatively high minority population. As of the 2020 US Census, the minority population in this block group was 31%.
- Block group 2 of Census Tract 7424.01 in the west of town has been identified as an EJ area due to its relatively high minority population. As of the 2020 US Census, the minority population in this block group was 25%.
- Block group 2 of Census Tract 7424.02 in the northwest of town has been identified as an EJ area due to its relatively high minority population. As of the 2020 US Census, the minority population in this block group was 67%.
- Block group 3 of Census Tract 7424.02 in the northwest of town has been identified as an EJ area due to its relatively high minority population. As of the 2020 US Census, the minority population in this block group was 84%.
- Block group 1 of Census Tract 7612 in the northeast of town has been identified as an EJ area due to its relatively high minority population. As of the 2020 US Census, the minority

[28] "Massachusetts 2020 Environmental Justice Populations," Mass-eoeea.maps.arcgis.com, Massachusetts Executive Office of Energy and Environmental Affairs, November 12, 2022, https://mass-eoeea.maps.arcgis.com/apps/webappviewer/index.html?id=1d6f63e7762a48e5930de84ed4849212; "Environmental Justice Maps Update 2022, Frequently Asked Questions," Mass.gov, Massachusetts Executive Office of Energy and Environmental Affairs, accessed July 5, 2024, https://www.mass.gov/doc/environmental-justice-maps-update-2022-frequently-asked-questions/download.

population in this block group was 47%.

- Block group 2 of Census Tract 7612 in the east of town has been identified as an EJ area due to its relatively high minority population and its relatively low median household income. As of the 2020 US Census, the minority population in this block group was 52%. As of the 2020 American Community Survey 5-year estimates, median household income in this block group is estimated at $53,810, compared to Westborough's town-wide median of $119,299 and Worcester County's median of $77,155.[29]
- Block group 3 of Census Tract 7612 in the north of town has been identified as an EJ area due to its relatively high minority population. As of the 2020 US Census, the minority population in this block group was 28%.

The locations of these EJ areas are shown in Maps 1 and 3 in Appendix A.

It is important for the Town to consider EJ populations and other vulnerable community members in the hazard mitigation planning process. In Westborough, according to the 2020 US Census, 24.7% of the population is under the age of 18 and 15.1% of the population is 65 years and over.[30] According to 2022 ACS 5-year estimate data, approximately 33.8% of the population in town speaks a language other than English at home.[31] According to these same estimates, approximately 4.2% of the population in town speaks Spanish at home, approximately 15.0% of the population in town speaks other Indo-European languages at home, approximately 11.8% of the population in town speaks Asian and Pacific Island languages at home, and approximately 2.8% of the population in town speaks other languages at home;[32] Approximately 7.9% of the population in Westborough has a disability according to this same data.[33] This 2022 ACS 5-year estimate data also shows that people without health insurance account for about 1.2% of Westborough's population[34], about 4.6% of the Town's population is living in poverty[35], and about 5.8% of households in town do not have a personal motor vehicle available.[36]

Outreach to vulnerable community members was a vital part of the public outreach strategy for the Westborough Hazard Mitigation Plan. Paper HMP surveys were available at the town hall, library, and senior center, and CMRPC staff conducted a presentation at a hybrid Select Board meeting in town during the planning process. These measures allowed residents who lack access to reliable Internet service and/or who have difficulty using the Internet to have a chance to complete the survey as well as hear about the planning process. The public presentation for the draft plan was also televised on local cable access TV.

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[29] "B19013: Median household income in the past 12 months (in 2020 inflation-adjusted dollars)," Data.Census.gov, United States Census Bureau, accessed July 5, 2024, https://data.census.gov/table?q=2020%20b19013&g=050XX00US25027_060XX00US2502775015_1500000US250277612002.

[30] "DP1: Profile of General Population and Housing Characteristics," Data.Census.gov.

[31] "S1601: Language Spoken at Home," Data.Census.gov, United States Census Bureau, accessed July 5, 2024, https://data.census.gov/table?q=s1601%20westborough%20town%20ma.

[32] Ibid.

[33] "S1810: Disability Characteristics," Data.Census.gov, United States Census Bureau, accessed July 5, 2024, https://data.census.gov/table?q=s1810%20westborough%20town.

[34] "S2701: Selected Characteristics of Health Insurance Coverage in the United States," Data.Census.gov, United States Census Bureau, accessed July 5, 2024, https://data.census.gov/table?q=s2701%20westborough%20town.

[35] "S1701: Poverty Status in the Past 12 Months," Data.Census.gov.

[36] "DP04: Selected Housing Characteristics," Data.Census.gov.

4.0 HAZARD PROFILES, RISK ASSESSMENT, AND VULNERABILITIES

Sections 4.0-4.13 help meet the following FEMA local mitigation plan requirements:

- *A4. "Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information?" (Requirement 44 CFR § 201.6(b)(3));*
- *B1. "Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events?" (Requirement 44 CFR § 201.6(c)(2)(i);*
- *B2. "Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods?" (Requirement 44 CFR § 201.6(c)(2)(ii));*
- *C1. "Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?" (Requirement 44 CFR § 201.6(c)(3));*
- *C2. "Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?" (Requirement 44 CFR § 201.6(c)(3)(ii));*
- *C4. "Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?" (Requirement 44 CFR § 201.6(c)(3)(ii)); and*
- *E1. "Was the plan revised to reflect changes in development?" (Requirement 44 CFR § 201.6(d)(3))*

The following section of this plan includes a summary of natural hazards that have affected or could affect Westborough in the future. Natural hazards are weather-related, climate-related, or other environmental processes which threaten people's lives as well as property and/or other valuable assets to human society. By examining historical data on natural hazard occurrences, as well as future projections on how climate change will interact with natural hazards, it is possible to approximate the future risk of natural hazards.

Historical documents relating to natural hazard occurrences, discussions with local officials and emergency management personnel, available hazard mapping and databases, and weather-related databases were used to develop the following list of the most significant identified natural hazards which affect Westborough:

- Flooding, including changes in groundwater
- Severe Snowstorms / Ice storms/ Nor'easters
- Hurricanes
- Severe Thunderstorms / Wind / Tornadoes
- Wildfires
- Earthquakes
- Dam failure
- Drought, including changes in groundwater
- Extreme Temperatures
- Invasive Species
- Other hazards

4.1 State-wide Overview of Hazards

4.1.1 Massachusetts State Hazard Mitigation and Climate Adaptation

The state of Massachusetts under Governor Healy's administration has updated the 2018 State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) pursuant to Executive Order 569. The 2023 ResilientMass Plan updates and expands upon the previous SHMCAP and outlines how the state of Massachusetts must prepare strategies to prevent, respond to, and mitigate natural hazards.[37] This plan incorporates climate change adaptation into a state-level hazard mitigation plan. The plan is also the document which makes Massachusetts eligible for federal disaster recovery and hazard mitigation funding. The plan is effective under FEMA from September 12, 2023 to September 13, 2028. The Massachusetts SHMCAP is a useful model for incorporating considerations relating to the effects of climate change into the natural hazard mitigation planning process.

4.1.2 Climate Change Interactions

As part of the SHMCAP planning process, the state of Massachusetts performed a statewide analysis which detailed the effects of climate change on the cities and towns of Massachusetts. This analysis was included in the 2022 Climate Change Assessment, which detailed the impacts of climate change on the Central Region of Massachusetts (which includes 55 cities and towns) along with the other regions of the state. This report refocuses climate change impact assessment away from the specific hazards and towards how the most urgent of those hazards would affect the Region in the following sectors: Human, Infrastructure, Natural Environment, Governance, and Economy. The hazards identified as having the most urgent impacts for Central Massachusetts are **Extremes in Temperature and Precipitation**, with wide fluctuations in both precipitation extremes (including both flooding and droughts) as well as extremes in temperatures (both in extremely hot days becoming more prevalent, as well as extreme lows in temperature) being anticipated to having the greatest future risk to the Central Region across these sectors.

The State plan, while being comprehensive, places different priorities on the impacts of climate change and natural hazards than this Westborough municipal plan. These different priorities are based more on the specificities of local conditions in Westborough rather than any contradictions with the State's analysis, and this local hazard mitigation planning effort was informed by the state planning process.

The following descriptions provide an overview of climate change impacts on the five sectors identified in the 2022 Climate Change Assessment.

- **Human Impacts**: The assessment identified a **Reduction in Food Safety and Security** and **Health and Cognitive Effects** from extreme heat as the most urgent human sector climate change impacts for the Central Region. The reduction in food safety and security is likely to occur at all levels of production and distribution because of both extreme heat and extreme cold causing spoilage, power outages, and extremes in precipitation creating a more unpredictable environment for the growth of produce. According to multiple studies, reductions in crop yields across the state and within the Region are anticipated to occur; research has shown that key commodity crop yields in the Central Region could decline by 12 percent by 2030.[38] These impacts to the regional food supply chain are expected to be

[37] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," Mass.gov, Massachusetts Executive Office of Energy and Environmental Affairs, accessed June 10, 2024, https://www.mass.gov/info-details/2023-resilientmass-plan.

[38] Estimates derived from application of data from the following two sources:

similar to impacts on state and national crop yields and food distribution patterns. While our food supply networks are currently anticipated to be able to withstand these shocks, the increases in food prices which these shocks will cause will correspondingly lead to an increase in food insecurity within the Central Region.

The impacts of extreme temperatures are also projected to have a significant impact on health and cognition within the Central Region, particularly in our more urbanized areas. Currently, three annual premature deaths are attributed to extreme temperature in the Region, but approximately 35 additional premature deaths per year are expected in the Region as a result of climate change by the end of the century,[39] assuming that no new mitigation measures are taken to reduce the threat of temperature extremes. The negative impacts of extreme heat on people's physical and cognitive health can cause declines in learning outcomes, declines in workplace productivity, and increases in the usage of and strain upon emergency rooms dealing with heat related illnesses and injuries.

Additional Human Sector impacts identified in the 2022 Massachusetts Climate Change Assessment include: **Increases in Mental Health Stressors; Increases in Vector Borne Disease Incidence and Bacterial Infections; Damage to Cultural Resources; Health Effects from Aeroallergens and Mold; Emergency Service Response Delays and Evacuation Disruptions; Health Effects of Extreme Storms and Power Outages; and Health Effects from Degraded Air Quality.**

- **Infrastructure Impacts**: The assessment identified the **Loss of Urban Tree Cover** and **Damage to Electric Transmission and Distribution Infrastructure** as the most urgent infrastructure sector climate change impacts for the Central Region. Urban Trees face a broad range of climate impacts and stressors, including increasing extreme weather activity, increasing threats from invasive pests and diseases, and reduced water and soil quality; All of these impacts and stressors correspond to an increased rate of tree mortality and therefore increased urban forest management costs for municipalities. Central Massachusetts has both urban and suburban centers where projected temperature increases make urban tree coverage particularly valuable at reducing the Heat Island Effect. A prime example of a community which could benefit from increased tree coverage is the City of Worcester, which is the state's second most populous city. 75 percent of the City's area falls within state-designated environmental justice block groups, but the City has relatively low canopy coverage and is at disproportionate risk for urban tree loss.[40]

  Across the Central Region, damage to electric transmission and distribution infrastructure is

USEPA, "Multi-Model Framework for Quantitative Sectoral Impacts Analysis: A Technical Report for the Fourth National Climate Assessment," U.S. Environmental Protection Agency, 2017, EPA 430-R-17-001; Robert H. Beach et al., "Climate change impacts on US agriculture and forestry: benefits of global climate stabilization," *Environmental Research Letters* 10, no. 9 (2015). doi:10.1088/1748-9326/10/9/095004.

[39] Estimates derived from application of David Mills et al., "Climate change impacts on extreme temperature mortality in select metropolitan areas in the United States.," *Climatic Change* 131 (2014): 83-95. https://doi.org/10.1007/s10584-014-1154-8.

[40] "2022 Massachusetts Climate Change Assessment," Mass.gov, Massachusetts Executive Office of Energy and Environmental Affairs and Massachusetts Emergency Management Agency, December 2022, https://www.mass.gov/doc/2022-massachusetts-climate-change-assessment-december-2022-volume-iii-regional-reports/download, pages RS36-RS37.

projected to cost orders of magnitude more in the coming decades, with additional annual costs projected to grow to $6 million by 2030; $12 million by 2050; $19 million by 2070; and $28 million by 2090.[41] These costs are anticipated to be caused by the need for repair activities in response to climate-related damages and failures, and they take into account a wide range of climate stressors beyond extremes in temperature and precipitation.

Additional Infrastructure Sector impacts identified in the 2022 Massachusetts Climate Change Assessment include: **Damage to Roads and Loss of Road Service; Reduction in Clean Water Supply; Increased Risk of Dam Overtopping or Failure; Loss of Energy Production and Resources; Damage to Inland Buildings; and Damages to Rails and Loss of Rail/Transit Service.**

- **Natural Environment Impacts**: The assessment identified **Freshwater Ecosystem Degradation** and **Forest Health Degradation** as the most urgent natural environment sector climate change impacts in the Central Region. Increased nutrient load and harmful algal bloom growth in freshwater ecosystems from increased precipitation runoff as well as increased concentrations of contaminants in these ecosystems under drought conditions are both exacerbated by climate extremes. In addition, shifts in habitat caused by increased average air and water temperatures especially threaten the cold-water habitats and fisheries of the Central Region.

  The effect of climate change on the Region's forests is harder to predict, but the potential for significant forest ecosystem loss in the Region caused by climate change cannot be understated. Statewide, a third of tree species are classified by the U.S. Forest Service as having low capacity for adapting to projected climate change, and an increased frequency of extreme events poses an additional threat to forests in the Central Region.[42]

  Additional Natural Environment Sector impacts identified in the 2022 Massachusetts Climate Change Assessment include: **Shifting Distribution of Native and Invasive Species and Soil Erosion.**

- **Governance Impacts**: As is true for other parts of the state, the assessment identified **Increase in Costs of Responding to Climate Migration**; an **Increase in Demand for State and Municipal Government Services**; and a **Reduction in State and Municipal Revenues** caused by climate change as the most urgent governance sector climate change impacts in the Central Region. Climate Migration, whether forced or voluntary, is already being felt by Massachusetts communities; it has been identified by the state as an impact which causes

[41] Estimates derived from application of Charles Fant et al., "Climate change impacts and costs to U.S. electricity transmission and distribution infrastructure," *Energy*, 195 (2020). https://doi.org/10.1016/j.energy.2020.116899.
[42] Estimates derived from application of US Forest Service Tree Atlas for Massachusetts.
Northern Research Station Landscape Change Research Group: Iverson, Peters, Prasad, Matthews. "Massachusetts - Climate Change Atlas Tree Species: Current and Potential Future Habitat, Capability, and Migration," Fs.usda.gov, United States Department of Agriculture Forest Service, September 2022, https://www.fs.usda.gov/nrs/atlas/combined/resources/summaries/states/Massachusetts.pdf; "Climate Change Atlas," Fs.usda.gov, United States Department of Agriculture Forest Service, accessed June 10, 2024, https://www.fs.usda.gov/nrs/atlas/combined/resources/summaries/states.

major consequences and will be the most difficult climate change impact to adapt to in the Central Region. Urban centers, particularly in and around Worcester, as well as towns serviced by state and regional transit services, are likely to become receiving zones for climate migration based on the relative assessment of climate hazards nationwide. The new influx of population caused by climate migration is expected to increase demand for government services. The need to increase government expenditures to maintain the current level of service for the existing population in addition to climate migrants and refugees is expected to be a significant stressor for local governments. Increased needs for MassHealth, food security support, and emergency services are expected in the Central Region due to population growth caused by climate migration in addition to other climate change impacts.

Many climate change impacts are expected to be concentrated in low-income areas. Existing inequalities in the Region may become exacerbated if steps are not taken to prepare for these impacts, as an influx of climate migrants and refugees may increase demand for and place strain on public services.

An increase in natural hazard impacts due to climate change is expected to increase disruptions to State and municipal revenue generation in the Region; these disruptions may include property tax and sales tax losses caused by interruptions to business and the economy.

Additional Governance Sector impacts identified in the 2022 Massachusetts Climate Change Assessment include: **an Increased Need for State and Municipal Policy Review and Adaptation Coordination and Damage to Inland State and Municipal Buildings.**

- **Economic Impacts**: The assessment identified a **Reduced Ability to Work** and a **Decrease in Agricultural Productivity** caused by climate change as the most urgent economic sector climate change impacts in the Central Region. Both of these impacts relate to an increase in dangerous temperature extremes causing to a decrease in workers' abilities to work; these impacts also relate to other natural hazards affecting workers' abilities to get to the job safely and increases in illnesses among workers caused by primary or secondary effects of natural hazards and climate change. Workers in the Region in high-risk industries (those exposed to outdoor conditions) are projected to lose 31 hours of work per worker per year by 2050 and 128 hours of work per worker per year by 2090; these projected losses in work hours by the end of the century are the highest in the Commonwealth.[43]

  While the agricultural sector is a small part in the Central Region's economy, the impacts to this sector of the economy through climate change-induced lower crop yields have the potential to severely disrupt the local economy and regional food systems. Key commodity crop yields in the Central Region could decline by 12 percent by 2030 and by 14 percent by 2070; these declines in key commodity crop yields carry potentially disproportionate impacts on the local economies that rely on agricultural production and the individual farm

[43] Estimates derived from application of Matthew Neidell et al., "Temperature and work: Time allocated to work under varying climate and labor market conditions," *PloS One*, 16, no. 8 (2021), https://doi.org/10.1371/journal.pone.0254224.

workers and employers who work in this sector.[44]

Additionally, though not identified as the one of the most urgent economic sector climate change impacts in the Central Region in the state's assessment, the expected **Reduction in Availability of Affordably Priced Housing** has become a more prevalent issue since the assessment was released. As affordable properties are typically situated in more hazard-prone areas, climate change-induced natural hazard impacts may lead to a decrease in the supply of affordable housing over time. Also, as increases in demand for housing continue in the Region due to a disproportionate economic impact on working families from climate change-induced natural hazard, the overall resiliency of the Region to shocks will also decrease.

Additional Economic Sector impacts identified in the 2022 Massachusetts Climate Change Assessment include: **Damage to Tourist Attractions and Recreation Amenities and Economic Losses from Commercial Structure Damage and Business Interruptions.**

During the local Hazard Mitigation Planning process, the local HMP planning team in Westborough noted that their chief concerns related to the natural hazard impacts of climate change are extremes in precipitation in the form of rain or snow; these concerns are in concurrence with the state assessment.

4.1.3 Previous Federally Declared Disasters and Massachusetts State of Emergency Declarations in Worcester County

From 2017 to the present, the following Federally Declared Disasters and Massachusetts State of Emergency Declarations have occurred in Worcester County:

Table 9: Previous Federally Declared Disasters and Massachusetts State of Emergency Declarations in Worcester County[45]

Disaster Declaration	Disaster Type	Incident Period	Declaration Date
Massachusetts Severe Storms and Flooding (DR-4780-MA)	Flooding	September 11, 2023 - September 13, 2023	May 15, 2024
Massachusetts Hurricane Lee (EM-3599-MA)	Hurricane	September 15, 2023 - September 17, 2023	September 15, 2023
Shelter Capacity Crisis	Not a Natural Hazard	August 8, 2023 - Present	August 8, 2023

[44] Estimates derived from application of USEPA (2017) and Beach et al. (2015)

[45] "Disaster Declarations for States and Counties," FEMA.gov, Federal Emergency Management Agency, accessed September 16, 2024, https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties; "State of Emergency Information," Mass.gov, Massachusetts Emergency Management Agency, accessed December 12, 2024, https://www.mass.gov/info-details/state-of-emergency-information.

Massachusetts Covid-19 Pandemic (DR-4496-MA)	Pandemic	January 20, 2020 - May 11, 2023	March 27, 2020
Massachusetts Severe Winter Storm and Snowstorm (DR-4379-MA)	Snow	March 13, 2018 - March 14, 2018	July 19, 2018

All of the disaster occurrences described in the above table were both Federal Disaster Declarations and Massachusetts State of Emergency Declarations with the exception of the Shelter Capacity Crisis, which is a Massachusetts State of Emergency Declaration but not a Federal Disaster Declaration, and the March 13th-14th, 2018 Severe Winter Storm and Snowstorm, which was a Federal Disaster Declaration but not a Massachusetts State of Emergency Declaration.

The majority of these disaster occurrences directly relate to the natural hazard concerns of towns within Worcester County; flooding from rain events and other extremes in precipitation (such as snowfall events) are the chief concerns of residents and local hazard mitigation planners alike in the Region.

4.2 Natural Hazard Identification and Analysis

This section of the plan examines the hazards in the Massachusetts SHMCAP which are identified as likely to affect Westborough. This analysis is organized into the following sections: Hazard Description, Location, Extent, Previous Occurrences, Probability of Future Events, Impact, Exposure, Potential Climate Change Effects, Vulnerability, and Mitigation Strategies. A description of each of these sections of the analysis and the risk assessment summary table which includes each hazard identified are provided below.

4.2.1 Hazard Description

The natural hazards identified for Westborough are:

- Flooding, including changes in groundwater,
- Severe Snowstorms / Ice Storms / Nor'easters,
- Hurricanes,
- Severe Thunderstorms / Wind / Tornadoes,
- Wildfire,
- Earthquakes,
- Dam Failure,
- Drought, including changes in groundwater,
- Extreme Temperatures, and
- Invasive Species.

Many of these hazards result in similar impacts to a community. For example, hurricanes, tornadoes and severe snowstorms all may cause wind-related damage.

4.2.2 Location

Location refers to the geographic areas within the planning area that are affected by the hazard. Some hazards affect the entire planning area universally, while others apply to a specific portion of the planning area, such as a floodplain or area that is susceptible to wildfires. Location classifications (large, medium, or small) are based on the area that would potentially be affected by the hazard, on the following scale:

Table 10: Percentage of Town Impacted by Natural Hazard

Land Area Affected by Occurrence	Percentage of Town Impacted
Large	More than 50% of the town affected
Medium	10 to 50% of the town affected
Small	Less than 10% of the town affected

4.2.3 Extent

Extent describes the strength or magnitude of a hazard. Where appropriate, extent is described using an established scientific scale or measurement system. Other descriptions of extent include

water depth, wind speed, and duration.

4.2.4 Previous Occurrences

Previous hazard events that have occurred are described in this section. Depending on the nature of the hazard, events listed may have occurred on a local, state-wide, or regional level.

4.2.5 Probability of Future Events

The likelihood of future events occurring in the planning area for each natural hazard was classified according to the following scale:

Table 11: Frequency of Occurrence and Annual Probability of Given Natural Hazard

Frequency of Occurrence	Probability of Future Events
Very High	70-100% probability in the next year
High	40-70% probability in the next year
Moderate	10-40% probability in the next year
Low	1-10% probability in the next year
Very Low	Less than 1% probability in the next year

4.2.6 Impact

Impact refers to the effect that a hazard may have on people and property in a planning area, based on the assessment of the extent and the severity of the hazard. Impacts are classified according to the following scale:

Table 12: Impacts, Magnitude of Multiple Impacts of Given Natural Hazard

Impacts	Magnitude of Multiple Impacts
Catastrophic	Multiple deaths and injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of facilities for 30 days or more.
Critical	Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.
Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.
Minor	Very few injuries, if any. Only minor property damage and minimal disruption to quality of life. Temporary shutdown of facilities.

4.2.7 Exposure

Certain features of a community's infrastructure, society, and environment may face more of, or may be disproportionately impacted by, natural hazards; these features therefore can be described as experiencing increased exposure to natural hazards. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3.

4.2.8 Potential Climate Change Effects

Each natural hazard is influenced by one or more of the climate change interactions listed in Section 4.1.2 Climate Change Interactions. Climate change interactions can modify the location, extent, and/or probability of future events depending on the hazard. The hazard risk assessment table in section 4.2.11 of this plan lists climate change interactions as described by the 2023 ResilientMass Plan.

4.2.9 Vulnerability

Based on the above metrics, a hazard index rating was determined for each hazard. The hazard index ratings are based on a scale of 1 through 5 as follows:

1 – Highest risk

2 – High risk

3 – Medium risk

4 – Low risk

5 – Lowest risk

This ranking is qualitative and is based, in part, on the local HMP planning team's knowledge of past experiences with each hazard. The size and impacts of a natural hazard can be unpredictable; However, many of the mitigation strategies currently in place and many of those proposed for implementation in Westborough can be applied to expected natural hazards, regardless of their unpredictability.

4.2.10 Mitigation Strategies

Based on meetings with the local planning team, a selection of mitigation strategies that address the specific hazard is included at the end of each hazard analysis section.

4.2.11 Risk Assessment

Table 13: Hazard Risk Assessment for Each Natural Hazard in Westborough

Type of Hazard	Location of Occurrence	Probability of Future Events	Impact	Potential Climate Change Effects	Hazard Risk Index Rating
Flooding, including changes in groundwater	Small	High	Minor	Increase extent; increase probability	2
Severe Snowstorms / Ice Storms/ Nor'easters	Large	Very High	Minor	Increase extent	3
Hurricanes	Large	Low	Minor	Increase extent; increase probability	4
Severe Thunderstorms / Wind	Small	Moderate	Minor for severe thunderstorms; Limited for severe wind	Unclear	2
Tornadoes	Small	Very Low	Limited	Unclear	3

Type of Hazard	Location of Occurrence	Probability of Future Events	Impact	Potential Climate Change Effects	Hazard Risk Index Rating
Wildfire	Small	Moderate	Minor	Increase extent; increase probability	3
Earthquakes	Large	Very Low	Minor	None	5
Dam Failure	Small	Very Low	Limited	Indirect effects related to flooding	4
Drought, including changes in groundwater	Large	Low	Minor	Increase extent; increase probability	3
Extreme Temperatures	Large	Moderate	Limited	Increase in average temperature; increase in probability of extreme heat	3
Invasive Species	Large	Very High	Critical	Increase in range and severity of invasive species	3

Source: based on Massachusetts Resilient Mass Plan 2023; [46] modified to reflect conditions in Westborough.

[46] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

4.2.12 Natural Hazard Impacts from Changes in Future Conditions

The following table summarizes how changes in future conditions, including changes in population, changes in land use and development, and climate change could potentially change natural hazard impacts on people and vulnerable community assets in Westborough.

Table 14: Natural Hazard Impacts from Changes in Future Conditions

Type of Hazard	Impacts from Changes in Population	Impacts from Changes in Land Use and Development	Impacts from Climate Change
Flooding, Including Changes in Groundwater	The Whittier Rehabilitation Center, the New England Center for Autism, Westborough Healthcare, Highlands Gracious Living, the Westborough Housing Authority (special needs) at 83 East Main Street, Park Village, Westborough High School, the Hastings Elementary School ballfields, and Miss Tanya's Longmeadow School have been identified as vulnerable to flooding, including flooding caused by changes in groundwater, by CMRPC's GIS analysis or are very close to flooding hazard areas; if more people from vulnerable populations live in and/or frequent these critical infrastructure sites in the case that the Town ages and continues to grow, the Town would be at higher risk in the case of flooding, including flooding caused by changes in groundwater, occurring.	If commercial and industrial development continues to be built in town and/or the pace of residential development in town increases from its currently low level, the Town will face increased flooding risk (and therefore increased risk from hurricanes and severe thunderstorms) if these developments are built near the 100-year, 500-year, and locally identified flooding hazard areas and/or have large amounts of impervious surface.	The Town may no longer be able to safely develop in areas of town that experience frequent flooding, including flooding caused by changes in groundwater, so the Town may need to change its zoning bylaw to emphasize stormwater resilience. New areas of town may be subject to severe and/or frequent flooding. Dams in town may face more pressure from flooding, including flooding caused by changes in groundwater.
Severe Snowstorms / Ice Storms / Nor'easters	There are no anticipated impacts from changes in population on the impacts of severe snowstorms, ice storms, and nor'easters in Westborough.	If developments with flat roofs are built in town in the future, the Town will face increased snow and ice load risk.	An increase in wintertime rains may lead to more frequent occurrences of hazardous roadway conditions. Snow and ice storms will become less frequent but will become more severe when they occur; this may lead to a need for more sheltering infrastructure in town.

Type of Hazard	Impacts from Changes in Population	Impacts from Changes in Land Use and Development	Impacts from Climate Change
Hurricanes	The critical infrastructure sites described above that were identified as vulnerable to flooding by CMRPC's GIS analysis would likely be at risk in the case of hurricanes occurring in town; if more people from vulnerable populations live in and/or frequent these critical infrastructure sites in the case that the Town ages and continues to grow, the Town would be at higher risk in the case of hurricanes occurring.	If most developments in town continue to not be built to Zone 1 Design Wind Speed Codes, the Town will continue to face increased risk from hurricanes.	More intense hurricanes may lead to the need to increase stormwater resilience measures in the Town's zoning bylaw and the need for more sheltering infrastructure in town.
Severe Thunderstorms / Wind	The critical infrastructure sites described above that were identified as vulnerable to flooding by CMRPC's GIS analysis would likely be at risk in the case of severe thunderstorms / wind occurring in town; if more people from vulnerable populations live in and/or frequent these critical infrastructure sites in the case that the Town ages and continues to grow, the Town would be at higher risk in the case of severe thunderstorms / wind occurring.	If most developments in town continue to not be built to Zone 1 Design Wind Speed Codes, the Town will continue to face increased risk from severe thunderstorms and wind.	More intense severe thunderstorm and wind events may lead to the need to increase stormwater resilience measures in the Town's zoning bylaw and the need for more sheltering infrastructure in town.
Tornadoes	There are no anticipated impacts from changes in population on the impacts of tornadoes in Westborough.	If most developments in town continue to not be built to Zone 1 Design Wind Speed Codes, the Town will continue to face increased risk from tornadoes.	More research needs to be conducted on the anticipated climate change impacts of tornadoes in Westborough, but some studies indicate that the number of days with tornadoes will decrease but the number of tornadoes on these days will increase.[47]

[47] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," page 5.1-56.

Type of Hazard	Impacts from Changes in Population	Impacts from Changes in Land Use and Development	Impacts from Climate Change
Wildfire	There are no anticipated impacts from changes in population on the impacts of wildfires in Westborough.	If commercial and industrial development continues to be built in town and/or the pace of residential development in town increases from its currently low level, the Town will face increased wildfire risk if these developments are built near the densely forested areas of the wildland-urban interface.	The Town may no longer be able to safely develop near densely forested areas in the wildland-urban interface. The Town may have less access to water to fight wildfires due to the increased prevalence of drought. Wildfire-related air quality risks may become more prevalent in town.
Earthquakes	There are no anticipated impacts from changes in population on the impacts of earthquakes in Westborough.	If many developments in town continue to not be built to the Massachusetts State Building Code's seismic standards, the Town may continue to face increased risk from earthquakes.	There are no anticipated climate change impacts on earthquakes in Northborough.
Dam Failure	The New England Center for Autism has been identified as vulnerable to potential dam failure by CMRPC's GIS analysis; if more people from vulnerable populations live in and/or frequent this critical infrastructure site in the case that the Town continues to grow, the Town would be at higher risk in the case of dam failure occurring.	If new developments in town are built in the potential inundation zones of dams, the Town will face increased risks from potential dam failure.	Dams in town may face more pressure from flooding, and therefore will face a higher risk of overtopping.
Drought, Including Changes in Groundwater	There are no anticipated impacts from changes in population on the impacts of drought, including drought-induced changes in groundwater, in Westborough.	If commercial and industrial development is built in and/or the pace of residential development in town increases from its currently low level in areas of town not served by the public reservoir-fed water system, the Town will face increased risk from wells drying out due to lower groundwater levels caused by drought.	Land in Westborough may become harder or impossible to farm due to more frequent and severe drought which causes groundwater levels to lower. The Town may see an increase in population, with people from parts of the country facing more severe drought impacts (such as more severely low groundwater levels) moving to the northeast.

Type of Hazard	Impacts from Changes in Population	Impacts from Changes in Land Use and Development	Impacts from Climate Change
Extreme Temperatures	If the Town's population ages, the Town will face increased risk from extreme temperatures, as older adults are more vulnerable to extremely hot and cold conditions.	If the Town does not sufficiently prioritize artificial and/or passive/natural heating and cooling measures, both inside and outside, as the Town's development pattern changes in the future, the Town will face increased risk from extreme temperatures.	Growing seasons, ecosystem types, and migratory patterns in Westborough will shift, and farmers and wildlife may be forced to adapt. More intense extreme heat events will lead to a need for more sheltering infrastructure in town, and residents and businesses in town may need to alter work patterns due to more frequent and severe extreme heat events. Westborough may see an increase in population, with people from parts of the country facing more severe extreme heat impacts moving to the northeast.
Invasive Species	There are no anticipated impacts from changes in population on the impacts of invasive species in Westborough.	If the Town does not sufficiently prioritize the control of invasive species when new developments and changes in land use encroach on wild areas, the Town will face increased risk from invasive species.	Changing climatic conditions, including warming temperatures, may assist invasive species in outcompeting native species in town. Invasive species may take advantage of climatic shocks and disturbances and may be more easily able to damage agricultural crops. Invasive vegetation species may be more easily able to build up as fuel that can increase the Town's wildfire risk.

Westborough has grown steadily in population in recent decades. The Town has a high population of pre-retirement age of older adults between 30 and 64 years old, with the Town's largest five-year age cohort being older adults between 35 and 39 years old. The Town also has a high population of school-aged children and young adults between 10 and 19 years old, with the Town's largest five-year age cohort of people under 40 years old being between 10 and 14 years old. [48] If many older adults continue to live in town after they retire, the Town's number of retirement-age residents facing increased vulnerability to natural hazard impacts will rise. If a greater number of families with school-aged children choose to live in town in the future, the Town's number of young residents facing increased vulnerability to natural hazards will rise. If the proportion of new construction built in vulnerable areas in town remains the same, the Town's vulnerability to natural hazards will slightly increase over time if the population continues to increase.

[48] "Westborough," Cmrpc.org

4.3 Flooding, Including Changes in Groundwater

The local HMP planning team identified flooding, including flooding caused by changes in groundwater, as one of the most prevalent natural hazards in Westborough. Flooding is generally caused by hurricanes, nor'easters, severe rainstorms, and thunderstorms. Global climate change has the potential to exacerbate the hazards which cause flooding over time by leading to more severe and frequent storm and rainfall events. There are several different types of flood hazards – from stormwater inundation and poor drainage infrastructure to riverine flooding and storm surges to raised groundwater levels during storms to dam failures. Riverine and stormwater flooding both occur in Westborough, though stormwater flooding is more common. Riverine flooding occurs when the surge of water comes from the top of streams, ponds, and rivers. Stormwater flooding occurs when the amount of precipitation in a storm is greater than the volume that the stormwater management system can handle.

Location

Flooding and flood-prone areas in Westborough, including areas prone to flooding caused by changes in groundwater, are closely associated with the 100-year flood areas identified by FEMA. According to a GIS analysis performed by CMRPC, there are 907 parcels in Westborough that are susceptible to 100-year floods, with 584 of them containing structures. Building footprints that overlap with flood zones may be impacted by flooding, especially if residents and building owners do not act to mitigate their personal flood risk. While there is some upland terrain in the northern and southwestern parts of town, much of Westborough is low-lying; low-lying areas in Westborough include large wetlands which cover almost 685 acres, or 5% of town. Westborough's affected area from this hazard, or its location, is considered "small" (less than 10% of the Town). Map 2 in Appendix A illustrates the FEMA FIRM 100-year flood zones in town, as well as locally identified flooding areas. See below for discussion of previous flood occurrences and their locations. Map 2 in Appendix A illustrates the FEMA FIRM 100-year / 1% flood zones in town, as well as locally identified flooding areas.

FEMA Flood zones

FEMA creates and manages Flood Insurance Rate Maps (FIRMs) that identify local Special Flood Hazard Areas (SFHAs). These SFHAs are locations that will be inundated by a flood event with a 1% or greater chance of occurring in any year. These areas are also referred to as the base flood, or 100-year / 1% flood zone. These areas are considered at high risk of flooding and have around a 1 in 4 chance of flooding during a 30-year mortgage.

FEMA FIRMs also identify areas with a "moderate" flood risk, defined as locations outside of the 100-year / 1% flood zone that will be inundated by a flood event with between a 1% and a .2% chance of occurring in any year. These areas are also known as the 500-year / 0.2% flood zone.

The 2023 Worcester County Flood Insurance Study from FEMA lists the following flooding sources which impact Westborough:

- The Assabet River (lower and upper reaches, flood zone AE),
- Denny Brook and Denny Brook Tributary 1 (flood zone AE),
- Jackstraw Brook (flood zone AE),
- Piccadilly Brook (flood zone AE),
- Rutters Brook, Rutters Brook Tributary 1, and Rutters Brook Tributary 1.1 (flood zone AE),

- The Sudbury River (flood zone AE),
- Sullivan Brook (flood zone AE), and
- Zone A Flooding Sources of the Concord River Watershed.

The 2023 Worcester County FIS also notes that causes of severe flooding in the county include hurricanes, melting snow in combination with rain in the spring, heavy thunderstorms and resulting rapid downstream runoff, ice jams, and the accumulation of debris at bridges. In addition, the study notes that flooding can occur in any season in the county, but that major flooding is less common in the summer than in other seasons.[49]

As of September 2022, the Town of Westborough has no repetitive loss structures as defined by FEMA's NFIP. As defined by the NFIP, a repetitive loss property is any property which the NFIP has paid two or more flood claims of $1,000 or more for in any given 10-year period since 1978. For more information on repetitive losses see https://www.fema.gov/repetitive-flood-claims-grant-program-fact-sheet. The Town of Westborough has 20 NFIP policy holders in town, and the NFIP insures up to $6,986,000.00 of property in the Town. NFIP has paid out 10 claims, totaling $30,890.15, in total to policy holders in Westborough; there has been one substantial damage claim in town since 1978.[50]

EXTENT

The average annual precipitation for the closest weather station to Westborough (which is located at the Worcester Regional Airport) has been 53.64 inches for the period from 2017 to 2023.[51] Water levels in Westborough's rivers, streams, groundwater sources, and wetlands rise and fall seasonally and rise during high rainfall events. High water levels in town are typical in spring due to snowmelt and ground thaw; This is the period when flood hazards are normally expected. Low water levels occur in summer due to high evaporation and plant uptake (transpiration). Monthly precipitation levels in town are highly variable, but for the period between 2017 and 2024, Westborough received on average the most precipitation in the months of July, September, October, and December; July was also uncharacteristically rainy in 2021 and 2023, in a deviation from expected norms. At any time, heavy rainfall may create conditions that raise water levels in rivers and streams above bank full stage; this results in overflow which floods adjacent lands.

More severe flooding occurrences in town will lead to more impactful changes in the levels and quality of groundwater. The United States Geological Survey National Groundwater Conditions web application measures groundwater levels by monthly percentiles as compared to historic levels at each particular site.[52] In Massachusetts, the quality of drinking water, including from groundwater sources, is assessed by measuring maximum containment levels (MMCLs) from a number of inorganic

[49] Federal Emergency Management Agency, "Flood Insurance Study: Worcester County, Massachusetts (All Jurisdictions)," Map1.msc.fema.gov., FEMA Flood Map Service Center, accessed August 21, 2024, https://map1.msc.fema.gov/mipdata/25027CV001C.pdf?LOC=2cdcfcb8d29a9ba73c75a69614806808.

[50] "Community Overview: Westborough, Town of," NFIP Community Information System, accessed July 2, 2024.

[51] The calculation of this average does not incorporate data from the year 2021, as precipitation data for January 2021 is missing for this station.
"Monthly Total Precipitation for Worcester Area, MA (ThreadEx)," Weather.gov, National Oceanic and Atmospheric Association National Weather Service, accessed October 30, 2024, https://www.weather.gov/wrh/Climate?wfo=box.

[52] Lee Stanish, "Introducing the National Groundwater Conditions web application," Waterdata.usgs.gov, United States Geological Survey, accessed April 7, 2025, https://waterdata.usgs.gov/blog/groundwater-levels-app/.

and organic chemical, radionuclide, and biological contaminants.[53] Shallow flooding caused by changes in groundwater system is measured with the same classification systems as other types of flooding.

Based on past records and the knowledge and experience of members of the Westborough Hazard Mitigation Planning Team as well as town residents, the extent of the impact of localized flooding would be "minor" in town.

Previous Occurrences

In addition to the floodplains mapped by FEMA for the 100-year / 1% and 500-year / .2% annual chance floods, Westborough periodically experiences minor flooding at isolated locations due to drainage problems or problem culverts. Town staff have reported that flooding events are becoming more frequent in recent years. The following specific flooding locations (mapped in Appendix A) were identified by the Westborough Hazard Mitigation Planning Team:

- Charles Street by Westborough High School
- The MBTA Commuter Rail Line (which passes through Cedar Swamp)
- Flanders Road
- East Main Street
- Milk Street
- Chauncey Street and Chauncey Circle
- Church Street and West main Street
- Harvey Lane
- Longmeadow Road
- Hundreds Road
- Research Drive

Most of the flood hazard areas listed here were identified due to known past occurrences in the respective areas. The reservoirs connecting to Cedar Swamp in particular were noted by the local HMP planning team in town as having experienced higher water levels and overload during the summer of 2023 because of short in duration, high intensity rainfall events. There are other areas of town with no record of previous flood incidents that could be affected in the future by heavy rain and runoff. Additionally, some areas in town have experienced erosion and stormwater drainage failures. It is important to note that many of these areas are near or along evacuation routes and cause concern in cases of evacuation from affected parts of town.

In the past 10 years, there have been a number of major flooding events that have occurred in and around Westborough;[54] major events near and/or in town described as part of the National

[53] "Drinking Water Standards and Guidelines," Mass.gov, the Massachusetts Department of Environmental Protection, accessed April 7, 2025, https://www.mass.gov/guides/drinking-water-standards-and-guidelines.

[54] "Storm Events Database Search Results for Worcester County, Massachusetts," NCDC.NOAA.gov, National Oceanic and Atmospheric Administration National Centers for Environmental Information, accessed September 17, 2024, https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Flash+Flood&eventType=%28Z%29+Flood&eventType=%28C%29+Heavy+Rain&beginDate_mm=11&beginDate_dd=01&beginDate_yyyy=2000&endD

Oceanic and Atmospheric Administration (NOAA)'s National Centers for Environmental Information (NCEI) database are listed below:

- 8/15/2015 – Flood: A weak cold front moving through southern New England brought showers and thunderstorms to the region. These storms produced hail and damaging winds as well as some poor drainage street flooding.
- 7/22/2016 – Flood: A cold front moved through southern New England and when coupled with the existing heat and humidity, resulted in showers and thunderstorms developing over much of the area late in the day and continuing into the evening and overnight hours. Minor street flooding occurred on Route 135 in Westborough.
- 10/21/2016 – Flash Flood: Low pressure tracking toward southern New England tapped into a plume of tropical moisture and produced torrential rainfall over parts of central and northeast Massachusetts in the matter of a few hours. This resulted in prolific urban flash flooding in the greater Worcester area and significant urban flooding in greater Boston. The highest single rainfall total from this event was within the City of Worcester, where a Skywarn Spotter reported 5.24 inches of rainfall.
- 6/27/2017 – Flood: A disturbance at mid-levels in the atmosphere moved from the Great Lakes across New England during the afternoon and evening. This along with daytime heating through partly sunny skies allowed afternoon and evening thunderstorms to develop.
- 10/24/2017 – Flood: Low pressure moved north through the Great Lakes. This swung a cold front slowly east into Southern New England on October 25. The front stalled over the region during the 25th before moving off to the east on the 26th. Strong low level winds brought a flow of tropical moisture ahead of the front. The strong winds aloft were brought to the surface in damaging wind gusts, with speeds reaching 45 to 55 mph. The tropical moisture was converted to heavy downpours, with storm rainfall totals ranging from 2 inches to 6 1/2 inches. This brought widespread urban and poor drainage flooding. State Route 9 at Saybrook Road in Shrewsbury was flooded.
- 7/17/2018 – Flash Flood: A cold front moved east from the Great Lakes, crossing Massachusetts during the night of the 17th. The thunderstorms brought strong wind gusts and wind damage during the afternoon and evening. Thunderstorms also brought downpours in Western, Central, and Northeast Massachusetts. Two to four inches of rain fell from Westfield through Worcester to Boston.
- 8/11/2018 – Flood: A cold front stalled over Southern New England on the 11th. Low pressure from the Midwest then moved slowly east along the front. The weather system drew upon warm and very humid air to create showers with local downpours, resulting in rainfall amounts of two to five inches in Northern Massachusetts on August 11th and 12th. An exceptionally powerful downpour left 8.15 inches in the city of Lynn.
- 8/23/2020 – Flash Flood: Diurnally driven thunderstorms brought wind damage, hail, and

ate_mm=11&endDate_dd=30&endDate_yyyy=2023&county=WORCESTER%3A27&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=25%2CMASSACHUSETTS.

some flooding to mainly western and central Massachusetts.

- 9/11/2023 – Flash Flood: A deamplifying mid level shortwave with dewpoints in the 70s and decent instability brought scattered thunderstorms and widespread flash flooding to Massachusetts and Rhode Island. There were many streets closed, many cars stranded in flood waters, and several houses with flooded basements or first floors.

Additionally, the local HMP planning team in Westborough noted that the following major flooding events have also affected town:

- 7/25/2023 – Flash Flood: sections of roads were closed down at 3 PM throughout town due to 3-5 inches of rainwater flooding.
- 9/8/2023 – Flash Flood: more sections of roadway in townwere closed due to flash flooding.

In addition, minor flooding related to changes in groundwater was identified as affecting the Town, as basement flooding has been experienced by town residents who responded to the survey. The 2023 ResilientMass Plan describes how flooding resulting from changes in groundwater can impact communities in Massachusetts.[55]

Probability of Future Events

Based upon previous data, there is a "high" probability (40% to 70% chance) of localized flooding, including flooding caused by changes in groundwater, occurring in Westborough in the next year. This represents a slight increase over the last plan due to increased precipitation driven by climate change.

Impact

The Town faces a minor impact from flooding, including flooding caused by changes in groundwater, with less than 10% of properties in the affected area of town likely to be damaged or destroyed by a 100-year / 1% annual chance flooding event. Based on the HAZUS analysis described below, a flood in Westborough is unlikely to destroy any buildings, but a 500-year / .2% annual chance flood event could displace residents and come with a significant economic cost.

Utilizing the GIS analysis noted in the location section above, the total building value of the 548 parcels with structures that are susceptible to a 100-year / 1% annual chance flood event in town is approximately $832,605,600.00. This approximates the property value at risk of flooding, not the estimated financial impact of a major flood event.

HAZUS-MH (multiple-hazards) is a computer program developed by FEMA to estimate losses due to a variety of natural hazards. The HAZUS software was used to model potential damage to the community from a 500-year / .2% annual chance flood event, assuming a 1 square mile data resolution.

[55] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," pages 5.1-34-5.1-35.

Table 15: HAZUS Potential Damages to Westborough from .2% Annual Chance Flood Event

	.2% annual chance flood event
Building Characteristics	
Estimated total number of buildings in Westborough	5,523
Estimated total building replacement value (2024 $)	$ 5,877,511,000.00
Building Damages	
# of buildings sustaining minor damage (1-10%)	0
# of buildings sustaining moderate damage (11-40%)	0
# of buildings sustaining severe damage (41-50%)	0
# of buildings destroyed	0
Population Needs	
# of households displaced	18
# of people seeking public shelter	24
Value of Damages	
Total property damage (buildings and content)	$ 1,580,000.00
Total losses due to business interruption	$ 5,650,000.00
Total Economic loss	**$7,220,000.00**

Though there are no recorded instances of a flood event of this size in Westborough, this model was included in order to present a reasonable "worst case scenario" that would help planners and emergency personnel evaluate the impacts of flooding that might be more likely in the future as we enter into a period of more intense and frequent storms. For more information on the HAZUS-MH software, go to http://www.fema.gov/hazus-software.

EXPOSURE

Certain features within Westborough's infrastructure, society, and environment may face more exposure to flooding (including flooding caused by changes in groundwater), or be disproportionately impacted by it, relative to the rest of the community. Some of these features are documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- Low-lying areas, including but not limited to the FEMA 1% and .2% annual chance flood zones.
- Specific locations with undersized or outdated storm water infrastructure that cannot handle sudden surges in precipitation.
- Residents who may have trouble evacuating from their residence due to age, health concerns, or lack of a vehicle.

- Flood-prone municipal buildings and critical infrastructure.
- that are subject to flooding and potential contamination from flood waters.
- Septic systems, especially in flood prone areas or locations with high water tables.
- Aquatic ecosystems, which may suffer from erosion, eutrophication, or sedimentation due to stormwater.
- The municipal financial burden of infrastructure maintenance and upgrades meant to address flooding.
- Highway department staff, who sometimes must unclog storm drains during extreme weather events. Due to limited staffing, highway department employees often have to go out alone, making safety a concern.
- Sides of roadways, which may be erode due to excessive rainfall. Lack of funding to make road repairs may compound this issue.

The local HMP planning team in Westborough noted in particular that the Town's current culvert infrastructure has fallen behind in keeping up with the rainfall which the Town has experienced in past years. This is corroborated in the Town's MVP Plan, which also notes infrastructural vulnerability concerns relating to the Town's culverts.[56]

The following critical infrastructure sites and routes identified in this plan were noted as being especially vulnerable to flooding, in several cases including flooding caused by changes in groundwater, by the local HMP planning team in Westborough and/or CMRPC's GIS analysis:

- Westborough High School,
- All evacuation routes identified in this plan,
- The bridges at 50 East Main Street and the intersection of Route 135 and Route 9,
- Two water pump stations and an impoundment in town,
- Four sewer pump stations in town,
- The access road to the Senior Center,
- The CSX/MBTA/AMTRAK railroad,
- The Lower Sandra Pond Reservoir, George H. Nichols Multipurpose, Farm Pond, and Whittemore Pond dams,
- The Whittier Rehabilitation Hospital,
- The New England Center for Autism,
- Westborough Healthcare,
- Highlands Gracious Living,

[56] Central Massachusetts Regional Planning Commission, "Town of Westborough Municipal Vulnerability Preparedness Summary of Findings," Cmrpc.org, The Town of Westborough, September 2020, https://cmrpc.org/wp-content/uploads/2024/01/Town-of-Westborough-MVP-Summary-of-Findings-W-Appendix-Final-9-21-20.pdf.

- The Westborough Housing Authority site for people with special needs,
- Park Village,
- The ballfields at Hastings Elementary School, and
- Miss Tanya's Longmeadow School.

Also, in certain low-lying areas of town, including the Hundreds neighborhood, the existing stormwater system is inadequate and is overwhelmed during significant rainstorms. The capacity of the stormwater management system needs to be increased in these areas of town, including along public easements, in order to reduce flooding impacts.

Potential Climate Change Effects

According to the 2023 State Hazard Mitigation and Climate Adaptation Plan, climate change effects coupled with changes in development and population density can increase the risk of flooding from precipitation. As noted earlier in this plan, the Central Region is most likely to be impacted by extremes in precipitation in the following ways:

- Climate change is projected to increase the variability of precipitation events in any given year, including the potential for extreme precipitation events. Instances of inland flooding, river overflows, and pressure on dams may result; and
- Projected changes in precipitation patterns in all seasons, as well as higher frequency of extreme weather (including hurricanes and nor'easters), will change patterns of river flow and increase the frequency and severity of inland riverine flooding.

According to the 2023 ResilientMass Plan, climate change is predicted to affect groundwater levels; Sea level rise, extreme temperature events, and changes in precipitation patterns will all affect groundwater conditions and may increase the risk in town of minor basement flooding.[57]

In summary, climate change is likely to increase the extent and probability of future flood events in Westborough, which will make it more likely for multiple storms in a short duration to cause cumulative damage; These impacts can affect land use and development by causing people to no longer be able to develop in parts of town that flood frequently and causing the Town's government to zone for increased stormwater resilience as well as promote measures such as new storm drains and rain gardens.

Vulnerability

Based on this analysis and the assessment of the Westborough Core Team, Westborough faces a hazard index rating of "2 - high risk" from flooding, including flooding caused by changes in groundwater. Westborough has a great number of wetlands and low-lying areas which can act as a sponge for floodwaters. The Town's infrastructure has not been able to adequately handle short-duration, high intensity storms, and these storms have caused flash flooding issues in town in recent years. Increased development in Westborough has additionally put more people and places at risk of flooding.

Mitigation Strategies

The Town of Westborough is currently able to effectively respond to flooding, including flooding

[57] Ibid.

caused by changes in groundwater, through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities for the Town to expand upon its existing capabilities to mitigate and respond to flooding, including flooding caused by changes in groundwater. The local HMP planning team identified the following strategies that could be used to reduce the threat of flooding in Westborough:

- Complete an engineering study to identify mitigation options for East Main Street at the MBTA viaduct; this area is near the 100-year flood zone and is barely above Cedar Swamp and the Rutters Brook Wetland. Enhance maintenance here as well.
- Investigate the benefits and requirements of the Community Rating System (CRS) and decide whether to participate in this program or not.
- Review and update local plans and development review processes for stormwater management and conservation to ensure that new construction will not be affected by hazards and to encourage LID (low impact development) best practices.

In addition, several other mitigation strategies in this plan relate to drainage improvements utilizing nature-based solutions which could alleviate flooding in particular choke point areas noted by the local HMP planning team.

4.4 Severe Snowstorms / Ice Storms / Nor'easters

Severe winter storms can pose a significant risk to property and human life. Severe snowstorms and ice storms can involve rain, freezing rain, ice, snow, cold temperatures, and wind. Heavy snowfall and extreme cold can immobilize an entire region. Even areas that normally experience mild winters can be hit with a major snowstorm or extreme cold event. Winter storms can result in flooding, storm surges, closed highways, blocked roads, downed power lines, and hypothermia among residents. A northeast coastal storm, known as a nor'easter, is typically a large counterclockwise wind circulation around a low-pressure center; nor'easters often result in heavy snow, high winds, and rain.

Location

The entire town of Westborough is susceptible to severe snowstorms, ice storms, and nor'easters; this means that the location of occurrence of severe snowstorms in town is "large." Because these storms occur regionally, the entire town is equally vulnerable to them.

Extent

The Northeast Snowfall Impact Scale (NESIS) characterizes and ranks high-impact snowstorms, including nor'easters, in the northeast USA. These storms have large areas of 10-inch or greater snowfall accumulations. NESIS has five categories: Extreme, Crippling, Major, Significant, and Notable. The index differs from other meteorological indices in that it uses population information in addition to meteorological measurements. Thus, NESIS gives an indication of a storm's societal impacts.

NESIS scores are a function of the area affected by the snowstorm / nor'easter, the amount of snow, and the number of people living in the storm's path. The aerial distribution of snowfall and population information are combined in an equation that calculates a NESIS score which varies from around one (for smaller storms) to over ten (for extreme storms). The raw score is then classified into one of the five NESIS categories. The largest NESIS values are given to storms producing heavy snowfall over large areas which include major metropolitan centers.

Table 16: Northeast Snowfall Impact Scale Categories[58]

Category	NESIS Value	Description
1	1—2.499	Notable
2	2.5—3.99	Significant
3	4—5.99	Major
4	6—9.99	Crippling
5	10.0+	Extreme

An ice storm is a winter storm in which freezing rain occurs and accumulates as ice on the ground when it lands on cold surfaces. The Sperry-Piltz Ice Accumulation Index rates approaching ice storms based on the potential damage they are projected to cause, their projected footprint, and their predicted total ice accumulation. The expected extent of ice storms in Westborough is similar to the expected extent of snowstorms in town. Ice storms with Sperry-Piltz indexes of zero through

[58] National Centers for Environmental Information, "The Northeast Snowfall Impact Scale (NESIS)," Ncei.noaa.gov, National Oceanic and Atmospheric Association, accessed June 12, 2024, https://www.ncei.noaa.gov/access/monitoring/rsi/nesis.

five could possibly occur in Westborough, with ice storms with a lower index and more minimal impacts such as black ice being present in some areas being expected to have a higher likelihood of occurring in town; More destructive ice storms with maximum extents resembling the December 2008 ice storm which affected much of the northeastern USA and which caused 0.5 inches of ice accumulation in town[59] could possibly occur in town.

Table 17: The Sperry-Piltz Ice Accumulation Index[60]

Ice Damage Index	Damage and Impact Descriptions
0	Minimal Risk of Damage to exposed utility systems; no alerts or advisories needed for crews, few outages
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

The Miller classification is a system used to classify nor'easters.[61] The types of storm classifications under the Miller classification are listed below. Miller C / Storm Type C nor'easters are expected to be the most common type of nor'easters to affect Westborough, with Miller A / Storm Type A, Miller B / Storm Type B, and Miller E / Storm Type E nor'easters also anticipated to potentially affect the Town.

[59] Hayden Frank and Joe DelliCarpini, "WFO Taunton Storm Series Report # 2009-01: Analysis of the December 11-12, 2008 Destructive Ice Storm across Interior Southern New England," Weather.gov, National Weather Service Forecast Office, 2009, https://www.weather.gov/media/box/science/December_2008_Ice_Storm.pdf.
[60] "What is the Sperry-Piltz Ice Accumulation Index?," Spia-index.com, SPIA Index, accessed March 18, 2025, https://spia-index.com/
[61] Mike Priante, "The Miller Classification," Weatherworksinc.com, WeatherWorks, December 4, 2020, https://weatherworksinc.com/news/Miller-A-vs-Miller-B; "Mid-Atlantic Winter Storm Patterns," Glenallenweather.com, Glen Allen, VA Weather, accessed March 20, 2025, https://glenallenweather.com/alink/18snow/stormtypes.htm.

Table 18: The Miller Classification for Nor'easters

Miller Classification	Description
Miller A / Storm Type A	Miller A, or Storm Type A, nor'easters form in the southeastern USA or along the Gulf of Mexico and intensify as they move north until turning east to the Atlantic Ocean. They are most impactful the mid-Atlantic region but can also lead to major snow events in New England if they are strong enough.
Miller B / Storm Type B	Miller B, or Type B, nor'easters form in the midwestern USA and move slightly southeast to the southern mid-Atlantic region until they combine with / transfer energy to a storm originating along the coast in this region. This combined storm then travels north, impacting inland and coastal areas of the northeast USA with major snow events, before turning east to the Atlantic Ocean.
Miller C / Storm Type C	Miller C, or Type C, nor'easters are similar to Miller B nor'easters but are stronger and tend to be more impactful in the midwestern USA and southern New England.
Miller D / Storm Type D	Miller D, or Type D, nor'easters are similar to Miller B nor'easters but are weaker and tend to have more limited impacts in the southern mid-Atlantic region.
Miller E / Storm Type E	Miller E, or Type E, nor'easters are similar to Miller B nor'easters but form further to the south and tend to have a long band of area they are highly impactful in which stretches from the northern part of the inland southeastern states, through the mid-Atlantic region, and to inland New England.

Broadly speaking, the extent of damages for the winter storm category of natural hazard includes the results of heavy snowfall, strong winds, freezing rain, and/or snow and ice accumulation. Typically, the damage extent is lesser for a snowstorm, greater for an ice storm, and greatest for a nor'easter, which combines both snow and ice with high winds. A nor'easter can be categorized under the NEISIS Scale and/or the Sperry-Piltz Ice Accumulation Index depending on what kind of wintery precipitation is to be expected.



Image 1: The Westborough Department of Public Works responds to severe snowstorm damage in town.



Image 2: The Westborough Fire Department responds to severe snowstorm damage in town.

Based on data available from the National Oceanic and Atmospheric Administration, there are 88 high-impact snowstorms (including nor'easters) since 1958 that have affected the Northeast Corridor. Of these, approximately 38 storms (including nor'easters) resulted in at least 10 inches of

snow fall in Westborough. These storms are listed in the table below:[62]

Table 19: High-Impact Snowstorms with Snow Falls in Westborough of at Least 10 Inches Since 1958

Start Date	NESIS Value	NESIS Category	NESIS Classification
1/28/2022	1.73	1	Notable
1/30/2021	4.93	3	Major
12/14/2020	3.21	2	Significant
3/3/2019	1.29	1	Notable
3/11/2018	3.16	2	Significant
1/3/2018	2.27	1	Notable
3/12/2017	5.03	3	Major
2/9/2017	1.87	1	Notable
2/8/2015	1.32	1	Notable
1/29/2015	5.42	3	Major
1/25/2015	2.62	2	Significant
3/4/2013	3.05	2	Significant
2/7/2013	4.35	3	Major
1/26/2011	2.17	1	Notable
1/9/2011	5.31	3	Major
12/24/2010	4.92	3	Major
12/18/2009	3.99	2	Significant
1/17/2009	1.32	1	Notable
2/12/2006	4.10	3	Major
1/21/2005	6.80	4	Crippling
2/15/2003	7.50	4	Crippling
2/6/2003	1.30	1	Notable
3/31/1997	2.29	1	Notable
2/8/1994	5.39	3	Major
3/12/1993	13.2	5	Extreme
2/10/1983	6.25	4	Crippling
4/6/1982	3.35	2	Significant
2/5/1978	5.78	3	Major
1/19/1978	6.53	4	Crippling
2/18/1972	4.77	3	Major
2/22/1969	4.29	3	Major
2/8/1969	3.51	2	Significant
2/5/1967	3.50	2	Significant
2/2/1961	7.06	4	Crippling

[62] Ibid.

Start Date	NESIS Value	NESIS Category	NESIS Classification
1/18/1961	4.04	3	Major
12/11/1960	4.53	3	Major
3/2/1960	8.77	4	Crippling
2/14/1958	6.25	4	Crippling

Additionally, the NCEI database notes at least one instance of heavy snowfall in Worcester County:[63]

- 01/07/2024 – Heavy Snow: A strong storm moved up the east coast passing near the 70/40 benchmark brought heavy snow to southern New England beginning late Monday night and continuing on Sunday. The first round of heavy snow fell overnight followed by a lull in the snow and mixing with rain Sunday morning. Comma head snow then filled back into eastern MA and RI bringing moderate to heavy snow Sunday afternoon and evening. Snow amounts ranged from 2 to 18 inches.

The 2023 ResilientMass Plan notes that, on average, Massachusetts experiences one to two nor'easters per year.[64] Between 2013 and 2022, there were 63 heavy snow days, 12 blizzard days, and two ice storm days in Massachusetts. As was previously mentioned, the December 2008 ice storm affected Westborough and led to 0.5 inches of ice accumulation in town.[65]

The local HMP planning team in Westborough noted the Town has been lucky in avoiding the worst effects of snowfall due to its low-lying location. However, they also noted that the Town does experience a great deal of slush and freezing rain; this slush and freezing rain has caused trees and tree limbs to fall and damage powerlines and even fire department equipment. Wind pushing snow drifts in the area of Upton Road were also noted as a concern by the local HMP planning team, but their primary concern is the downing of trees caused by heavy, wet snow loads.

Probability of Future Events

Based upon the availability of records for Worcester County, the likelihood that a severe snowstorm, ice storm, or nor'easter will affect Westborough in any given year is "very high" (a greater than 70% chance).

Based on the information from the 2023 ResilientMass Plan described above, on average, Westborough can expect to experience one to two nor'easters per year.[66] As this plan also describes, there were 63 heavy snow days, 12 blizzard days, and two ice storm days between 2013 and 2022 in Massachusetts, and Westborough and the rest of the state should expect a

[63] "Storm Events Database Search Results for Worcester County, Massachusetts," NCDC.NOAA.gov, National Oceanic and Atmospheric Administration National Centers for Environmental Information, accessed September 17, 2024, https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Heavy+Snow&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2020&endDate_mm=06&endDate_dd=30&endDate_yyyy=2024&county=WORCESTER%3A27&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=25%2CMASSACHUSETTS.

[64] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

[65] Hayden Frank and Joe DelliCarpini, "WFO Taunton Storm Series Report # 2009-01: Analysis of the December 11-12, 2008 Destructive Ice Storm across Interior Southern New England"

[66] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

relatively similar number of these types of storms over the next ten years.

IMPACT

Westborough faces a "minor" impact, with less than 10% of total property in affected areas damaged, from snowstorms, ice storms, or nor'easters. The weight from multiple snowfall events can test the load ratings of building roofs and can potentially cause significant damage. Multiple freeze-thaw cycles can also create large amounts of ice and can lead to even heavier, even more dangerous roof loads.

Other impacts from snowstorms, ice storms, or nor'easters include:

- Tree damage and fallen branches that cause utility line damage and roadway blockages;
- Disrupted power and phone service;
- Unsafe roadways and increased traffic accidents;
- Infrastructure and other property also being at risk from severe winter storms and the associated flooding that can occur following heavy snow melt;
- Damage to telecommunications structures; and
- Reduced ability of emergency officials to respond promptly to medical emergencies and fires.

The local HMP planning team in Westborough noted that icing has caused concerns throughout town and that heavy slush has damaged trees in town. Snow drift was also identified as a concern along Upton Road near Sandra Pond / the Westborough Reservoir by the local HMP planning team.

EXPOSURE

Certain features within Westborough's infrastructure, society, and environment may face more exposure to severe snowstorms, ice storms, or nor'easters, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- Elderly residents, who may have more difficulty clearing snow and walking on icy or snow-covered sidewalks. Elderly residents may also be more vulnerable to extremely low temperatures;
- Households with low or fixed incomes, who may be less able to afford sufficient heating or home improvements to improve energy efficiency and insulation;
- Renters, who may have less control over their living situation and indoor environment than homeowners;
- Public safety, utility, and highway department workers, who are tasked with responding to emergency calls, keeping the heat and power on, and keeping the streets clear during winter storms.

Specifically, Interstate 90 in town was noted as being especially vulnerable to winter storms by CMRPC's GIS analysis.

POTENTIAL CLIMATE CHANGE EFFECTS

According to the 2023 ResilientMass Plan, sea level rise, warming ocean temperatures, and changing atmospheric circulation patterns are likely to increase the frequency and severity of winter

storms.[67] Warmer temperatures indicate that more precipitation will fall as rain rather than snow throughout the 21st century. The result of this will be fewer overall snowstorms; however, the snowstorms that do occur will likely be worse. Increased wintertime rain also creates a greater risk for wintery mix, sleet, and ice storms; in addition, it will cause hazardous roadway conditions, as temperature drops overnight will cause transportation infrastructure to ice over if mitigation measures are not put in place.

In summary, climate change is likely to increase the extent and probability of future severe snowstorm, ice storm, or nor'easter events in Westborough. This may have societal impacts; more frequent severe winter storms may change land use and development protocols, as more homes and community buildings may need to have greater sheltering infrastructure to prepare for heavy snowfall.

VULNERABILITY

Based on the above assessment, Westborough has a hazard index rating of "3 – medium risk" from snowstorms, ice storms, and nor'easters. Snowstorms, ice storms, nor'easters, and other forms of winter precipitation are a frequent occurrence in Massachusetts, and they are expected to only become more frequent over time. Additionally, the expected increase in "wintery-mix" precipitation may lead to increased roadway hazards, as standing water freezing in overnight temperatures creates hazardous road conditions for travelers and responders. The local HMP planning team also noted that wet wintery mix snow causes more wear and tear on their equipment and a greater number of icy-road induced traffic accidents. The critical infrastructure route (Interstate 90) mentioned above as being especially vulnerable to winter storms as well as the Town's water system are also vulnerable to losing power due to ice accumulation caused by ice storms. In addition, the evacuation routes listed in section 3.2 of this plan are vulnerable to becoming difficult to access because of roads being iced over after ice storms.

MITIGATION STRATEGIES

The Town of Westborough is currently able to effectively respond to severe snowstorms, ice storms, and Nor'easters through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. Given that Westborough, as well as other towns in the region, experience snowstorms frequently, local and state officials as well as emergency response personnel amply prepare for major snow events. However, there are numerous opportunities to expand upon the Town's existing capabilities to mitigate and respond to severe snowstorms, ice storms, and nor'easters. The local HMP planning team identified the following strategies that could be used to reduce the threat of snowstorms in Westborough:

- Enhance coordination relating to needed tree trimming throughout town to protect utility wires from storm damage. Review tree work in wetland resource area buffer zone.
- Enhance road information coordination as well as planning for snow removal.

[67] Ibid.

4.5 HURRICANES

Hurricanes begin as tropical storms that form over warm ocean waters in the Atlantic Ocean off the west coast of Africa or the Pacific Ocean. These storms form as heated, moist air is drawn up into the atmosphere and begins circulating clockwise or counterclockwise, depending on which hemisphere they are in. Tropical storms become hurricanes when their sustained winds exceed 74 miles per hour. The primary damaging forces associated with these storms are high-level sustained winds and heavy precipitation. Hurricane winds can reach speeds of up to 200 miles per hour and can grow to 500 miles in diameter. The official hurricane season starts on June 1st. In New England, hurricanes generally occur in August, September, and the first half of October due to the time required for the waters south of Long Island to warm enough to sustain hurricane activity this far north. Hurricanes in the region can result in flooding and wind damage to structures and above-ground utilities.[68]

LOCATION

Because of this hazard's regional nature, all of Westborough is at risk from hurricanes, meaning the location of occurrence is "large." Ridgetops in town are more susceptible to wind damage. Areas susceptible to flooding are also likely to be affected by heavy rainfall from hurricanes.

EXTENT

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, is given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour, the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Hurricane Wind Scale, which rates hurricane wind intensity on a scale of 1 to 5, with 5 being the most intense.

Table 20: The Saffir-Simpson Scale (1)[69]

Category	Maximum Sustained Wind Speed
1	74–95 mph: very dangerous winds will produce some damage
2	96–110 mph: extremely dangerous winds will cause extensive damage
3	111–129 mph: devastating damage will occur
4	130–156 mph: catastrophic damage will occur
5	157 + mph: catastrophic damage will occur

[68] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

[69] National Hurricane Center and Central Pacific Hurricane Center, "Saffir-Simpson Hurricane Wind Scale," National Oceanic and Atmospheric Association, accessed June 10, 2024, https://www.nhc.noaa.gov/aboutsshws.php.

Previous Occurrences

Hurricanes that have affected the region near Westborough are shown in the following table:

Table 21: Hurricanes Which Have Affected the Region Near Westborough

Storm Name	Year	Saffir/Simpson Category (when reached MA)
Belle	1976	Tropical Storm
Gloria	1985	1
Henri	1985	Tropical Storm
Chris	1988	Minor Storm
Bob	1991	2
Beryl	1994	Tropical Storm
Bertha	1996	Tropical Storm
Floyd	1999	Tropical Storm
Gordon	2000	Minor Storm
Hermine	2004	Tropical Storm
Barry	2007	Minor Storm
Hanna	2008	Minor Storm
Irene	2011	Tropical Storm
Sandy	2012	Extratropical Storm, made landfall south of MA but still had impacts in the state
Andrea	2013	Minor Storm
Elsa	2021	Tropical Storm
Fred	2021	Extratropical Storm
Henri	2021	Tropical Storm/Depression

Probability of Future Events

Westborough's inland location in Central Massachusetts approximately reduces the risk of extremely high winds that are associated with hurricanes, although the Town can still experience some high wind events. Based upon past occurrences, it is reasonable to say that there is a "low" probability (a 1% to 10% chance in any given year) of hurricanes occurring in Westborough. However, climate change is projected to result in more severe weather, including increased occurrence of hurricanes and tropical storms. Because of this, the occurrence of hurricanes will likely increase in town in the future.

Impact

Descriptions of damages that could occur due to hurricanes of different storm categories of the Saffir-Simpson scale are shown below:

Table 22: The Saffir-Simpson Scale (2)

Storm Category	Damage Level	Description of Damages	Wind Speed (MPH)
1	MINIMAL Very dangerous winds will produce some damage	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage. An example of a Category 1 hurricane is Hurricane Dolly (2008).	74-95

2	MODERATE Extremely dangerous winds will cause extensive damage	Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings. An example of a Category 2 hurricane is Hurricane Francis in 2004.	96-110
3	EXTENSIVE Devastating damage will occur	Some structural damage to small residences and utility buildings, with a minor amount of curtain wall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland. An example of a Category 3 hurricane is Hurricane Ivan (2004).	111-129
4	EXTREME Catastrophic damage will occur	More extensive curtain wall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland. An example of a Category 4 hurricane is Hurricane Charley (2004).	130-156
5	CATASTROPHIC Catastrophic damage will occur	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. An example of a Category 5 hurricane is Hurricane Andrew (1992).	157+

HAZUS-MH (multiple-hazards) is a computer program developed by FEMA to estimate losses due to a variety of natural hazards. The HAZUS software was used to model potential damage to Westborough from 1% and 0.2% hurricane events (storms that are 1% and 0.2% likely to happen each year, and roughly equivalent to Category 1 and Category 2 hurricanes, respectively). The damage caused by these hypothetical storms were modeled as if the storm track passed directly through the Town, bringing the strongest winds and greatest damage potential.

Table 23: HAZUS Potential Damages to Westborough from 1% and .2% Annual Chance Hurricane Events

	1% storm (89 mph winds)	0.2% storm
Building Characteristics		
Estimated total number of buildings	5,523	
Estimated total building replacement value (2024 $)	$5,877,921,000.00	
Building Damages		
# of buildings sustaining minor damage	303	980
# of buildings sustaining moderate damage	52	262
# of buildings sustaining severe damage	1	16
# of buildings destroyed	0	12
Population Needs		

# of households displaced	4	40
# of people seeking public shelter	2	20
Debris		
Building debris generated (tons)	2,287	8,600
Tree debris generated (tons)	7,287	14,828
# of truckloads to clear building debris	91	344
Value of Damages		
Total property damage (buildings and content)	$ 25,080,410.00	$ 106,018,060.00
Total losses due to business interruption	$ 1,935,390.00	$ 13,429,800.00

Though there are no recorded instances of a hurricane equivalent to a 0.2% storm passing through Massachusetts, this model was included in this plan in order to present a reasonable "worst case scenario" that can help planners and emergency personnel evaluate the impacts of storms that might be more likely in the future, as more intense and frequent storms become more common. For more information on the HAZUS-MH software, go to http://www.fema.gov/hazus-software.

Westborough faces a "minor" impact from hurricanes, with 10% or less of property in the affected area of town being damaged or destroyed in any given hurricane instance.

Exposure

Certain features within Westborough's infrastructure, society, and environment may face more exposure to hurricanes, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- The electrical grid, which is vulnerable to outages from trees falling across power lines. National Grid proactively trims trees in their right of way, but outages are still common;
- Municipal buildings have been impacted by high winds in the past. Damage to these buildings could impact critical town functions and distract people from other essential emergency response and recovery activities; and
- Public safety, utility, and highway department workers, who are tasked with responding to emergency calls and keeping the streets clear during hurricanes.

In addition to high winds, hurricanes can also bring heavy precipitation and cause flooding. The vulnerable features identified in the flooding section above also apply to hurricanes.

Potential Climate Change Effects

According to the 2023 ResilientMass Plan, there are two major ways that climate change influences hurricanes and tropical storms:[70]

[70] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

- Warming oceans will provide more energy for hurricanes and tropical storms, which could lead to more intense or potentially damaging storms in the future, and larger storms could result in more storms that are likely to impact Massachusetts; and
- Warmer air can hold more water vapor and will enable greater precipitation rates during future storms.

In summary, climate change is likely to increase the frequency and extent of hurricanes in Westborough.

VULNERABILITY

Based on the above analysis, Westborough has a hazard index rating of "4 – low risk" from hurricanes. Its location and elevation decrease the risk of hurricane force winds and rains, though it does not remove them entirely. Historically, by the time a storm has arrived in Westborough, it has been typically downgraded to a tropical storm or tropical depression; however, climate change may increase the severity of these types of storms in town in the future.

MITIGATION STRATEGIES

The Town of Westborough is currently able to effectively respond to hurricanes through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities to expand upon the Town's existing capabilities to mitigate and respond to hurricanes. The local HMP planning team identified the following strategies that could be used to reduce the threat of hurricanes in Westborough:

- Update the 2008 Debris Management Plan.

In addition, several other mitigation strategies in this plan relate to drainage improvements utilizing nature-based solutions which could alleviate flooding caused by hurricanes in particular choke point areas noted by the local HMP planning team in town.

4.6 Severe Thunderstorms / Wind / Tornadoes

A thunderstorm is a storm with lightning and thunder produced by a cumulonimbus cloud; thunderstorms usually produce gusty winds as well as heavy rain and sometimes generate hail. Effective January 5, 2010, the National Weather Service (NWS) modified the hail size criterion to classify a thunderstorm as 'severe' when it produces damaging wind gusts in excess of 58 mph (50 knots), hail that is 1 inch in diameter or larger (quarter size), or a tornado.

Every thunderstorm has an updraft (rising air) and a downdraft (sinking air). Sometimes strong downdrafts, known as downbursts, can cause tremendous wind damage that is similar to that of a tornado. A small (less than 2.5-mile path) downburst is known as a "microburst", and a larger downburst is called a "macro-burst." An organized, fast-moving line of microbursts traveling across large areas is known as a "derecho" – these occasionally occur in Massachusetts. The strongest downburst ever recorded was a 175 mph downburst in North Carolina. Downburst winds exceeding 100 mph have been measured in Massachusetts.[71]

Wind is air in motion relative to the surface of the earth. For non-tropical events over land, the NWS issues a Wind Advisory (for sustained winds of 31 to 39 mph for at least 1 hour and for any gusts of 46 to 57 mph) or a High Wind Warning (for sustained winds 40+ mph and for any gusts 58+ mph). For non-tropical events over water, the NWS issues a small craft advisory (for sustained winds of 25 to 33 knots), a gale warning (for sustained winds of 34 to 47 knots), a storm warning (for sustained winds of 48 to 63 knots), or a hurricane force wind warning (for sustained winds of 64+ knots). For tropical systems, the NWS issues a tropical storm warning for any areas (inland or coastal) that are expecting sustained winds from 39 to 73 mph, and a hurricane warning is issued for any areas (inland or coastal) that are expecting sustained winds of 74 mph or greater. High winds are a hazard for the boating, shipping, and aviation industry sectors. They can also cause scattered power outages, downed trees and/or power lines, and damage to parts of structures like roofs and windows.

Tornadoes are swirling columns of air that typically form in the spring and summer during severe thunderstorm events. In a relatively short period of time and with little or no advance warning, a tornado can attain rotational wind speeds in excess of 250 miles per hour and can cause severe devastation along paths that range from a few dozen yards to over a mile in width. The path of a tornado can be unpredictable because tornadoes can stall or change direction abruptly. High wind speeds, hail, and debris generated by tornadoes can result in loss of life, downed trees and power lines, and damage to structures and other personal property. In Massachusetts, tornadoes have occurred most frequently in the Connecticut River Valley and in western Worcester County, with Westborough approximately 40 miles east of the zone of most frequent past occurrences.

Location

As per the 2023 ResilientMass Plan, the entire town is at risk of high winds, severe thunderstorms, and tornadoes. This plan identifies Westborough and the communities surrounding it as having a moderate frequency of tornado occurrence within the Massachusetts context. However, the actual area affected by thunderstorms, wind, or tornadoes in town is "small," with less than 10 percent of the Town generally affected.

Extent

An average thunderstorm is 15 miles across and lasts for 30 minutes; severe thunderstorms can be

[71] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

much larger and longer. Southern New England typically experiences 10 to 15 days per year with severe thunderstorms. Thunderstorms can cause hail, wind, lightning damage, and flooding.

High wind is linked to a number of other hazards, including hurricanes and winter storms, in addition to thunderstorms and tornadoes. High winds can cause damage to structures and trees and can also increase the risk of wildfire.

Tornadoes are measured using the Enhanced Fujita Scale, which is shown below with the following categories and corresponding descriptions of damage:

Table 24: Enhanced Fujita Scale Levels and Descriptions of Damage[72]

EF-Scale Number	Intensity Phrase	3-Second Gust (MPH)	Type of Damage Done
EF0	Gale	65–85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damage to sign boards.
EF1	Moderate	86–110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF2	Significant	111–135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	Severe	136–165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF4	Devastating	166–200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.

Table 25: Extent Scale for Hail[73]

Hail Size (in.)	Object Analog Reported
.50	Marble, moth ball
.75	Penny
.88	Nickel
1.00	Quarter
1.25	Half Dollar
1.50	Walnut, ping pong
1.75	Golf ball
2.0	Hen egg
2.5	Tennis ball

[72] National Weather Service, "The Enhanced Fujita Scale (EF Scale),"Weather.gov, National Oceanic and Atmospheric Administration, accessed June 10, 2024, https://www.weather.gov/oun/efscale.
[73] Storm Prediction Center, "Converting Traditional Hail Size Descriptions," Spc.noaa.gov, National Oceanic and Atmospheric Administration, accessed June 10, 2024, https://www.spc.noaa.gov/misc/tables/hailsize.htm.

2.75	Baseball
3.00	Tea cup
4.00	Grapefruit
4.50	Softball

Previous Occurrences







Images 3, 4, and 5: Severe wind / thunderstorm damage in Westborough

Because thunderstorms and wind affect Westborough regularly, there is not a comprehensive record available of all thunderstorm and wind events which have affected the Town. As per the Massachusetts State Hazard Mitigation and Climate Adaptation Plan, there are approximately 10 to 30 days of thunderstorm activity in the state each year.

In Worcester County, there have been several F1 tornadoes over the years; Tornadoes with a rating of 3 or above and tornadoes resulting in a death or injury, or significant property damage, are listed below. [74]

- In 1953, an F4 tornado struck Worcester. The event resulted in at least 90 fatalities and more than 1,200 injuries. There was extensive property damage. On the same date, an F3 tornado began in the Town of Sutton.
- In 1981 an F3 tornado struck Westminster, resulting in 3 injuries and very little reported property damage.
- In June 2011, an F3 tornado struck Massachusetts. Few deaths were reported, all in Hampden County. No deaths were reported in Worcester County.

Within the last 6 years, there has only been one small tornado that has affected communities near Westborough:

- 2018 Tornado (East Douglas, Uxbridge, Upton) [75]

The local HMP planning team in Westborough noted that a microburst event in 2016 directly affected the Town. On July 22nd, 2016, a microburst of straight-line winds ripped out billboards from Route 9 to Flanders Road before turning off into the woods. This report from the local planning team is corroborated by a report from the NCEI storm events database in the list on page 78.

- Specifically, the following critical infrastructure routes and sites identified in this plan were noted as having been affected by this microburst event by CMRPC's GIS analysis:

[74] "Tornado Paths," Arcgis.com, ESRI, accessed March 13, 2025, https://www.arcgis.com/apps/View/index.html?appid=01672085b139432e8fe1296a743f67d7.
[75] Ibid

- Route 9, Interstate 90, Interstate 495, Flanders Road, and Connector Road,
- The intersection of Route 9 and Otis Street,
- The bridge at the intersection of Route 135 and Route 9,
- Six sewer pump stations in town and a water treatment plant in town,
- The MEMA Repeater Site at Oak Street,
- The DPW Yard and Office,
- The Whittemore Pond Dam,
- The Beaumont Rehabilitation and Skilled Nursing Center,
- The Whittier Rehabilitation Hospital, and
- The New England Center for Autism.

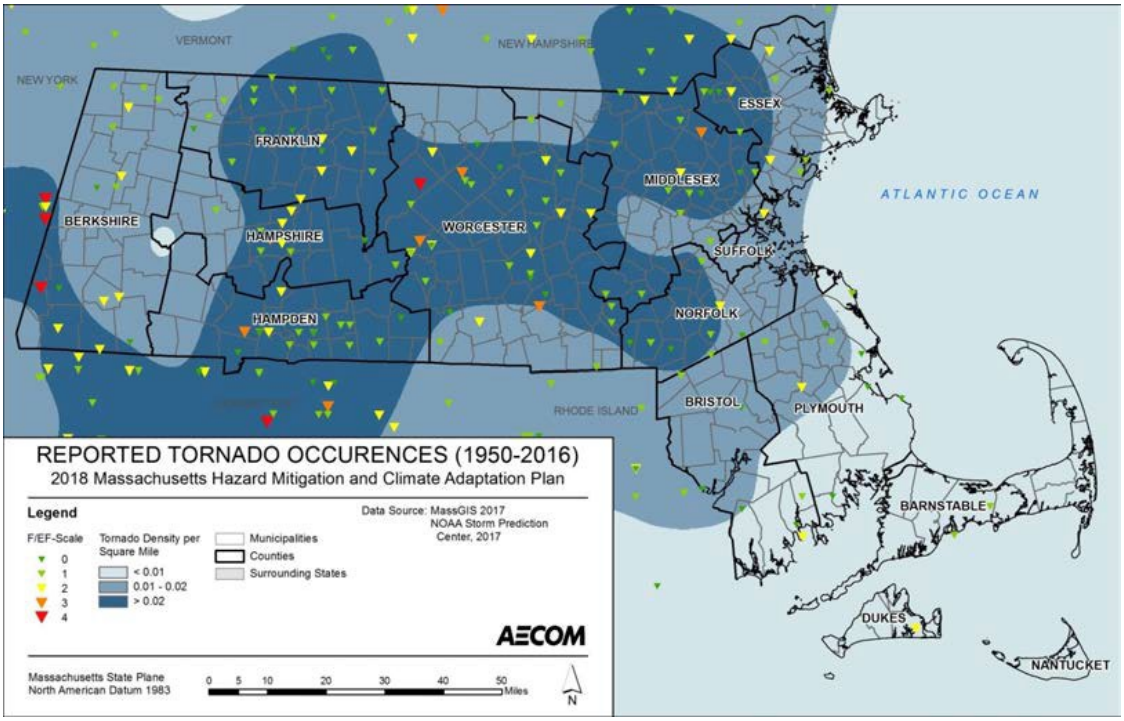

Figure 1: Density of Reported Tornados per Square Mile (1950-2016)[76]

[76] "Massachusetts State Hazard Mitigation and Climate Adaptation Plan," Mass.gov, Massachusetts Executive Office of Energy and Environmental Affairs and Massachusetts Emergency Management Agency, September 2018, https://www.mass.gov/doc/state-hazard-mitigation-and-climate-adaptation-plan/download.



Image 6: Above - NASA released this image of part of the 39-mile-long tornado track through south-central Mass. The image was captured on June 5, 2011 by the Landsat 5 satellite.

Thunderstorm occurrences are more frequent in Massachusetts than tornados, as thunderstorms have the potential to produce tornadoes. However, the type of storm that most commonly produces tornadoes is supercells: severe, long-lived thunderstorms. Approximately 20 percent of supercells produce tornadoes. In Westborough, there have been several severe thunderstorm/wind occurrences:[77]

- 01/31/2013 – High Wind: A warm front moved northward across southern New England. This brought a period of mainly rain and warm temperatures. In addition, a strong low level jet (up to 80 kts) resulted in high winds across much of southern New England. There was some tree damage and downed power lines with winds gusting to 60 to 70 mph. An amateur radio operator in Milford recorded a wind gust to 64 mph on their home weather station. The Automated Surface Observation System at Worcester Regional Airport (KORH) recorded a wind gust to 55 mph.
- 07/22/2016 – Thunderstorm Wind: A cold front moved through southern New England and when coupled with the existing heat and humidity, resulted in showers and thunderstorms developing over much of the area late in the day and continuing into the evening and overnight hours. A concentrated area of wind damage in Westborough was found by an NWS storm survey team around Chauncy and Oak Streets and extended ENE

[77] "Storm Events Database Search Results for Worcester County, Massachusetts," NCDC.NOAA.gov, National Oceanic and Atmospheric Administration National Centers for Environmental Information, accessed September 24, 2023, https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Hail&eventType=%28Z%29+High+Wind&eventType=%28Z%29+Strong+Wind&eventType=%28C%29+Thunderstorm+Wind&eventType=%28C%29+Tornado&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2010&endDate_mm=12&endDate_dd=30&endDate_yyyy=2024&county=WORCESTER%3A27&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=25%2CMASSACHUSETTS.

to the east shore of Chauncy Pond on the old Westborough State Hospital property and to the ESE along Flanders Street. Numerous hardwood and softwood trees, some very large, were uprooted or snapped off. A few landed on houses and vehicles. Most of the downed trees were lying in an easterly direction except more toward the ENE along the east shore of Chauncy Pond, consistent with what one might expect to be something of a divergent pattern with a microburst. At the southern edge of the damage swath no more than a quarter mile from downtown Westborough, the trees and branches seemed to be lying in a more ESE direction, again suggesting a hint of a divergent pattern. Several signs were blown down along Route 9, including a large restaurant sign and a billboard. A resident along Chauncy Street who took video looking out of his basement window showed an image that showed the storm approaching at 7:55 PM EDT and damage occurring at 8:02 PM EDT. The concentrated part of the microburst began about a half mile west of the Route 9 and Lyman Street intersection and ended about three quarters of a mile east of that point. The westernmost sign of damage observed was a tree down along Otis Street. It is possible that some damage occurred further west but was not part of the survey area. The team encountered one of the largest root balls they had ever seen on the old Westborough State Hospital grounds. Scattered damage was observed to the east into Southborough. This was corroborated by the Local Hazard Mitigation Planning Team.

- 10/26/2017 – Strong Wind: Coastal low pressure intensified as it lifted north through Maine. This brought strong northwest winds, primarily across eastern and central Massachusetts, during the evening of the 26th. Several large trees were brought down by this wind. A tree was brought down on Chestnut Street in Westborough.
- 10/15/2018 – Strong Wind: A cold front moved east from the Great Lakes on Monday October 15th. Strong southwest winds ahead of the front moved across Massachusetts during the late evening and night of the 15th, then became strong northwest after the cold front moved through. Winds then diminished on the morning of the 16th. Coastal areas of Southeast Massachusetts reported wind gusts of 40 to 60 mph, while inland areas had gusts of 40 to 50 mph. There were several reports of trees and wires down in Eastern and Central Massachusetts. At 10:11 PM EST, a large tree was down on the dirt road leading to the parking lot off Allen Hall in Westborough.
- 07/17/2019 – Thunderstorm Wind: An approaching cold front, coupled with moisture associated with the remnants of Barry brought showers and thunderstorms to the region. A few of these storms were severe, with damaging wind gusts. There was also isolated flooding from heavy rainfall. In Westborough, large trees were downed at Bowman Street at Olde Coach Road. Other large trees were downed on Upton Road.
- 11/30/2020 – High Wind: Strong low pressure passed well to the west of southern New England, with strong to damaging southerly winds across our region. In addition, 2.00 to 3.75 inches of rain fell across most of the region. Grafton at 535 PM EST, a report was received via amateur radio of a gust to 59 mph. In Milford at 340 PM EST, a tree was down on Hayward Road and at 420 PM EST, trees were down on Tanglewood Street, Highland Street, and School Street. In Westborough at 343 PM EST, a tree was down into a garage on Milk Street. In Northborough at 430 PM EST, a large tree was down on a house on Scott Lane, causing structural damage. Also in Northborough at 525 PM EST, a tree was down on Coolidge Circle near Morse Circle. In Millville at 527 PM EST, a tree was down on Chestnut Hill Road near Eagle Rock Drive. In Hopedale at 539 PM EST, a tree fell through the roof of a house on Green Street; a second tree was down on Green Street; and a third tree was down on Anthony Road.

- 04/30/2021 – Strong Wind: Low pressure and its associated cold front swept across the region before sunrise, bringing an end to rain showers. This was followed by dry but windy conditions which caused scattered damage across Southern New England. Winds generally gusted to 45 to 55 mph. The highest measured gust was 56 mph in Mendon at 528 PM EDT. In Westborough, a tree came down on Adams St.
- 02/28/2024 – High Wind: A strong cold front crossed southern New England on Wednesday night the 28th bringing soaking rains and strong wind gusts to southern New England followed by sharply falling temperatures. This cold frontal passage included a fine line stronger storms. Winds generally gusted 45 to 55 mph. The strongest gusts were 59 mph at the Worcester Airport ASOS (KORH) at 2:18 AM EST on the 29th and a gust to 55 mph at the Fitchburg Airport ASOS (KFIT) at 1:57 AM EST on the 29th.





Images 7 and 8: Trees felled by severe wind / thunderstorms causing damage in and blocking roads in Westborough

PROBABILITY OF FUTURE EVENTS

According to the 2023 ResilientMass Plan, Massachusetts averages two to five tornadoes per year.[78] Only two tornadoes in the state (which occurred in 1953 and 2011) received disaster declarations. Massachusetts has experienced 12 EF0 to EF1 tornadoes since 2018; six EF0 tornadoes occurred in the state in 2021, and these 2021 EF0 tornadoes caused under $50,000 in property damage. Because tornadoes are relatively rare in the Commonwealth, residents are less likely to be prepared for them in the Commonwealth than in other parts of the country. People who live in manufactured housing, such as mobile homes, are more at risk to tornadoes. Tornadoes can affect all sectors and populations, and their primary effect is damage from their high winds to structures and the environment. Any structure located in a tornado zone or path is at risk. Tornado activity may become more variable due to climate change, so predicting the likelihood of future tornado events in Westborough is difficult.

Based upon the available historical record, as well as Westborough's location in a moderate-density cluster of tornado activity for Massachusetts, there is a "very low" probability (less than 1% chance in any given year) of a tornado affecting the Town, and a moderate (10% to 40% chance in any given year) probability of a severe thunderstorm and/or high winds affecting the Town.

[78] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

IMPACT

Overall, Westborough faces a "minor" impact from severe thunderstorms, with less than 10% of property in the affected area of town expected to be damaged in this type of hazard event. Westborough also faces a "limited" impact from severe winds and tornados, with between 10% and 25% of property in town expected to be damaged in these types of hazard events.

As indicated in Table 24 above, the following likely impacts on the physical environment can result from tornadoes of different levels:

- EF0 - Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damage to sign boards.
- EF1 - The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving automobiles pushed off the roads; attached garages may be destroyed.
- EF2 - Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
- EF3 - Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
- EF4 - Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.

The potential for locally catastrophic damage is a factor in any tornado, severe thunderstorm, or wind event. In Westborough, a tornado that hits residential areas would leave much more damage than a tornado with a travel path that ran along the town's uplands, where there is less settlement. Most buildings in the town have not been built to Zone 1 Design Wind Speed Codes. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975, and 56.9% of the Town's 8,552 total housing units was constructed in 1979 or earlier (according to the 2022 American Community Survey 5-year estimates).[79]

Westborough's median home value is $601,900 (according to American Community Survey 2022 5-year estimates).[80] Utilizing the total value of all property in town, $5,751,717,385,[81] and an estimated 10 percent of damage to 5 percent of all structures, the estimated amount of damage from a tornado in town is $28,758,586.93. The cost of repairing or replacing roads, bridges, utilities, and contents inside structures is not included in this estimate.

EXPOSURE

Certain features within Westborough's infrastructure, society, and environment may face more

[79] "DP04: Selected Housing Characteristics," Data.Census.gov, United States Census Bureau, accessed October 18, 2024, https://data.census.gov/table/ACSDP5Y2022.DP04?q=dp04%20selected%20housing%20characteristics&g=060XX00US2502775015.

[80] Ibid.

[81] Data Analytics and Research Bureau, "Assessed Values by Class," Dlsgateway.dor.state.ma.us, Massachusetts Department of Revenue, October 18, 2024, https://dlsgateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=PropertyTaxInformation.AssessedValuesbyClass.assessedvaluesbyclass&tblassessedvalues-PageNr=41&rdDataCache=400584956&rdShowModes=&rdSort=&rdNewPageNr=True1&rdRequestForwarding=Form.

exposure to severe thunderstorms/wind/tornadoes, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. Vulnerable features to severe thunderstorms/wind/tornadoes overlap with the features vulnerable to hurricanes and flooding described in the sections of this plan focusing on these other hazards. Westborough's older building stock makes it particularly vulnerable to high wind events.

Potential Climate Change Effects

The 2023 ResilientMass Plan identifies that current climate models predict an increase in severe thunderstorms, which have the potential to produce tornadoes. However, it is unknown if tornado frequency will increase with climate change. Some studies suggest there will be a decrease in the number of tornado days, but an increase in the number of tornadoes per day.[82]

Without a clear understanding of how climate change will impact tornadoes, the Town is not able to determine exactly how this hazard will impact population patterns and land use needs for the Town of Westborough. However, if climate change does increase the likelihood of tornado occurrence, the Town may have to incorporate additional emergency shelters into development and land use.

Vulnerability

Based on the above assessment, Westborough has a hazard index rating of "2 – high risk" from severe thunderstorms and winds, and a "3 – medium risk" hazard index rating from tornadoes. The relatively old age of the housing stock in Westborough makes the Town particularly vulnerable to tornadoes, despite their relative infrequency.

Mitigation Strategies

The Town of Westborough is currently able to effectively respond to severe thunderstorms, wind, and tornadoes through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities for the Town to expand upon its existing capabilities to mitigate and respond to severe thunderstorms, wind, and tornadoes. The local HMP planning team identified the following strategies that could be used to reduce the threat of severe thunderstorms and tornados in Westborough:

- Install lightning rods at the Town Hall and the Forbes Municipal Building to address lightning strikes.
- Expand redundancy of public safety and emergency services in different areas of town as flooding, intense storm events, and other crises become more frequent. This can allow different parts of town to respond effectively to a disaster if one part of the town is most severely hit and can address the current emergency response issues in efficiently reaching the east side of town.

[82] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," page 5.1-56.

4.7 WILDFIRES

Wildfires are fires involving full-sized trees, meadows, and/or scrublands.. Typical causes of wildfires and brush fires are lightning strikes, human carelessness, and arson. Relative humidity and wind and two weather-related factors that influence fire danger. Relative humidity refers to "the ratio of the amount of moisture in the air to the amount of moisture necessary to saturate the air at the same temperature and pressure."[83] When relative moisture drops, light fuels like grasses become drier and burn more easily.[84]

FEMA has classifications for three different types of wildfires:

- Surface fires are the most common type of wildfire, with the surface burning slowly along the floor of a forest, killing or damaging trees.
- Ground fires burn on or below the forest floor and are usually started by lightning.
- Crown fires move quickly by jumping along the tops of trees. A crown fire may spread rapidly, especially under windy conditions.

Potential effects of wildfires include damage to structures and other human infrastructure as well as impacts on natural resources. Smoke and air pollution from wildfires can be a health hazard, especially for sensitive populations including children, the elderly, and people with respiratory and cardiovascular diseases.

LOCATION

Approximately 74.4% of total land area in Worcester County is deciduous forest, evergreen forest, forested wetland, scrub/shrub land, scrub/shrub wetland, or grassland.[85] Much of this region of Massachusetts, including the Westborough area, has a high risk of wildfires for the state. In Westborough, approximately 33.6% of land is deciduous forest, approximately 5.5% of land is evergreen forest, approximately 13.4% of land is forested wetland, approximately 1.0% of land is scrub/shrub land, approximately 6.8% of land is scrub/shrub wetland, and approximately 2.2% of land is grassland.[86] Westborough is developed in a moderately suburban pattern, with few uninterrupted tracts of forest present. Although the substantial tree cover in town does present some risk for wildfires, the total amount of the Town that could be affected by a wildfire is categorized as "small," or less than 10% of its total area.

Westborough is vulnerable to interface problems (fires spreading from unoccupied land to human development). Human activity, which may involve cooking and camping fires as well as carelessly tossed cigarettes and other fire sources, can lead to problems for residents living near these fires and fire sources. Additionally, lightning strikes and faulty power infrastructure can lead to wildfires developing in town.

[83] "Understanding Fire Danger," Nps.gov, United States National Park Service, August 17, 2023, https://www.nps.gov/articles/understanding-fire-danger.htm.
[84] Ibid.
[85] Massachusetts Bureau of Geographic Information, "MassGIS Data: 2016 Land Cover/Land Use," Mass.gov, Massachusetts Executive Office of Technology Services and Security, May 2019, https://www.mass.gov/info-details/massgis-data-2016-land-coverland-use.
[86] Ibid.

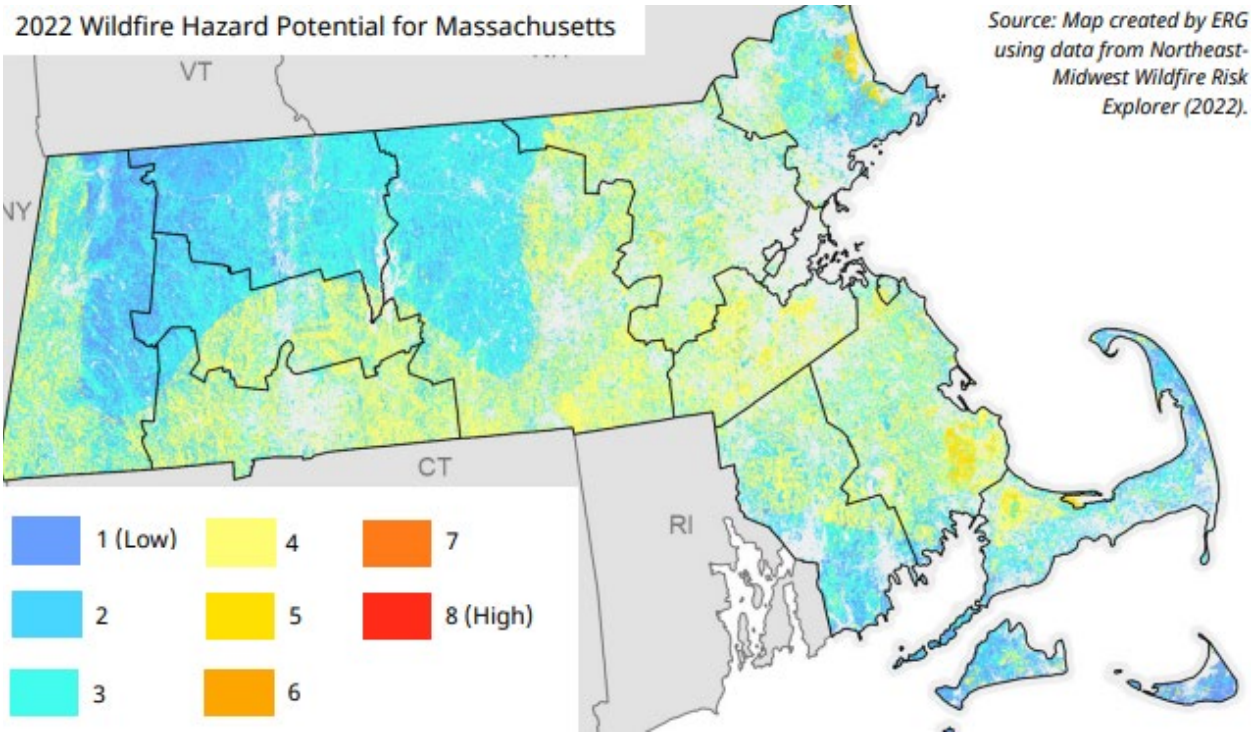

Figure 2: Wildfire Risk Areas for the Commonwealth of Massachusetts.[87]

EXTENT

Wildfires can cause widespread damage. They can spread very rapidly, depending on local wind speeds, and can be very difficult to get under control. Wildfires can last from several hours up to several days.

Approximately 62.5% of the Town's total land area is deciduous forest, evergreen forest, forested wetland, scrub/shrub land, scrub/shrub wetland, or grassland. These areas are at risk of fire and are spread evenly throughout the community, with developed areas, rivers, and major transportation corridors (such as Route 9, Interstate 495, and the MBTA Framingham-Worcester Commuter Rail Line) breaking up the forest. In drought conditions, a wildfire would be a matter of concern in town.

The National Fire Danger Rating system illustrates the potential extent of wildfires should they occur under different fire danger conditions:

[87] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

Table 26: The National Fire Danger Rating System

Rating	Basic Description	Detailed Description
CLASS 1: Low Danger (L) Color Code: Green	Fires not easily started	Fire starts are unlikely. Weather and fuel conditions will lead to slow fire spread, low intensity, and relatively easy control with light mop up. Controlled burns can usually be executed with reasonable safety.
CLASS 2: Moderate Danger (M) Color Code: Blue	Fires start easily and spread at a moderate rate	Some wildfires may be expected. Expect moderate flame length and rate of spread. Control is usually not difficult and light to moderate mop up can be expected. Although controlled burning can be done without creating a hazard, routine caution should be taken.
CLASS 3: High Danger (H) Color Code: Yellow	Fires start easily and spread at a rapid rate	Wildfires are likely. Fires in heavy, continuous fuel, such as mature grassland, weed fields, and forest litter, will be difficult to control under windy conditions. Control through direct attack may be difficult but possible, and mop up will be required. Outdoor burning should be restricted to early morning and late evening hours.
CLASS 4: Very High Danger (VH) Color Code: Orange	Fires start very easily and spread at a very fast rate	Fires start easily from all causes and may spread faster than suppression resources can travel. Flame lengths will be long with high intensity, making control very difficult. Both suppression and mop up will require an extended and very thorough effort. Outdoor burning is not recommended.
CLASS 5: Extreme (E) Color Code: Red	Fire situation is explosive and can result in extensive property damage	Fires will start and spread rapidly. Every fire start has the potential to become large. Expect extreme, erratic fire behavior. NO OUTDOOR BURNING SHOULD TAKE PLACE IN AREAS WITH EXTREME FIRE DANGER.

Beyond the direct hazards that wildfires pose, wildfires pose the indirect hazard of air quality reduction from smoke particulates. Smoke particulates are measured, along with other particulates that affect air quality, by the EPA's Air Quality Index.[88] For each pollutant, an AQI value of 100 generally corresponds to an ambient air concentration that equals the level of the short-term national ambient air quality standard for the protection of public health. AQI values at or below 100 are generally thought of as satisfactory. When AQI values rise above 100, air quality is unhealthy; at first for certain sensitive groups of people, then for everyone as AQI values get higher. The EPA establishes an AQI for five major air pollutants regulated by the Clean Air Act. Each of these pollutants has a national air quality standard set by EPA to protect public health, and these pollutants are: ground-level ozone; particle pollution (also known as particulate matter, including

[88] "Air Quality Index (AQI) Basics," Airnow.gov, United States Environmental Protection Agency, accessed June 10, 2024, https://www.airnow.gov/aqi/aqi-basics/.

PM2.5 and PM10); carbon monoxide; sulfur dioxide; and nitrogen dioxide.

The AQI is divided into six categories. Each category corresponds to a different level of health concern. Each category also has a specific color. The color makes it easy for people to quickly determine whether air quality is reaching unhealthy levels in their communities.

Table 27: AQI Basics for Ozone and Particle Pollution

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.





Images 9 and 10: Wildfires occurring in Westborough

Westborough has a professional fire department providing 24/7 coverage. In addition, Westborough is part of the South Middlesex County Fire Department (Mutual Aid District 14), with

23 other Towns. Westborough has experienced 196 wildfires between 2011-2020; however, each of these fires were quite small, and altogether they consumed 47.5 acres of brush/wildland over a 10-year period.[89] The local HMP planning team in Westborough noted that a brushfire occurred on April 14th, 2023 along the MBTA commuter rail line in town and that this fire was potentially caused by sparks from the braking systems of the MBTA passenger trains using this line. The local HMP planning team noted that the Town has a few problem areas where fires occur; they include Old Flanders Road, the Mass Turnpike, and the MBTA line from just north of the town center southwest to the Westborough side of Tufts University's Cummings School of Veterinary Medicine.

During a critical drought which occurred across most of Massachusetts in late 2024 and was ongoing at the time of the writing of this plan, at least 638 wildfires which in combination burned at least 3,413 acres occurred in the state.[90]

Probability of Future Events

The 2023 ResilientMass Plan notes that climate-change driven changes in the intensity and frequency of precipitation and thunderstorms, prolonged drought conditions, and rising temperatures are expected to increase the frequency and severity of wildfires.[91] In drought conditions, forest types that are not typically prone to wildfires will become more likely to burn. Globally, wildfires are projected to increase worldwide by 14% by 2030, 30% by 2050, and 50% by 2100.

Changes in weather patterns driven by climate change can intensify fires which in turn heighten the effects of climate change. By mid-century, mean summer temperatures in the Concord River Basin are projected to increase by between 3.6° F and 8.1° F due to climate change.[92] Rising temperatures coupled with variable precipitation could exacerbate summer drought and could encourage more high-elevation wildfires; These wildfires release stores of carbon that contribute to the buildup of greenhouse gases and therefore further exacerbate climate change.

Climate change is also predicted to bring increased wind damage from major storms and bring new types of pests, including invasive species, to the region. Both increased wind and the introduction of new pests could potentially create more debris in wooded areas and result in a larger risk of fires.

The Westborough HMP Team found it difficult to predict the likelihood of wildfires in a probabilistic manner because of the number of variables involved; fuel availability, weather and climate conditions, and human activity all factor into wildfire occurrences. However, based on regular previous occurrences of minor wildfires in town, the local HMP planning team determined the probability of future damaging wildfire events to be "moderate" (a 10% to 40% percent chance in the next year).

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[89] "Wildfire Data," Cmrpc-my.sharepoint.com, Massachusetts Fire Incident Reporting System, accessed October 18, 2024, https://cmrpc-my.sharepoint.com/:x:/r/personal/wtalbot_cmrpc_org/_layouts/15/Doc.aspx?sourcedoc=%7B1F0B29EB-3A47-4669-B4E6-FA4FC08AD498%7D&file=Wildfire%20Data.xlsx&action=default&mobileredirect=true.

[90] Massachusetts Emergency Management Agency, "Massachusetts Emergency Management Agency Situational Awareness Statement # 24: Statewide Wildfire Operations," (issue brief), Boston, Massachusetts, November 21, 2024.

[91] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

[92] ResilientMass Maps and Data Center, "Climate Change Projections Dashboard," Resilientma-mapcenter-mass-eoeea.hub.arcgis.com, ResilientMass, accessed July 1, 2024, https://resilientma-mapcenter-mass-eoeea.hub.arcgis.com/#ClimateDashboard.

IMPACT

While a large wildfire could in theory damage much of the landmass of Westborough, most forested areas are sparsely developed; this means that fires in the most wildfire-prone areas of town are not likely to cause damage to property. For this reason, the Town faces a "minor" impact from wildfires, with damage to less than 10% of property in the affected area of town likely to occur in the case of a wildfire hazard event.

Wildfires can consume homes, other buildings, and/or agricultural resources. Wildfires impact:

- Benefits that people receive from the environment, such as food/water and the regulation of floods and drought;
- Local heritage, through the destruction of natural features;
- The economy, due to damage to property and income from land following a wildfire;
- The overall destruction of property, loss of life, and/or injuries.

Utilizing the total value of all property, $5,751,717,385,[93] and an estimated 5 percent of damage to 1 percent of all structures, the estimated amount of damage from a wildfire is $2,875,858.69. The cost of repairing or replacing roads, bridges, utilities, and contents inside structures is not included in this estimate.

The Wildland Urban Interface (WUI) is defined as the area where houses meet or intermingle with undeveloped wildland vegetation; the WUI represents a large percentage of the land use within Worcester County as a whole.[94]

EXPOSURE

Certain features within Westborough's infrastructure, society, and environment may face more exposure to wildfires, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- People who are sensitive to smoke, including children, the elderly, and individuals with health conditions. Air pollution from wildfires is a public health concern, as it leads to smoke inhalation which can be severe. Smoke can exacerbate respiratory conditions like asthma and can carry toxic chemicals and particulate matter. In 2021, wildfire smoke from western states and Canada extended across the continental US and forced the Massachusetts Department of Environmental Protection to issue an air quality alert;[95] and
- First responders, especially the town's firefighters.

Specifically, the following critical infrastructure sites and routes identified in this plan were noted as being especially vulnerable to wildfires / brush fires by CMPRC's GIS analysis:

[93] Data Analytics and Research Bureau, "Assessed Values by Class"

[94] Volker C. Radeloff et al., "The 1990-2020 wildland-urban interface of the conterminous United States - geospatial data," FS.USDA.gov, Forest Service Research Data Archive, 2023, https://www.fs.usda.gov/rds/archive/products/RDS-2015-0012-4/_metadata_RDS-2015-0012-4.html.

[95] Kat J. McAlpine (2021, July 27). "Wildfire Smoke in New England Is 'Pretty Severe from Public Health Perspective'," BU.edu, The Brink: Pioneering Research from Boston University, July 27, 2021, https://www.bu.edu/articles/2021/wildfire-smoke-in-new-england/.

- Route 135,
- Otis Street,
- The CSX/MBTA/AMTRAK railroad, and
- The Westborough MBTA station.

As previously described in the 2021 example above, wildfires do not have to take place within town to affect the Town; in March through July of 2023, historic wildfires in Canada sent smoke across a broad swath of New England, peaking in June of that year. In Worcester County, these fires reduced air quality throughout the months of May and June. The AQI for Worcester County peaked at 148 – Unhealthy for Sensitive Groups for fine particulate matter (PM2.5) – on June 6th 2023.[96]

Potential Climate Change Effects

Climate change effects will impact future wildfires, as is noted in the "Probability of Future Events" section above. According to the 2023 ResilientMass Plan, precipitation changes, prolonged drought, rising temperatures, and increased frequency of lightning are expected to contribute to increased frequency and severity of wildfire.[97] As droughts become more frequent and severe, forest types that do not usually burn and are not fire adapted will be more likely to burn. Wildfires are projected to increase worldwide by 14% by 2030, 30% by 2050, and 50% by 2100.

Seasonal drought exacerbated by climate change may also make it more difficult to ensure a reliable water source for firefighting.

In summary, climate change is likely to increase the frequency and extent of wildfires in Westborough. This increase in wildfires may lead to changes in land use, such as the Town no longer being able to develop near dense forest. Additionally, if wildfires worsen significantly, residents may desire to move away from dense forest, shifting populations from more rural areas to cities or downtown communities. The future air quality risks to Westborough from wildfires are hard to predict with any certainty and represent a threat to the broader region; town officials could consider including air purifying equipment as a needed aspect of shelter planning in the future.

Vulnerability

Based on the above assessment, Westborough has a hazard risk index of "3 – medium risk" from wildfires. However, this risk assessment is highly dependent on short term weather patterns like wind, lightning, and rainfall, which are impossible for the Town to predict with certainty. Sustained drought conditions could put Westborough at risk to a greater frequency and ferocity of wildfires, and wildfires outside of Westborough could reduce air quality to dangerous levels in town.

Mitigation Strategies

The Town of Westborough is currently able to effectively respond to wildfires through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities for the Town to expand upon its existing capabilities to mitigate and respond to wildfires. The local HMP planning team identified the following strategies that could be used to reduce the threat of wildfires in

[96] "Pre-Generated Data Files," Aqs.epa.gov, United States Environmental Protection Agency, October 26, 2023, https://aqs.epa.gov/aqsweb/airdata/download_files.html.
[97] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

Westborough:

- Create additional egresses where necessary to expand emergency response capabilities in town, especially in heavily forested woods where firefighting ability is currently hindered.
- Enhance coordination with other water systems to ensure that there is a backup water supply for the Town from the MWRA which runs through neighboring towns. Plan for treatment incompatibilities if a backup system is needed.

4.8 EARTHQUAKES

An earthquake is a sudden, rapid shaking of the ground caused by the breaking and shifting of rock beneath the Earth's surface. Earthquakes can occur suddenly and without warning at any time of the year. Ground shaking from earthquakes can rupture gas mains and disrupt other utility services, can damage buildings, bridges, and roads, and can trigger other hazardous events such as avalanches, flash floods (which can be caused by dam failure), and fires. Unreinforced masonry buildings, buildings with foundations that rest on filled land or unconsolidated and unstable soil, and mobile homes not tied to their foundations are especially vulnerable during an earthquake.

LOCATION

Because of the regional nature of the hazard, the entire Town of Westborough is susceptible to earthquakes. This makes the location of occurrence for this hazard "large."

EXTENT

Earthquake magnitude and intensity are two measures of the overall extent of earthquakes in a given area. Magnitude is defined as the energy produced by an earthquake, and intensity is defined as an earthquake's level of effect on the Earth's physical environment, nature, people, and structures.

The magnitude of an earthquake can be measured using the Richter Scale, which measures the energy of an earthquake by determining the size of the greatest vibrations recorded on a seismogram. On this scale, one step up in magnitude (from 5.0 to 6.0, for example) indicates an increase in energy of an earthquake of more than 30 times. Earthquakes are also commonly measured using the moment magnitude scale, which provides similar measurements to the Richter scale but more accurately measures earthquakes with magnitudes greater than 8.[98]

Table 28: Richter Scale Magnitudes and Effects

Magnitude	Effects
< 3.5	Generally not felt, but recorded.
3.5 - 5.4	Often felt, but rarely causes damage.
5.4 - 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 - 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 - 7.9	Major earthquake. Can cause serious damage over larger areas.
8 or >	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

The intensity of an earthquake is measured using the Modified Mercalli Scale. This scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature, and man-made structures on a scale of I through XII; I denotes a weak earthquake and XII denotes an earthquake that causes almost complete destruction.

[98] "How Do We Measure Earthquake Magnitude? Michigan Technological University," MTU.edu, Michigan Tech, accessed June 10, 2024, https://www.mtu.edu/geo/community/seismology/learn/earthquake-measure/.

Table 29: Modified Mercalli Intensity Scale for and Effects[99]

Scale	Intensity	Description of Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs.	
II	Feeble	Some people feel it.	< 4.2
III	Slight	Felt by people resting; like a truck rumbling by.	
IV	Moderate	Felt by people walking.	
V	Slightly Strong	Sleepers awake; church bells ring.	< 4.8
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves.	< 5.4
VII	Very Strong	Mild alarm; walls crack; plaster falls.	< 6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged.	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open.	< 6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread.	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards.	< 8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves.	> 8.1

Previous Occurrences

The last recorded earthquake to cause major damage in New England occurred in 1755,[100] though seismologists state that another serious earthquake occurrence in the region in the future is possible. Earthquakes which caused damage in New England occurred in:

- 1638 (magnitude 6.5, Concord, New Hampshire),
- 1727 (magnitude 5.6, Newburyport, MA),
- 1755 (magnitude 6.2, off the coast of Cape Ann, MA),
- 1791 (magnitude 4-5, East Haddam, Connecticut),
- 1904 (magnitude 5.9, far eastern Maine, at the border with New Brunswick),
- 1940 (magnitude 5.5, west of Whittier, New Hampshire), and

[99] Earthquake Hazards Program, "The Modified Mercalli Intensity Scale," USGS.gov, United States Geologic Survey, accessed June 10, 2024, https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale?qt-science_center_objects=0#qt-science_center_objects.

[100] Northeast States Emergency Consortium and John E. Ebel, PhD. Boston College, Weston Observatory, "Massachusetts Earthquakes," NESEC.org, Northeast States Emergency Consortium, accessed June 10, 2024, http://nesec.org/massachusetts-earthquakes/.

- 1973 (magnitude 4.8, across the Quebec border from northern Oxford County, Maine)[101]

There are five seismological faults in Massachusetts, but there is no discernible pattern of previous earthquakes along these fault lines. Additionally, earthquakes that are based in more seismologically active regions like parts of Canada may also impact Massachusetts.[102] Earthquakes occur without warning and may be followed by aftershocks. Central New Hampshire is one of the most seismically active regions of New England, and earthquakes with epicenters in this region could cause damage in Westborough, as New England's often very hard igneous and metamorphic bedrock causes earthquake shockwaves to travel further than they do in other regions, such as the US West Coast.[103] Figure 3 below shows the locations of earthquakes that have occurred across the New England region and beyond from January 1975 through October 2017.

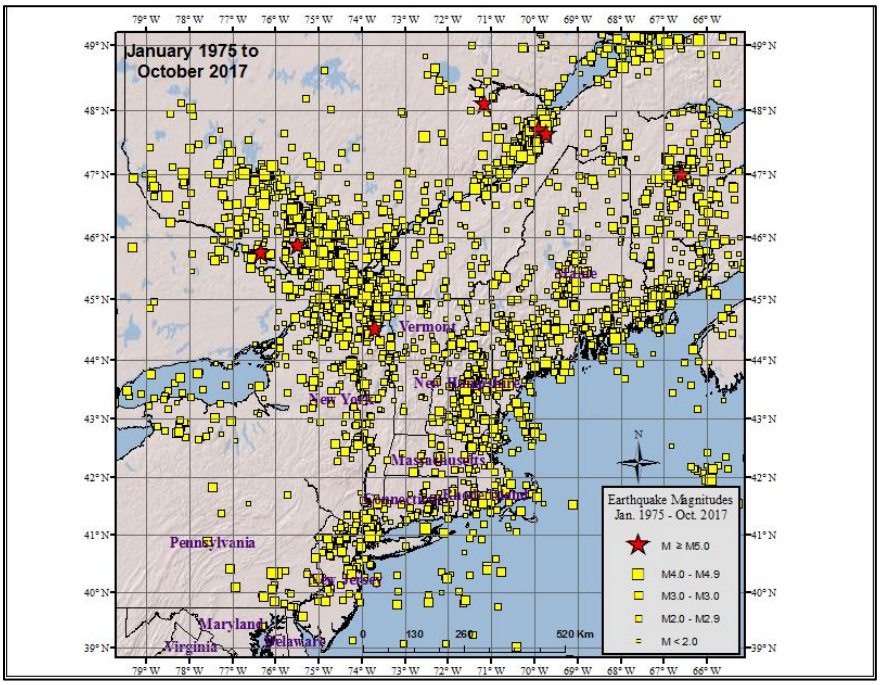

Figure 3: Map of Earthquakes of the Northeastern US and Southeastern Canada 1975 to 2017.[104]

The local hazard mitigation planning team reports that no earthquakes have recently been felt in Westborough. To determine whether earthquakes have occurred recently near Westborough, earthquake data over the past six years for all Massachusetts cities and towns gathered by the Weston Observatory at Boston College was reviewed.

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[101] Ibid; "New England Significant Earthquake Atlas," Aki.bc.edu, Weston Observatory at Boston College, accessed February 14, 2025, http://aki.bc.edu/quakes_historical.htm; Juli Mancini, "Big Noises: The Great Connecticut Quake of 1791," Patch.com, Patch: The Haddams-Killingworth, CT, March 27, 2011, https://patch.com/connecticut/thehaddams-killingworth/big-noises-the-great-connecticut-quake-of-1791; Henry N. Berry IV, "Earthquakes in Maine," Maine.gov, Maine Department of Agriculture, Conservation, and Forestry, January 26, 2015, https://www.maine.gov/dacf/mgs/hazards/earthquakes/quake.htm.

[102] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

[103] "New York Earthquakes," NESEC.org, Northeast States Emergency Consortium, accessed September 16, 2024, https://nesec.org/new-york-earthquakes/; Kevin Skarupa, "Why New England earthquakes are felt so far from epicenters," WMUR.com, WMUR9-ABC, January 27, 2025, https://www.wmur.com/article/feeling-new-england-earthquakes-bedrock/63574691.

[104] "New York Earthquakes," NESEC.org.

The Weston Observatory utilizes two scales to track the magnitude of earthquakes. One of these scales is the Nuttli magnitude (Mn) for North America east of the Rocky Mountains. Weston Observatory also utilizes the Coda Duration magnitude (Mc) scale, which is based on the duration of shaking at a particular station. The Coda Duration magnitude can quickly estimate the magnitude of an earthquake before its exact location is known.

The following earthquakes with a magnitude of over 2.0 on either the Nuttli magnitude or Coda Duration magnitude scales have been recorded at the Weston Observatory since 2018:

- 12/21/2018 – 3 km WSW of Gardner, 2.1/2.1 [Mn*/Mc**]
- 8/21/2019 – 2 km SSE of Wareham, 1.7/2.4
- 12/3/2019 – 4 km SSE of Plymouth, 1.6/2.2
- 11/8/2020 – 11 km SW of New Bedford, 3.8/3.4
- 11/22/2020 – 12 km WSW of New Bedford, 1.7/2.6
- 7/25/2021 – 5.0 km W of Peabody 1.4/2.5 [Mn*/Mc**]
- 1/1/2022 – 13.0 km N of Rockport 2.3/3.0
- 3/4/2022 - 5.0 km WSW of Orange 2.2/2.7
- 11/10/2022 – 12.0 km NW of Nantucket 2.6/3.0
- 11/13/2023 – 208.0 km E of Chatham 2.8/3.3
- 12/26/2023 – 52.0 km ENE of Rockport 2.2/2.8
- 3/11/2024 – 6.0 km E of Lawrence 1.1/2.1

  *Mn is the Nuttli Magnitude (see below)

  **Mc is the Coda Duration Magnitude (see below)

Each of these earthquakes are minor. Additionally, earthquakes with a magnitude of about 2.0 or less are usually called "microearthquakes" and are generally only recorded locally.[105]

On August 23, 2011, an earthquake measuring 5.8 on the Richter scale centered in Virginia was felt in much of the northeast, [106] but this earthquake was not felt in Westborough according to the local HMP planning team.

Probability of Future Events

The 2023 ResilientMass Plan notes that "The probability of a magnitude 5.0 or greater earthquake centered in New England in a 10-year period is about 10–15%."[107] Additionally, this plan notes that while Massachusetts is not near any tectonic plate boundaries, it is still susceptible to earthquakes on the North American Plate. Earthquakes elsewhere could also have secondary effects on the state and the region, such as potentially disrupting supply chains.

[105] New England Seismic Network, "NESN Recent Earthquakes," Aki.bc.edu, Weston Observatory at Boston College, June 10, 2024, http://aki.bc.edu/cgi-bin/NESN/recent_events.pl.
[106] Northeast States Emergency Consortium and John E. Ebel, PhD. Boston College, Weston Observatory, "Massachusetts Earthquakes," NESEC.org.
[107] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," page 5.1-42.

Based upon existing records, there is "very low" frequency (a less than 1% probability in any given year) of damaging earthquakes in Westborough.

IMPACT

Massachusetts introduced earthquake design requirements into its state building code in 1975 and improved its state building code for seismic resilience in the 1980s. However, these specifications apply only to new buildings or to extensively modified existing buildings. Buildings, bridges, water supply lines, and electrical power lines and facilities built before the 1980s may not be designed to withstand the forces of an earthquake. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975, and 56.9% of the Town's 8,552 total housing units, according to 2022 American Community Survey 5-year estimates, were constructed in 1979 or earlier.[108] Seismic standards in Massachusetts were upgraded with the 1997 revision of the state building code. Despite its fairly old housing stock, Westborough faces a "minor" impact from earthquakes, with damage to less than 10% of property in town likely to occur in the event of an earthquake due to the extreme rarity of damaging events.

HAZUS-MH (multiple-hazards) is a computer program developed by FEMA which estimates losses due to a variety of natural hazards. The HAZUS earthquake module allows users to define an earthquake magnitude and model the potential damages caused by that earthquake as if its epicenter is at the geographic center of the study area. For the purposes of this plan, a magnitude 5.0 earthquake was selected for analysis. Historically, major earthquakes are rare in New England, although a magnitude 5 earthquake occurred in the region in 1963.

Table 30: HAZUS Potential Damages from a Magnitude 5.0 Earthquake with an Epicenter in Westborough

	Magnitude 5.0
Building Characteristics	
Estimated total number of buildings	5,523
Estimated total building replacement value (2024 $)	$5,877,000,000.00
Building Damages	
# of buildings sustaining slight damage	1,295
# of buildings sustaining moderate damage	695
# of buildings sustaining extensive damage	165
# of buildings completely damaged	37
Population Needs	
# of households displaced	362
# of people seeking public shelter	162
Debris	

[108] "DP04: Selected Housing Characteristics," Data.Census.gov

Building debris generated (tons)	119,000
# of truckloads to clear debris (@ 25 tons/truck)	4,760
Value of Damages (dollars)	
Total property damage	$644,948,800.00
Total losses due to business interruption	$116,296,600.00

For more information on the HAZUS-MH software, go to www.fema.gov/hazus-software.

Exposure

Certain features within Westborough's infrastructure, society, and environment may face more exposure to earthquakes, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- Older buildings, including unreinforced masonry buildings in the downtown, constructed prior to the first edition of the Massachusetts State Building Code (these buildings would see substantial damage in the case of an earthquake similar in magnitude and length to the 1755 Cape Ann earthquake); and
- Underground water, sewer, and gas infrastructure, which DPW staff members on the local HMP planning team noted are vulnerable to being damaged in the event of an earthquake. This infrastructure is especially vulnerable to earthquakes due to the glacial outwash sand and gravel and glacio-lacustrine fine sand, silt and clay which make up a large portion of the Town's soils being prone to liquefaction during prolonged shaking when the water table is shallow.[109]

Potential Climate Change Effects

The 2023 ResilientMass Plan identifies no climate change effects that pertain to earthquake hazards.[110]

Vulnerability

Based on the above analysis, Westborough has a hazard index rating of "5 – lowest risk" from earthquakes.

Mitigation Strategies

The Town of Westborough is currently able to effectively respond to earthquakes through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities for the Town to expand its existing capabilities to mitigate and respond to earthquakes. The local HMP planning team identified the following strategies that could be used to reduce the threat of earthquakes in Westborough:

[109] "What is liquefaction," USGS.gov, United States Geological Survey, April 19, 2023, https://www.usgs.gov/faqs/what-liquefaction; "Soil Survey Map," ArcGIS.com, ESRI, accessed February 14, 2025, https://www.arcgis.com/apps/View/index.html?webmap=38a93357a08b4f6d94d7e07a424fafd5.
[110] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

- Inventory unreinforced masonry and brick buildings in town which may be vulnerable to earthquakes. Conduct a study which identifies ways that these buildings can meet the Massachusetts State Building Code's seismic standards. Consider making agreements with businesses in town to use reinforced office buildings on upland, glacial till soils as emergency shelters in the case of earthquakes affecting the Town. Consider using the Fales and/or Mill Pond Schools as earthquake shelters as well.
- Update the Town's Emergency Preparedness Planning Guide periodically…The core content of this guide should be translated into foreign languages commonly spoken in town, including Portuguese, Spanish, Chinese, and Arabic.

4.9 Dam Failure

Dams and their associated impoundments provide many benefits, such as water supply, recreation, hydroelectric power generation, and flood control, to communities. However, dams also pose a risk to lives and property in cases in which they fail. Dam failure is not a common occurrence, but dams do represent a potentially disastrous hazard.

When a dam fails, the potential energy of the stored water behind the dam is released rapidly. Some dam failures occur when floodwaters overtop and erode the material components of the dam. Other dam failures are caused by foundation defects, inadequate maintenance, internal erosion caused by seepage, and other specific causes.[111] Dam failures may be influenced by storm floodwaters, but most dam failures are caused by structural, mechanical, or hydraulic failures.[112] Dam breaches can lead to catastrophic consequences; they cause water to rush in a torrent downstream, flooding an area engineers refer to as an "inundation area." The number of casualties and the amount of property damage resulting from a dam failure will depend upon the timing of the warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Many dams in Massachusetts were built during the 19th century without the benefit of modern engineering design and construction oversight. Dams of this age are more vulnerable to failing because of structural problems caused by their age and/or lack of proper maintenance, as well as due to structural damage caused by an earthquake or flooding. The Massachusetts Department of Conservation and Recreation (DCR) Office of Dam Safety is the agency responsible for regulating dams in the state (M.G.L. Chapter 253, Section 44 and the implementing regulations 302 CMR 10.00).[113] Dams that are in excess of 6 feet in height (regardless of storage capacity) and that have more than 15 acre-feet of storage capacity (regardless of height) are under DCR regulation. Dam safety regulations enacted in 2005 transferred significant responsibilities for dams from the Commonwealth of Massachusetts to dam owners, including the responsibility to conduct dam inspections.

Location

According to the Massachusetts Office of Dam Safety, there are eight dams in Westborough. Of these dams, one is ranked as High Hazard and two are ranked as Significant Hazard. In addition, Whittemore Pond Dam (MA02929) and Leombruno Pond Dam (MA02930) have been noted as vulnerable to failure by the local HMP team in town. Both of these dams are privately owned.

[111] Association of State Dam Safety Officials. (n.d.). Dam Failures and Incidents. Association of State Dam Safety Officials. Retrieved December 29, 2021, from https://damsafety.org/dam-failures

[112] "Living with Dams: Know Your Risks (FEMA P-956)," Federal Emergency Management Agency, February 2013, page 9, https://www.fema.gov/sites/default/files/2020-08/fema_living-with-dams_p-956.pdf.

[113] "Section 44: Definitions applicable to Secs. 44 to 48B," MAlegislature.gov, The 193rd General Court of the Commonwealth of Massachusetts, accessed September 17, 2024, https://malegislature.gov/Laws/GeneralLaws/PartIII/TitleIV/Chapter253/Section44; "302 CMR 10.00: Dam safety," Mass.gov, The Commonwealth of Massachusetts, Massachusetts Court System, February 10, 2017, https://www.mass.gov/regulations/302-CMR-1000-dam-safety#:~:text=302%20CMR%2010.00%20provides%20regulatory%20guidelines%20for%20the,public%20review%20of%20the%20performance%20of%20a%20dam.

Table 31: Dams within Westborough

National ID	Dam Name	Owner	Regulatory Authority	Hazard Code	Notes
MA00939	Lower Sandra Pond Reservoir Dam	Public – Town of West-borough	Office of Dam Safety	Significant Hazard	This dam was upgraded during 2005-2007 for $360,000. Further upgrades to this dam have been planned; the Town has applied for a FEMA BRIC Grant to fund these upgrades and is waiting to hear back from FEMA to see if they have received this grant. It is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis. It is also located near a locally identified severe snowstorm / ice storm / nor'easter hazard area. The Combined Emergency Action Plan for this dam and the Upper Sandra Pond Reservoir Dam was completed in March 2018; the Operations and Maintenance Plan for these two dams was completed in 2017/2018. This dam was most recently inspected in December of 2023. Additional inspections of the portions of the water supply components of the dam need to be completed; Pending the results of these additional inspections, repairs or improvements to the dam should be completed as they are required.
MA00940	Upper Sandra Pond Reservoir Dam	Public – Town of West-borough	Office of Dam Safety	Significant Hazard	This dam was upgraded during 2005-2007 for $360,000. Further upgrades for this dam were funded by the Town and were completed in 2023. It is located near the FEMA 100-year flood zone and a locally identified severe snowstorm / ice storm / nor'easter hazard area. The Combined Emergency Action Plan for this dam and the Lower Sandra Pond Reservoir Dam was completed in March 2018; the Operations and Maintenance Plan for these two dams was completed in 2017/2018. This dam was most recently inspected in December of 2023.

National ID	Dam Name	Owner	Regulatory Authority	Hazard Code	Notes
MA01000	George H. Nichols Multi-purpose Dam	Public – Massachusetts Department of Conservation and Recrea-tion	Office of Dam Safety	High Hazard	This dam was upgraded during 2010-12 using $2.5 million in USDA and state funds. It is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis.
MA02926	Farm Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam is located in the FEMA 100-year flood zone and therefore was noted as vulnerable by CMRPC's GIS analysis.
MA02927	Old Cider Mill Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam is located near but not in the FEMA 100-year flood zone.
MA02928	Quick Pond Dam	Private	Non-Jurisdictional – Other	N/A	There are no noteworthy concerns regarding natural hazard impacts on this dam.
MA02929	Whitte-more Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam has been noted as vulnerable to failure by the local HMP team in town, is in the FEMA 100-year flood zone, and is in locally identified flooding and invasive species hazard areas; therefore, it was noted as vulnerable by CMRPC's GIS analysis. It is also located along a locally identified microburst hazard path; other critical facilities in town are likely to have a similar level of risk to potential future microbursts in town as critical facilities along this path.
MA02930	Leom-bruno Pond Dam	Private	Non-Jurisdictional – Other	N/A	This dam is in rough shape and there is currently not being regularly maintained. It has been noted as vulnerable to failure by the local HMP team in town, so therefore it was noted as vulnerable by CMRPC's GIS analysis. A failure of this dam could cause damage to infrastructure in town.

Inundation areas for these dams cover less than 10% of Westborough, or a "small" portion of its area.

Extent

As stated in the introduction to this dam failure section, dam or levee breaches often lead to catastrophic consequences; water released by a breach ultimately rushes in a torrent downstream, flooding an area engineers refer to as an "inundation area." The number of casualties and the amount of property damage which a dam failure causes will depend upon the timing of the warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Dams in Massachusetts are assessed according to their risk to life and property. The state has three hazard classifications for dams:

- High Hazard: Dams located where failure or improper operation will likely cause loss of life and serious damage to homes, industrial or commercial facilities, important public utilities, main highways, or railroads.
- Significant Hazard: Dams located where failure or improper operation may cause loss of life and damage to homes, industrial or commercial facilities, secondary highways, or railroads or cause interruption of use or service of relatively important facilities.
- Low Hazard: Dams located where failure or improper operation may cause minimal property damage to others; Loss of life is not expected.

Some dams do not have a hazard rating.

Previous Occurrences

To date, there have been no catastrophic dam failures in Westborough.

Probability of Future Events

The probability of future dam failure events in Westborough is "very low," with a less than 1% chance of a dam in town failing in any given year.

Impact

The Town faces a "limited" impact from the failure of dams, with 10% to 25% of property in the affected area of town likely to see damage in the case of a dam failure event.

It is not possible to estimate the property loss impacts of dam failure quantitatively given the large number of variables involved in failure events. Qualitatively, losses from failure of an individual dam could be significant but would likely be geographically limited to portions of the dam's inundation zone. The geographic areas included in dam inundation zones may change with future improvements to dam breach modeling software which are being developed and are currently in early trial stages, such as the DSS-WISE™ (Decision Support System for Water Infrastructural Security) program.[114]

Exposure

Certain features within Westborough's infrastructure, society, and environment may face more exposure to dam failures, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and

[114] "About DSS-WISE™ Web," Dsswiseweb.ncche.olemiss.edu, University of Mississippi, accessed June 10, 2024, https://dsswiseweb.ncche.olemiss.edu/userpages/about.php.

vulnerable populations in Section 3. These features include:

- Structures located within the inundation areas of Significant and High Hazard Dams;
- Downstream waterway infrastructure; and
- Poorly maintained or inspected dam infrastructure held in public or private hands.

Specifically, the following critical infrastructure routes and sites identified in this plan were noted as being especially vulnerable to dam failure by the local HMP planning team in Westborough and/or CMPRC's GIS analysis:

- Flanders Road,
- The Whittemore Pond and Leombruno Pond dams, and
- The New England Center for Autism.

Potential Climate Change Effects

Intensified and more frequent flooding caused by climate change can increase dam failure risk. Flooding can cause dam failure through overtopping; Overtopping occurs when floodwaters flowing into a dammed body of water exceed the spillway capacity of the dam and cause water to flow over the top of the dam. If the water flowing over the dam erodes the dam, then a dam failure can occur. Therefore, the risk of dam failure may be indirectly impacted by climate change through intensified flooding.

Vulnerability

Based on a mostly qualitative assessment, Westborough's overall vulnerability to dam failure is considered to be "4 – low risk." Significant damage to property and the Town's current and future assets, injuries to people, and/or deaths of people may occur if a Significant Hazard or High Hazard dam in town were to fail. However, dam failure events are unlikely to occur in town.

Mitigation Strategies

The Town of Westborough is currently able to effectively respond to dam failure through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities for the Town to expand its existing capabilities to mitigate and respond to dam failures. The local HMP planning team identified the following strategies that could be used to reduce the threat of dam failure in Westborough:

- Enhance the monitoring of conditions at the Town-owned, Significant Hazard Upper and Lower Sandra Pond dams; enhance the maintenance of and/or improve these dams as is needed.
- Complete additional inspections of the portions of the water supply components of the Lower Sandra Pond Dam that were inaccessible during the most recent inspection of the dam (as is described in the "Lower Sandra Pond Dam Phase 1 Inspection / Evaluation Report" from December 19th, 2023); these include below water portions of the gatehouse, water supply pipes, and valves. Pending the results of these additional inspections, complete repairs or improvements as they are required.
- Complete a town-wide drainage study that examines basins and dams to help with addressing more frequent high intensity natural hazard events.

4.10 Drought, Including Changes in Groundwater

Drought is a normal and recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. Drought is a lack of precipitation over an extended period of time which results in a prolonged water shortage for some activity, group, or environmental sector. The direct impacts of droughts include: reduced crop yields; reduced rangeland and forest productivity; increased fire hazards; reduced water levels (including reduced groundwater levels); increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat. Drought impacts, including reduced groundwater levels, can have far-reaching effects throughout the region and even the country.

Location

Because of this hazard's regional nature, drought (including reduced groundwater levels) would likely impact the entire community, meaning the location of occurrence within Westborough of this hazard is "large."

Extent

The National Drought Mitigation Center records information on historical drought occurrences. Unfortunately, drought data are only available at the state and county levels and not at the local level. The National Drought Mitigation Center categorizes drought severity on a D0-D4 scale as is shown below.

Table 32: National Drought Mitigation Center D0-D4 Scale[115]

Classification	Category	Description
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

More severe drought will lead to more impactful changes in groundwater by reducing water table levels and affecting groundwater quality. The United States Geological Survey's National Groundwater Conditions web application measures groundwater levels by monthly percentiles as compared to historic levels at each particular site.[116] In Massachusetts, the quality of drinking

[115] "Drought Classification," Droughtmonitor.unl.edu, National Drought Mitigation Center, University of Nebraska-Lincoln, accessed June 10, 2024, https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx.

[116] Lee Stanish, "Introducing the National Groundwater Conditions web application," Waterdata.usgs.gov, United

water, including from groundwater sources, is assessed by measuring maximum containment levels (MMCLs) from a number of inorganic and organic chemical, radionuclide, and biological contaminants.[117] Massachusetts also has a Drought Management Plan which provides an overview of how groundwater levels are monitored in the state;[118] data from groundwater monitoring locations in and near Westborough can be studied to see if groundwater levels in town are fluctuating outside of historically-experienced ranges.

Previous Occurrences

In Massachusetts, five statewide extreme droughts have occurred since 1930. These historic major droughts range in severity and in length, lasting from three to nine years. During many of these droughts, water supply systems around the state were found to be inadequate; At the times of these droughts, water was piped into urban areas, and water-supply systems were modified to permit withdrawals at lower water (including groundwater) levels caused by drought. The Westborough area has been spared the most severe impacts in each of these droughts according to the information for Massachusetts included in the USGS Water Supply Paper #2375.[119]

The following table shows peak drought severity data in Massachusetts from the National Drought Mitigation Center for each year since 2000:

Table 33: Peak Drought Severity Data in Massachusetts Per Year Since 2000[120]

Year	Maximum Severity
2000	No drought
2001	D2 conditions in 21% of the state
2002	D2 conditions in 100% of the state
2003	No drought
2004	D0 conditions in 48% of the state
2005	D1 conditions in 7% of the state
2006	D0 conditions in 98% of the state
2007	D1 conditions in 71% of the state
2008	D0 conditions in 69% of the state
2009	D0 conditions in 45% of the state
2010	D1 conditions in 27% of the state

States Geological Survey, accessed April 7, 2025, https://waterdata.usgs.gov/blog/groundwater-levels-app/.

[117] "Drinking Water Standards and Guidelines," Mass.gov, the Massachusetts Department of Environmental Protection, accessed April 7, 2025, https://www.mass.gov/guides/drinking-water-standards-and-guidelines.

[118] "Massachusetts Drought Management Plan," Mass.gov, Massachusetts Executive Office of Energy and Environmental Affairs and Massachusetts Emergency Management Agency, December 2023, https://www.mass.gov/doc/massachusetts-drought-management-plan/download.

[119] Richard W. Paulson et al., "National Water Summary 1988-89 – Hydrologic Events and Floods and Droughts," *United States Geological Survey Numbered Series Water Supply Paper,* no. 2375 (1991), https://doi.org/10.3133/wsp2375, page 329.

[120] "Statistics by Threshold," Droughtmonitor.unl.edu, National Drought Mitigation Center, University of Nebraska-Lincoln, accessed June 10, 2024, https://droughtmonitor.unl.edu/DmData/DataDownload/StatisticsbyThreshold.aspx.

2011	D0 conditions in 0.01% of the state
2012	D2 conditions in 51% of the state
2013	D1 conditions in 60% of the state
2014	D1 conditions in 54% of the state
2015	D1 conditions in 58% of the state
2016	D3 conditions in 52% of the state
2017	D3 conditions in 9% of the state
2018	D1 conditions in 36% of the state
2019	D0 conditions in 85% of the state
2020	D3 conditions in 36% of the state
2021	D2 conditions in 1% of the state
2022	D3 conditions in 70% of the state
2023	D1 conditions in 0.4% of the state
2024 (through late November)	D3 conditions in 47% of the state

The following table shows peak drought severity data in Worcester County from the National Drought Mitigation Center for each year since 2018:

Table 34: Peak Drought Severity Data in Worcester County Per Year Since 2018[121]

Year	Maximum Severity
2018	D1 conditions in 33% of Worcester County
2019	D0 conditions in 100% of Worcester County
2020	D3 conditions in 14% of Worcester County
2021	D1 conditions in 51% of Worcester County
2022	D3 conditions in 53% of Worcester County
2023	D0 conditions in 74% of Worcester County
2024 (through late November)	D3 conditions in 51% of Worcester County

During the most recent occurrences of drought conditions in Town, the Town issued the highest level of non-emergency water restrictions. Westborough operates off the State Drought Management Plan and therefore issue water bans on odd/even days; this means that users of town water with odd-numbered addresses are restricted to watering on odd-numbered days, and vice versa. The local HMP planning team in town noted that the Town experienced particularly harsh drought conditions in the summer of 2022, including in terms of reduced groundwater levels, with reservoirs in town resembling "mud flats" during that summer.

As of the writing of this plan, the Town of Westborough and large portions of Massachusetts are

[121] Ibid.

currently in critical drought conditions; since August 2024, all regions of the state except for the Cape and Islands have seen a rainfall deficit of 8 to 11 inches.[122]

Probability of Future Events

In Westborough, as in the rest of the state, the probability of extreme and exceptional droughts, including those that cause extreme and exceptional reductions in groundwater levels, is "low" (a 1% to 10% chance in the next year). Based on past events and current criteria outlined in the Massachusetts Drought Management Plan, Central Massachusetts may be slightly more vulnerable than parts of eastern Massachusetts to severe drought conditions such as severe reductions in groundwater levels.[123] However, many factors such as water supply sources, population, economic factors (i.e., if an area has an agriculture-based economy), and infrastructure may affect the severity and length of a drought event in different parts of the state.

The long-term risk of drought and resulting reduced groundwater levels, including extreme and exceptional drought and reductions to these groundwater levels, may increase in Westborough due to climate change influences. Specifically, climate change may cause an increase in consecutive dry days over time.

Impact

The specific impacts of historical droughts and drought-induced reductions in groundwater levels in Massachusetts are categorized by the National Drought Mitigation Center in Table 35 below:

Table 35: Historic Impacts of Drought in Massachusetts[124]

Category	Historically observed impacts
D0	Crop growth is stunted; planting is delayed
	Fire danger is elevated; spring fire season starts early
	Lawns brown early; gardens begin to wilt
	Surface water levels decline
D1	Irrigation use increases; hay and grain yields are lower than normal
	Honey production declines
	Wildfires and ground fires increase
	Trees and landscaping are stressed; fish are stressed
	Voluntary water conservation is requested; reservoir and lake levels are below normal capacity
D2	Specialty crops are impacted in both yield and fruit size
	Producers begin feeding cattle; hay prices are high
	Warnings are issued on outdoor burns; air quality is poor
	Golf courses conserve water

[122] "Drought Management in Massachusetts," Mass.gov, Massachusetts Executive Office of Energy and Environmental Affairs Drought Management Task Force, December 9, 2024, https://www.mass.gov/guides/drought-management-in-massachusetts.
[123] "Massachusetts Drought Management Plan," Mass.gov.
[124] "State Impacts," Droughtmonitor.unl.edu, National Drought Mitigation Center, University of Nebraska-Lincoln, accessed June 10, 2024, https://droughtmonitor.unl.edu/DmData/StateImpacts.aspx.

	Trees are brittle and susceptible to insects
	Fish kills occur; wildlife move to farms for food
	Water quality is poor; groundwater is declining; irrigation ponds are dry; outdoor water restrictions are implemented
D3	Crop loss is widespread; Christmas tree farms are stressed; dairy farmers are struggling financially
	Well drillers and bulk water haulers see increased business
	Water recreation and hunting are modified; wildlife disease outbreak is observed
	Extremely reduced flow to ceased flow of water is observed; river temperatures are warm; wells are running dry; people are digging more and deeper wells

The 2023 ResilientMass plan notes that while drought is a naturally occurring climate phenomenon, its impacts can be exacerbated by human behavior.[125] The volume and rate of groundwater withdrawn from underground aquifers can impact the amount of water that flows through surface water bodies; therefore, high rates of groundwater withdraw can negatively impact aquatic ecosystems. Additionally, more impervious surface coverage, and some forms of stormwater infrastructure, can prevent the natural infiltration of precipitation into groundwater and can therefore exacerbate drought.[126]

Reduced groundwater levels caused by drought can cause public water suppliers to have difficulty in meeting users' demands while also maintaining enough water pressure in their systems to facilitate fire suppression and water quality needs. Decreased firefighting capabilities due to low water availability during drought can increase the community's vulnerability to wildfires and fires caused by lightning strikes. Reduced groundwater levels can also lead to remaining well water having sediment (due to intense pumping into bedrock or the overburden aquifer being needed) and/or pollutants such as nitrates and heavy metals in it, and communities may need to consider drilling deeper wells or re-siting wells to areas less affected by drought if sedimentation and/or contamination occurs.

Specific drought impacts in Westborough, including the level of reduction in groundwater levels, may vary among and between customers of the Town's water system and private well users. While the impact of a drought, including the reduction in groundwater levels, can be assessed as "minor" overall, with very little damage to property (damage to less than 10% of property in the area affected by the hazard), injuries, or loss of life likely to occur in town, drought impacts may be higher in the parts of town that are not located within the Town's water service area.

EXPOSURE

Certain features within Westborough's infrastructure, society, and environment may face more exposure to drought (including the reduction in groundwater levels), or be disproportionately impacted by it, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- Residences or businesses with shallow wells;
- Wild plants and animals, including trees; and
- Vegetation, which may become more vulnerable to wildfire due to prolonged drought.

[125] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"
[126] Ibid.

Higher water bills and/or the cost of re-drilling private wells due to drought impacts could also negatively affect residents in town. Other factors like PFAS contamination of water sources could compound drought-related water supply challenges. Contaminants, including PFAS, can pose greater risk to the community after shifting position due to drought-driven changes in groundwater.[127]

Potential Climate Change Effects

According to the 2023 ResilientMass Plan, there are two major ways that climate change influences drought frequency and severity.

- The frequency and extent of droughts are projected to increase in summer and fall as higher temperatures result in more evaporation, snow melts earlier in the year, and precipitation becoming less frequent yet more extreme when it does occur.
- Rising temperatures and changes in precipitation patterns will reduce snowpack and hasten snowmelt and therefore can exacerbate drought. The process of reduced snowmelt can result in less snowmelt recharge of groundwater, less snowmelt feeding stream flows, and less snowmelt available as an agricultural water source.

A common concern among town residents who responded to the survey was that wells in town may dry up in the future as groundwater levels lower during drought events. Westborough is less vulnerable to dried-up wells resulting from drought than other communities in the CMRPC region, as the majority of the Town's residents are connected to the Town's public water system. According to the 2023 ResilientMass Plan, climate change is predicted to affect groundwater availability;[128] the increased frequency and duration of drought conditions will increase the risk in town of wells drying up.

In summary, climate change is likely to increase the frequency and extent of drought in Massachusetts. Drought that is worsened by climate change can have numerous community-wide implications in Westborough. Due to the impacts of drought on crop yield, land use designated for farming could be altered or reduced. In addition, drought is predicted to worsen significantly in other parts of the country, particularly in the southwestern United States, and it is possible that this could result in people from other parts of the country moving to the northeast, including to Westborough.

Vulnerability

Based on the above assessment, Westborough's overall vulnerability to drought is considered to be "3 – medium risk." Minimal or no loss of or damage to property and the Town's current and future assets, injuries, or loss of life is expected from drought in town. However, previous drought conditions experienced in town have exposed weaknesses in the Town's current drought mitigation practices. In addition, the Town is vulnerable to drought impacts such as reduced groundwater levels causing less water availability, especially at private wells not connected to the Town's water system and the current and future assets in town which rely on them. Residents and businesses in the minority of the Town which relies on private wells which are more prone to dry up in the case of drought are vulnerable to water shortages during drought events. The town-owned wells are also to an extent

[127] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," pages 5.1-34-5.1-35.
[128] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," pages 5.1-34-5.1-35.

vulnerable to drought.

MITIGATION STRATEGIES

The Town of Westborough is currently able to effectively respond to drought, including drought-induced reductions in groundwater levels, through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities for the Town to expand its existing capabilities to mitigate and respond to drought, including drought-induced reductions in groundwater levels. The local HMP planning team identified the following strategies that could be used to reduce the threat of drought, including drought-induced reductions in groundwater levels, in Westborough:

- Complete an engineering study to evaluate potential new well sites in town which could enhance the Town's resilience to drought.
- Consider completing a study to identify options for feeding a portion of the clean water discharge from the Town's wastewater treatment plant back into the Town's water supply.
- Provide information to residents and businesses on water conservation (to conserve water for drinking and firefighting).

4.11 Extreme Temperatures

The 2023 ResilientMass Plan states that there are no universal definitions of "extreme heat," "extreme cold," or "extreme temperatures"; these terms are relative terms whose meaning depends on the normal average temperatures and climatic highs and lows in a region.[129] Extreme heat in Massachusetts is typically defined as a period of three or more consecutive days with temperatures above 90 °F.[130] Extreme heat may also refer to any prolonged period of especially hot weather (which is called a heat wave) which may also be accompanied by high humidity. Extreme cold, like extreme heat, is a dangerous situation that can result in health emergencies for susceptible people. People without shelter, who are stranded, or who live in homes that are poorly insulated or are without heat and/or air conditioning are especially at risk to extreme temperatures.

For Massachusetts, extreme temperatures can be defined as those that are far outside the normal ranges. Normal temperatures within the period ranging from 1991-2020 for the area near Westborough are:

Table 36: Normal Temperatures in the Period Between 1991-2020 in the Area Near Westborough[131]

	July (Hottest Month)	January (Coldest Month)
Average High (°F)	79.8°	32.3°
Average Low (°F)	61.7°	17.1°

The National Weather Service's (NWS's) specific criteria for issuing extreme heat and extreme cold watches, warnings, and advisories are described in the Extent section below.

Location

Extreme temperatures can be expected to be uniform across Westborough during a given extreme temperature event, due to the Town's lack of extreme elevations, very densely developed areas, and coastal areas. Therefore, this hazard has a "large" geographic coverage in town.

Extent

The NWS uses the heat index scale to categorize extremely hot temperatures. This scale combines relative humidity with actual air temperature to determine the risk to humans. The NWS issues an Excessive Heat Advisory if the heat index is forecast to reach 95°F-99°F for 2 or more hours over 2 consecutive days, or 100°F-104°F for 2 or more hours over 1 day. The NWS issues an Excessive Heat Warning when the daytime heat index is forecasted to reach 105°F for 2 or more hours. The NWS defines a Heat Wave as 3 or more days of greater than or equal to 90°F temperatures. The following chart indicates the relationship between heat index and relative humidity:

[129] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

[130] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," pages 5.2-1-5.2-2.

[131] These temperature estimates are based on data recorded at a weather station at the Worcester Regional Airport.
"U.S. Climate Normals Quick Access," Ncei.noaa.gov, National Oceanic and Atmospheric Administration National Centers for Environmental Information, accessed September 25, 2024, https://www.ncei.noaa.gov/access/us-climate-normals/.

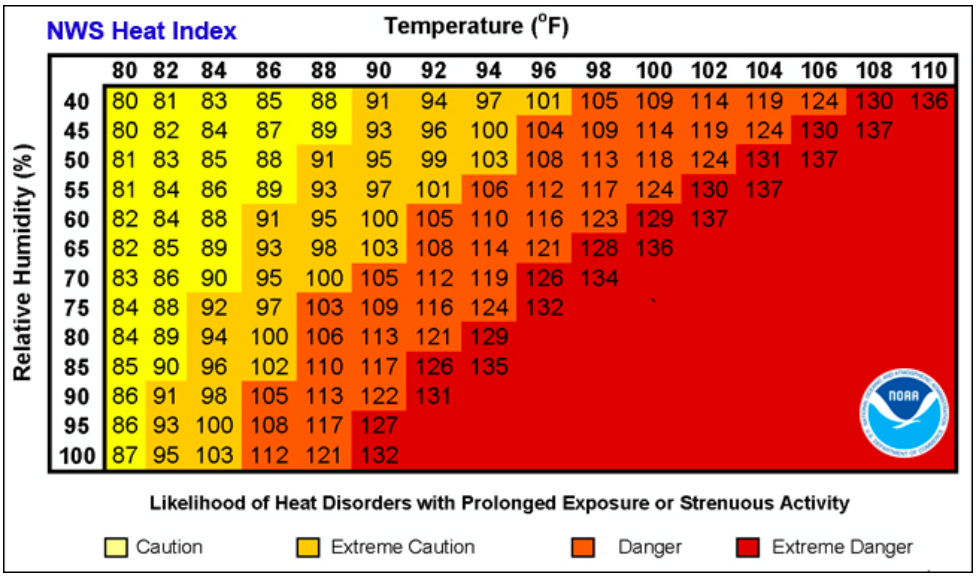

Figure 4: Heat Index[132]

Extreme heat causes more fatalities in the United States that all other weather-related natural hazards combined.[133] Extreme heat can be the underlying cause of death or can worsen other medical conditions like heart disease, hypertension, alcohol poisoning, and drug overdoses.[134] The heat-related mortality rate is higher among males and people aged 65 years and older.[135]

Table 37: Heat Effects on the Body lists the effects of extreme heat on the body at different levels of the heat index. It is important to note that while temperatures exceeding 100°F are unusual for Central Massachusetts, high humidity is very common during the summer and can drive the heat index in the region to dangerous levels / temperatures above 100°F.

Table 37: Heat Effects on the Body[136]

Classification	Heat Index	Effect on Body
Caution	80°-90°F	Fatigue possible with prolonged exposure and/or physical activity.
Extreme Caution	90°-103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°-124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F+	Heat strokes highly likely.

[132] National Weather Service, "What is the heat index?," Weather.gov, National Oceanic and Atmospheric Administration, accessed September 16, 2024, https://www.weather.gov/ama/heatindex.
[133] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan,"
[134] Ambarish Vaidyanathan et al., "Heat-Related Deaths—United States, 2004–2018," *Morbidity and Mortality Weekly Report* 69, no. 24 (2020): 729-734. https://doi.org/10.15585/mmwr.mm6924a1.
[135] Ibid.
[136] National Weather Service, "What is the heat index?," Weather.gov, National Oceanic and Atmospheric Administration, accessed June 10, 2024, https://www.weather.gov/ama/heatindex.

Other impacts of high temperatures include drought, wildfire, and the formation of ground-level ozone.[137] Prolonged heat can cause power use to spike and in turn can overload the electrical grid, causing outages.[138] Extreme heat and cold can both negatively impact transportation infrastructure; Railroad tracks are a particular concern because metal rails can kink in high temperatures.[139]

The 2023 ResilientMass Plan notes that the extent (severity or magnitude) of extreme cold temperatures is generally measured through the Wind Chill Temperature Index.[140] The wind chill temperature is the temperature that people and animals feel when outside; it is based on the rate of heat loss from exposed skin due to the effects of wind and cold.[141] In Massachusetts, the National Weather Service (NWS) Norton Forecast Office issues a wind chill warning when the Wind Chill Temperature Index, based on sustained wind, is –25°F or lower for at least three hours. The NWS Wind Chill Chart below shows three shaded areas of combinations of wind and temperature conditions in which there is frostbite danger; Each shaded area shows how long a person can be exposed before frostbite develops.

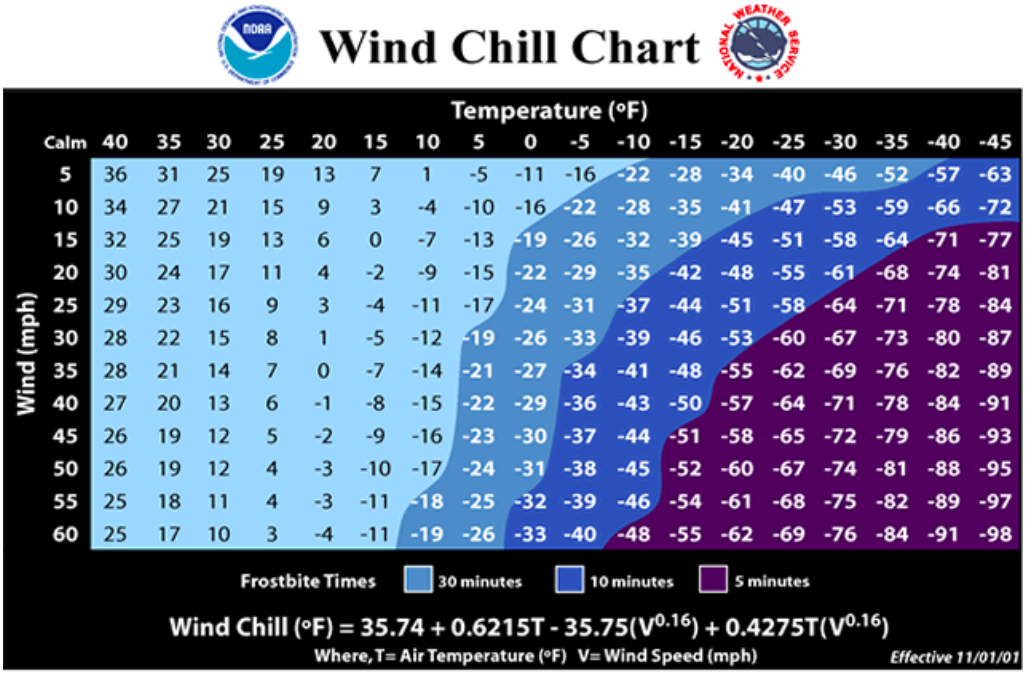

Figure 5: NWS Wind Chill Temperature (WCT) index.[142]

Cold temperatures are often combined with winter storms. People may experience the loss of heat and power in their homes and workplaces due to storm damage, which could further subject them to the cold.[143] Carbon monoxide poisoning is another risk during cold weather, especially when

[137] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan,"
[138] Ibid.
[139] Ibid.
[140] Ibid.
[141] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," pages 5.2-1-5.2-3.
[142] National Weather Service, "Understanding Wind Chill," Weather.gov, National Oceanic and Atmospheric Administration, accessed September 16, 2024, https://www.weather.gov/safety/cold-wind-chill-chart.
[143] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," pages 5.2-1-5.2-3.

households lack adequate power or heat.[144]

Previous Occurrences

There is not a comprehensive data source that lists instances when the National Weather Service has issued extreme heat or cold warnings or advisories in Worcester County.

According to the 2023 Resilient Mass Plan, there have been 118 warm weather events (heat and excessive heat events) in the state between 1995 and 2022.[145] 2010–2022 had seven of the 10 warmest summers on record in the state.

2012 and 2013 were notably hot summers in Massachusetts[146] In July 2013, a long period of hot and humid weather occurred throughout New England. One fatality occurred on July 6, when a postal worker collapsed as the heat index reached 100°F.[147]

The hottest two summers on record in the Commonwealth were 2020 and 2022.[148] August 2022 was the hottest August ever recorded in the Commonwealth, with temperatures more than 6°F greater than the 20th century average. In August 2022, Boston experienced at least 17 days above 90 degrees, including two six-day heat waves.

The local HMP planning team in Westborough noted that the summer of 2023 was extremely hot and humid and that the Town had to open its cooling shelters periodically during this summer.

Statewide, there were 33 extreme cold weather events between 1994 and 2018. The NOAA storm Events database lists the following Extreme Cold / Wind Chill Events as having occurred in Worcester County since the last Westborough HMP was developed in 2017:[149]

- 01/06/2018: Strong west winds trailed the January 4 winter storm. These winds drew bitterly cold arctic air over Massachusetts. The combination of strong wind and low temperatures created a dangerous wind chill, with readings reaching 25 degrees below zero or colder in a couple of locations during the early mornings of January 6 and 7.
- 01/21/2019: Strong west to northwest winds trailing the January 20th storm drew cold air across Southern New England on January 21st and caused wind chill values of 25 below zero or colder in Central and Western Massachusetts. The wind diminished during the afternoon and evening of January 21st allowing wind chill values to become less extreme, in the teens below zero.

The local HMP planning team in town also identified an extreme cold event which occurred on February 4th, 2023 and affected the Town and other parts of Massachusetts; An arctic blast on this

[144] Ibid.
[145] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," pages 5.2-7-5.2-8.
[146] Ibid.
[147] Ibid.
[148] Ibid.
[149] "Storm Events Database Search Results for Worcester County, Massachusetts," NCDC.NOAA.gov, National Oceanic and Atmospheric Administration National Centers for Environmental Information, accessed September 17, 2024, https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Extreme+Cold%2FWind+Chill&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2018&endDate_mm=12&endDate_dd=31&endDate_yyyy=2024&county=WORCESTER%3A27&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=25%2CMASSACHUSETTS.

day resulted in millions of dollars of damage in town due to broken storm pipes and water damage.

Inland portions of Massachusetts are more subject to extreme temperatures because they lack the moderating effect of the Atlantic Ocean. However, more densely developed cities are more likely to be impacted by heat waves than less densely developed towns like Westborough.

Probability of Future Events

The probability of future extreme heat or extreme cold events occurring in Westborough is considered to be "moderate," or between 10% and 40% in the next year.

Impact

The impact of extreme temperatures in Westborough is considered to be "limited," with no property damage and a limited effect on humans anticipated in the case of extreme heat events and with between 10% and 25% of property in town expected to be damaged and/or with town facilities being completely shut down for more than one day in the case of severe extreme cold events.

Exposure

Certain features within Westborough's infrastructure, society, and environment may face more exposure to extreme temperatures, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- Children and elderly residents, who are more vulnerable to the effects of extremely hot or cold conditions;
- Low-income residents who are unable to afford adequate cooling or heating;
- Renters who may have few home improvement options for mitigating extreme heat and cold;
- People who work outdoors such as construction or farm workers;
- The utility grid, which could be vulnerable to outages due to surges in power use during extreme temperatures. Power outages during extremely hot or cold days could cause further problems for people who rely on air conditioners or electric heaters; and
- Certain forms of agriculture which may be negatively affected by extreme temperatures, especially extreme heat.

Potential Climate Change Effects

According to the 2023 ResilientMass Plan, climate change is already causing more high heat days and fewer extreme cold events in Massachusetts and beyond.[150] Climate change is also shifting the average temperature in Massachusetts higher, leading to longer warm seasons as well as shifts to growing seasons, habitat and vegetation ecosystems, and migratory patterns. Rising temperatures will also cause warming seas, a degradation in air quality, impacts on people's health, and an increased demand for energy and government services. Secondary climate change effects of extreme temperatures include increased severity of wildfires, droughts, and flooding as well as encroachment by invasive species. According to the 2023 ResilientMass Plan:

[150] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

- By 2050, average annual temperatures are expected to increase by between 5.9° and 7.9°F. This is a drastically shortened timeline from the 2018 state hazard mitigation plan, where increases of this magnitude were not expected until the end of the century.[151]
- By 2100, annual average temperatures are expected to increase by between 10.0° and 12.9°F compared to the 1971-2000 baseline.

According to the 2022 Massachusetts Climate Change assessment, by 2030, the summer mean temperature could increase by 3.6°F from the period between 1950 and 2013, worsening stress on electric transmission and utility distribution infrastructure.[152]

In summary, climate change is likely to increase the frequency and duration of extreme heat events in Massachusetts. Changes to average annual temperatures will also impact Westborough. Seasonal temperatures will shift, with spring and summer temperatures extending through more of the year.[153] Winters may also be milder than historical norms.[154] Changes to average temperatures could impact the agricultural industry and the natural environment. Farmers may need to shift their practices to account for new climate conditions, and certain specific plants and animals may need to migrate to new ranges to find suitable habitat.[155]

To respond to climate change-induced changes in temperatures, Westborough residents and businesses may have to alter work patterns during extreme heat days and events to reduce workplace injuries in vulnerable jobs such as construction trades and agricultural labor. The Town may have to plan to offer more cooling stations for residents, particularly vulnerable populations such as the elderly and low-income residents. Westborough may also have to account for an increase in people moving to town and/or visiting town to seek refuge from extreme heat in other parts of the country.[156]

Vulnerability

Westborough's vulnerability to extreme heat and cold is considered to be "3 – medium risk." The Town has operated heating and cooling shelters and continues to do so at its senior center and public library.

Mitigation Strategies

The Town of Westborough is currently able to effectively respond to extreme temperatures through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, the Town has numerous opportunities to expand upon its existing capabilities to mitigate and respond to extreme temperatures. The local HMP planning team identified the following strategies that could be used to reduce the threat of extreme temperatures in Westborough:

- Consider options for increasing the number of cooling spots in town.
- Investigate establishing community gardens for residents to use.
- Update the Open Space and Recreation Plan (which expired in 2024) to include mitigation goals.

[151] "Massachusetts State Hazard Mitigation and Climate Adaptation Plan," September 2018
[152] "2022 Massachusetts Climate Change Assessment," page RS30.
[153] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"
[154] Ibid.
[155] Ibid.
[156] Ibid.

4.12 Invasive Species

An invasive species, as defined by the Invasive Species Advisory Committee (ISAC) of the U.S. Department of the Interior, is "a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health."[157] Invasive species are not the same as native pest species, such as beavers and deer. The State of Massachusetts, being heavily forested with relatively new growth forest, as well as having a great deal of its water sourced from open reservoirs, is vulnerable to the threat of both land and aquatic invasive species. Invasive species can damage and disrupt existing ecosystems by outcompeting the native flora and fauna: many invasive aquatic species harm water quality, and many land-borne invasive species increase the risk of wildfires. The effects of invasives are species-dependent, and a challenge for invasive species management is that many municipalities are affected by some invasive species but not others.

Location

Several invasive species affect broad regions of Massachusetts. The Emerald Ash Borer (*Agrilus planipennis*) has been detected in every city and town within the Central Region.[158] However, invasives and their effects can also be very species-dependent and localized, so invasive species hazards can also bear a resemblance to other more localized hazards such as localized flooding. Westborough's suburban development along with its geography lends itself to being more vulnerable to invasives. Westborough is characterized by its rolling hills interspersed with streams, and it is vulnerable to intrusion from both land-based and aquatic invasives. More than 50% of the Town is vulnerable to invasives, so this hazard has a "large" geographic coverage in town.

Extent

It is difficult for local officials to understand the extent of the impacts that invasive species have on their communities. Factors that lead to a dearth of knowledge about the extent of impacts of invasive species include: the unpredictable nature of invasives, the lack of verified data clearinghouses about invasive species, and the lack of resources and capacity for local conservation officials to track invasives. Often, it is not until the damage caused by invasives is apparent that local officials discover the true extent of the hazard. Still, there are some resources available to the local hazard mitigation planning team. This plan utilizes the Massachusetts Department of Agriculture's Invasive Pest Dashboard;[159] the Center for Invasive Species and Ecosystem Health's Early Detection and Distribution Mapping System (EDDMapS) hosted by the University of Georgia;[160] and the Forest Ecosystem Monitoring Cooperative's Northeastern Forest Health Atlas.[161]

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[157] Definitions Subcommittee of the Invasive Species Advisory Committee (ISAC). "Invasive Species Definition Clarification and Guidance," Doi.gov, United States Department of the Interior, April 27, 2006, https://www.doi.gov/sites/doi.gov/files/uploads/isac_definitions_white_paper_rev.pdf.

[158] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan," page 5.1-48.

[159] "MDAR Invasive Pest Dashboard," Experience.arcgis.com, Massachusetts Department of Agricultural Resources, accessed June 10, 2024, https://experience.arcgis.com/experience/a25afa4466a54313b21dd45abc34b62d/page/Page-2/?views=Town-by-Town.

[160] "My EDDMapS," EDDMapS.org, Center for Invasive Species and Ecosystem Health, accessed June 10, 2024, https://www.eddmaps.org/tools/query/index.cfm?observationDateStart=06/03/2017&observationDateEnd=06/03/2024&eradicationstatus=1,2&country=926&state=92625000&fipscode=92625027.

[161] "Northeastern Forest Health Atlas," UVM.edu, Forest Ecosystem Monitoring Cooperative, accessed June 10,

In Worcester County from 2017 to 2024, according to EDDMapS analysis of verified invasive species reporting, there have been 378 records of locations with invasive species; In the county, 353 distinct sightings of invasive species ranging from plants to insects have been left unchecked, 2 invasive species are being treated, and a total of 47 acres are considered to be infested with invasive species.[162]

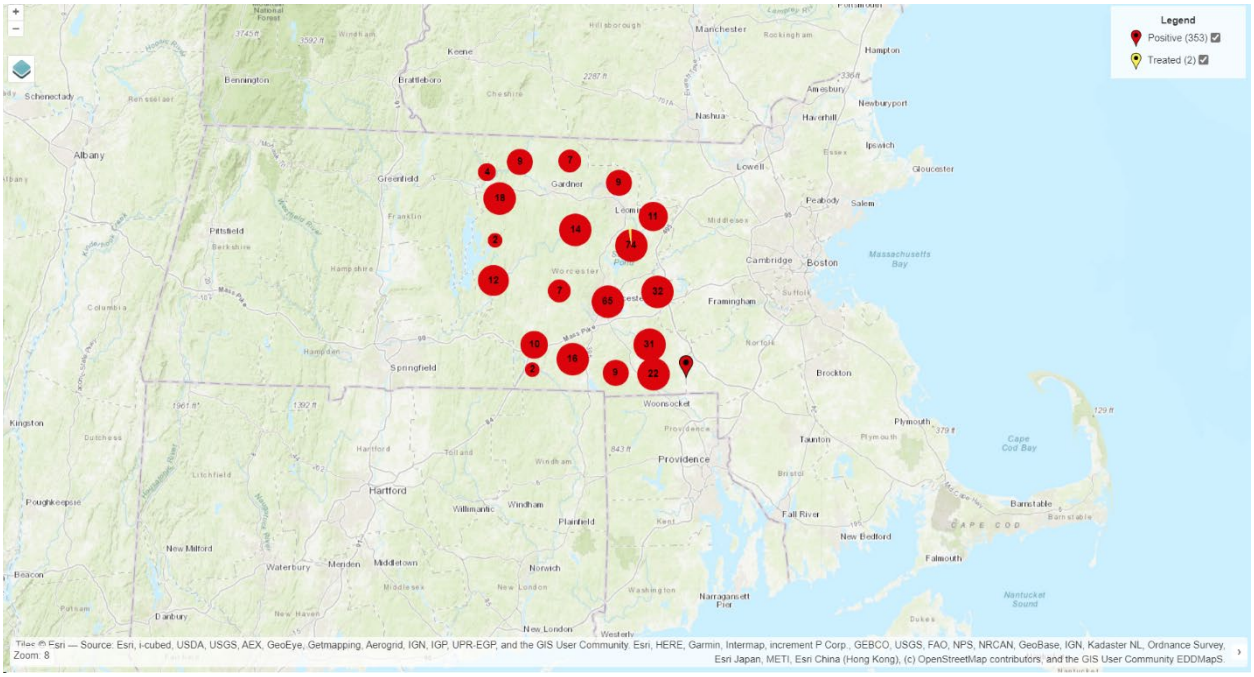


Figure 6: EDDMapS Analysis of Worcester County Invasives 2017-2024

The Massachusetts Department of Agriculture's Invasive Pests Dashboard notes that the Emerald Ash Borer was detected in Westborough in 2021, Beech Leaf Disease was detected in town in 2023, and a Spotted Lanternfly infestation is present in town as of 2024. Also, as of the time of writing of this plan, the entire state of Massachusetts is under a U.S. Department of Agriculture quarantine to restrict the spread of the Box Tree Moth.[163]

A lack of reporting on invasives may mean that the extent of invasives in Westborough is far greater than these databases report.

Previous Occurrences

According to the Northeast Forest Health Atlas, in the past 20 years of reporting, Massachusetts has experienced tree damage (including defoliation and mortality events) to 43,127,411 acres of forests from a variety of invasive pests; alarmingly, the greatest proportion of this damage has occurred in the past 3 years.[164]

2024, https://www.uvm.edu/femc/forest-health-atlas.

[162]"My EDDMapS," EDDMapS.org.

[163] "MDAR Invasive Pest Dashboard: Emerald Ash Borer (*Agrilus planipennis*)," Experience.arcgis.com, Massachusetts Department of Agricultural Resources, June 10, 2024, https://experience.arcgis.com/experience/a25afa4466a54313b21dd45abc34b62d/page/Page-2/?views=Emerald-Ash-Borer#data_s=id%3AdataSource_3-17f4202b73c-layer-3%3A87.

[164] "Northeastern Forest Health Atlas - Defoliation: Years of Damage," UVM.edu, Forest Ecosystem Monitoring Cooperative, accessed June 10, 2024, https://www.uvm.edu/femc/forest-health-atlas?premade=All_Defo.

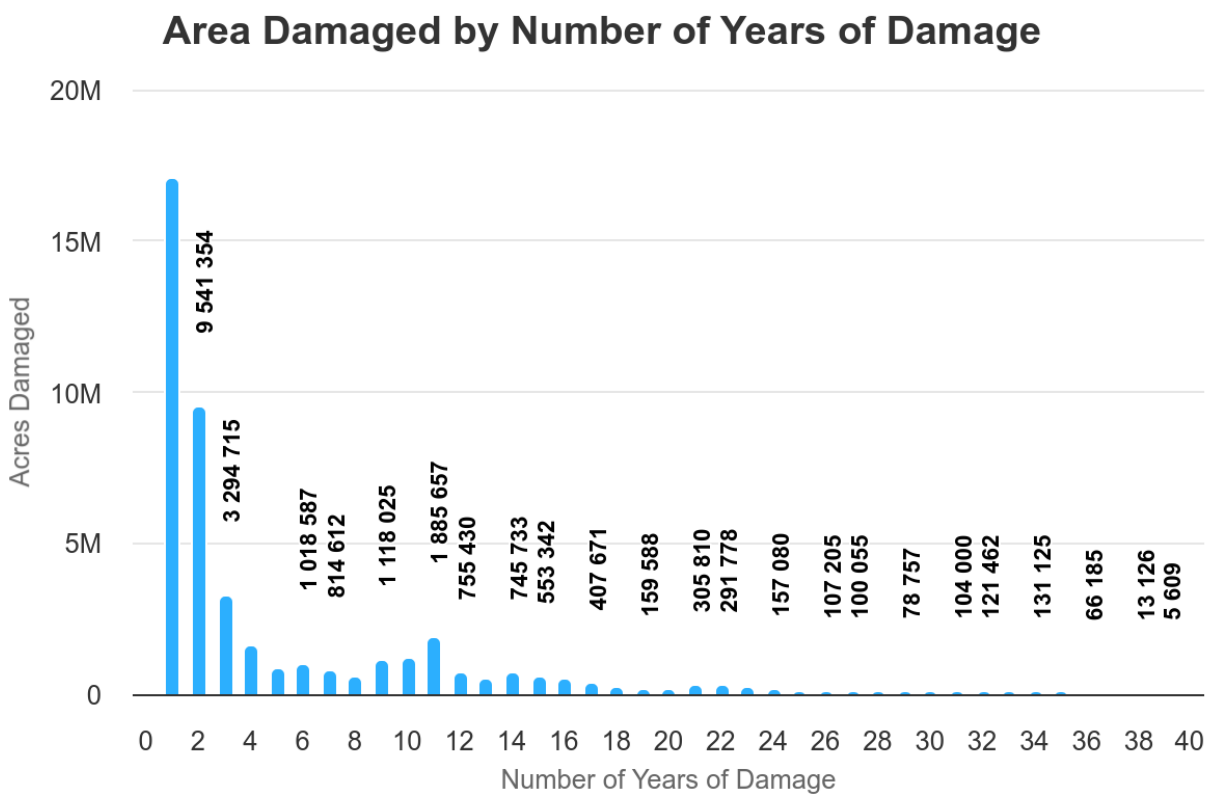


Figure 7: Area Damaged by Spongy Moth, Forest Tent Caterpillar, and Winter Moth from 1979 to 2019

In Worcester County, the vast majority of these invasive pest tree damage events occurred in the southern part of the county. Significant damage events have also occurred in the west and southwest of the county (near the border with Hampshire and Hamden Counties). In addition, localized defoliation events have occurred around the Town of Barre, the Tatnuck neighborhood of Worcester, and other communities. Tree mortality correlated with invasive species has been concentrated in the southern half of Worcester County.[165] In 2008, an outbreak of Asian long-horned beetles in Worcester destroyed nearly 30,000 trees.[166]

Westborough has experienced invasives-related defoliation events from 1998 through 2020, with significant mortality events occurring in 2018, 2019, and 2020. Based on trends identified in the Atlas, there is no reason to assume that invasive forest species hazards have lessened in more recent years.

The local HMP planning team in Westborough concurs noted that infestations of spongy moth, also known as "gypsy moth", occurred in town between 2017 and 2020. These infestations placed extreme stress on trees, especially oak trees, with many dead standing trees being observed after the infestation.

Probability of Future Events

The 2023 ResilientMass Plan notes that increased globalization of trade has created new paths for invasive species to spread. Climate change is also an aggravating factor in the spread of invasives,

[165] Ibid.
[166] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

as natural ecosystems become strained by increased temperatures and shifting precipitation patterns; Climate change therefore creates more opportunities for invasives to disrupt an already fragile ecology. Based on the previously identified occurrences and trends, the probability of an invasive species event occurring in Westborough is very high, with a 70% to 100% probability of occurrence in the next year.

IMPACT

Specific impacts of invasive species in Westborough may vary, depending on the type of invasive, the habitat that it is supplanting within the native ecosystem, and other factors. Invasive species' direct impact on the natural ecology has many notable secondary impacts. The 2023 ResilientMass plan identifies that invasive species can introduce new diseases to a region[167] (such as the 2005 Chikungunya Epidemic, spread in part by a viral mutation that allowed for the virus to be more commonly present in the *Aedes albopictus* mosquito, an invasive subspecies).[168] Invasives are also one of the costliest natural hazards in terms of control efforts, costing the United States and estimated $21 billion per year.[169] Given what information is known about the extent of invasive species within Westborough, the local HMP planning team estimates a "critical" impact on the Town from invasive species, with between 25% and 50% of property in the areas affected by this hazard being damaged or destroyed.

EXPOSURE

Certain features within Westborough's infrastructure, society, and environment may face more exposure to invasive species, or be disproportionately impacted by them, relative to the rest of the community. Some of these features may be documented in the list of critical facilities and vulnerable populations in Section 3. These features include:

- People with compromised immune systems or preexisting health conditions, children under the age of five, and people over 65 years old who might be particularly vulnerable to new diseases or aggravated health problems caused by invasives;
- Roadways, as Japanese Knotweed, an invasive known to cause streambank destabilization, can contribute to flood damages and can affect sightlines along roadways, potentially causing roadway hazards;
- Local government, as invasive species may pose a management cost burden that exceeds local financial capacity, especially for departments tasked with their management and for departments tasked with the maintenance of facilities that are impacted by invasives;
- The local ecology, as invasive species can also change the local ecology to make it more fire prone, either by damaging the native plants or by being prone to fire themselves.

Specifically, the following critical infrastructure routes and sites identified in this plan were noted as being especially vulnerable to invasive species by CMPRC's GIS analysis:

- Flanders Road and

[167] Ibid.

[168] Konstantin A. Tsetsarkin et al., "A single mutation in chikungunya virus affects vector specificity and epidemic potential," *PLOS Pathogens* 3, no. 12 (December 7, 2007): e201, https://doi.org/10.1371/journal.ppat.0030201.

[169] Kerry Sheridan, "Invasive species cost the US $21 billion per year, study finds," WUSF.org, WUSF Public Media, January 4, 2022, https://www.wusf.org/local-state/2022-01-04/invasive-species-cost-the-us-21-billion-per-year-study-finds.

- The Whittemore Pond Dam.

Potential Climate Change Effects

According to the 2023 ResilientMass Plan, climate change is predicted to increase the spread of invasive species and expand their range.[170] Already fragile ecosystems, if left unmanaged, will suffer the worst effects of invasive species; native flora and fauna species could be supplanted by invasive species that outperform or outright damage them. The vast majority of invasive species introductions are caused by human activity, either accidental or intentional.

Both changes in precipitation patterns and temperature may increase chances of successful invasion of ecosystems by non-native species.

1. Precipitation
    a. Elevated atmospheric CO2 concentrations could reduce the ability of ecosystems to recover from climate shocks; this can create an opportunity for invasive species, which can often rapidly establish themselves following a disturbance, to successfully propagate.
2. Temperature
    a. Climate-driven temperature changes exacerbate the impacts of invasive species by altering ecosystem conditions in ways that enhance their ability to reproduce, spread, and in some cases outcompete native species.
    b. As warmer temperatures place stress on native cold-weather species in the region, invasive species accustomed to higher temperatures are able to more easily fill native species' niches and therefore expand their habitat ranges northward.

Secondary hazard impacts from invasive species include increased temperatures, damage to agricultural crops, and increased wildfire risk; as described in previous sections, all of these hazard impacts have associated potential societal implications through population shifts and changes in land use and development.

Vulnerability

Based on the above assessment, Westborough has a hazard index rating of "3 – medium risk" from invasive species.

Mitigation Strategies

The Town of Westborough is currently able to effectively respond to invasive species through the emergency response facilities and services identified in the critical infrastructure and facilities and existing protection sections of this plan. However, there are numerous opportunities for the Town to expand upon its existing capabilities to mitigate and respond to invasive species. The local HMP planning team identified the following strategies that could be used to reduce the threat of invasive species in Westborough:

- Produce an integrated invasive species and pest management plan for the Town.
- Enhance collaboration with the Central Massachusetts Mosquito Control Project.
- Complete pilot Lake Chauncey Algae Bloom Study. Develop a management plan to treat

[170] "ResilientMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"

and prevent future algae blooms at Lake Chauncey as well as other surface waters in town. Provide education to the public on the harms of algae.

- Identify potential locations for pollinator gardens in town.

4.13 Other Hazards

In addition to the hazards identified in previous sections, the Hazard Mitigation Team reviewed the other hazards listed in the Massachusetts Hazard Mitigation Plan: coastal hazards, atmospheric hazards, ice jams, coastal erosion, sea level rise, and tsunamis. It was determined that these hazards are irrelevant to Westborough due to the town's location. Coastal hazards, coastal erosion, sea level rise, and tsunamis are recognized to affect coastal jurisdictions in Massachusetts and other New England states but have been deemed irrelevant to Westborough due to the Town being around 30 miles from the nearest coastline.

Although landslides have been recognized as affecting communities in Central Massachusetts, the HMP team in Westborough did not identify them as affecting the Town; therefore, they were omitted from having a full section in this plan. A brief overview of this hazard is included below.

Notably, the SHMCAP hazard of changes in groundwater has been profiled as a sub-hazard of flooding and drought in this plan.

Landslides

One other hazard that can affect Westborough is landslides. Landslides occur in all U.S. states and territories. In a landslide, masses of rock, earth, or debris move down a slope. Landslides may be small or large, slow or rapid. They are generally activated by:

- Storms,
- Earthquakes,
- Volcanic eruptions,
- Fires,
- Alternate freezing and thawing, and/or
- Steepening of slopes caused by natural erosion or human modification.

Debris and mud flows (landslides) are rivers of rock, earth, and other debris saturated with water. They develop when water rapidly accumulates in the ground, during heavy rainfall or rapid snowmelt, changing the earth into a flowing river of mud or "slurry." They can flow rapidly, striking with little or no warning at avalanche speeds. They also can travel several miles from their source, growing in size as they pick up trees, boulders, cars, and other materials. Vulnerabilities in the Central Massachusetts region to landslides could include damage to structures, damage to transportation and other infrastructure, and localized road closures. Injuries and casualties, while possible, would be unlikely given the low extent and impact of landslides in the region.

Landslides are therefore considered low frequency events that may occur once in 50 to 100 years (with a 1% to 2% chance of occurring per year) in Central Massachusetts.

There are no documented previous occurrences of significant landslides in Westborough. The Town is relatively flat and most of its rivers are slow moving, are frequently dammed, and/or are lined with riprap, which can minimize landslide risk. Roadways in town are not generally built close to river channels; this reduces undercutting risk from stormwater-induced bank erosion. CMRPC's data review and the local HMP planning team both noted no specific concerns relating to landslides in town.

5.0 EXISTING PROTECTION

Sections 5.0 and 5.1 help meet the following FEMA local mitigation plan requirements:

- *A4. "Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information?" (Requirement 44 CFR § 201.6(b)(3));*
- *B2. "Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods?" (Requirement 44 CFR § 201.6(c)(2)(ii));*
- *C1. "Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?" (Requirement 44 CFR § 201.6(c)(3)); and*
- *C2. "Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?" (Requirement 44 CFR § 201.6(c)(3)(ii))*

The Town of Westborough currently makes use of most available locally controlled tools, including zoning regulations, planning, and physical improvements, to help mitigate the consequences of natural hazards. The Town does not participate in federal StormReady certification or federal Firewise community certification, but the Town utilizes CodeRed and Reverse 911 for emergency notifications. The Town plans to research the utility of public awareness and education programs as a result of this planning process.

Westborough has most no-cost or low-cost hazard mitigation capabilities in place. These include land use regulations (including zoning and subdivision regulations) as well as an array of specific policies and regulations that include hazard mitigation best practices, such as limitations on development in floodplains, tree maintenance, and other practices. Westborough also has appropriate staff dedicated to hazard mitigation-related work for a community of its size, including a Town Manager, an Emergency Management Director / Fire Chief, a Town Planner, a professionally run Department of Public Works, a Community Development Director / Building Commissioner / Zoning Enforcement Officer, and a Tree Warden. Westborough has several plans relevant to hazard mitigation in place, including a Comprehensive Emergency Management Plan (2021), an Open Space and Recreation Plan (2018), and a Master Plan (2021). Not only does Westborough have these capabilities in place, but they are also deployed for hazard mitigation, as appropriate. The Town also has very committed and dedicated volunteers who serve on Boards, Commissions, and Committees as well as in other volunteer positions. The Town collaborates closely with surrounding communities through its Local Emergency Planning Committee (LEPC) and has fire protection mutual aid agreements with Massachusetts Fire District 14 as well as every individual community in Fire District 14. The Town's Fire Department also has automatic aid agreements with Northborough and Southborough Fire Departments, and the Town participates in the Community Compact. It also is a member of the Massachusetts Water/Wastewater Agency Response Network and participates in the mutual aid programming of the Worcester County Highway Association. In addition, Westborough is an active member community of the Central Massachusetts Regional Planning Commission (CMRPC) and can take advantage of no cost local planning assistance provided by the professional planning staff at CMRPC as is needed.

The table below describes existing hazard mitigation protections in Westborough. It includes a brief description of each activity, a subjective evaluation of each activity's effectiveness, and a description of any recommendations for improvement for each activity.

5.1 Existing Protection Matrix

Table 38: Existing Protection Matrix

Existing Measure	Description	Action	Effectiveness & Recommendations
Participation in National Flood Insurance Program (NFIP)	The NFIP provides flood insurance for structures located in flood-prone areas. Also, communities participating in the NFIP have adopted and enforce ordinances, bylaws, and regulations that meet or exceed FEMA requirements to reduce the risk of flooding.	Westborough has participated in the National Flood Insurance Program since May 15th, 1980. As of July 2nd, 2024, there are approximately 20 homeowners in town with flood insurance policies.[171] There are no repetitive loss properties in Westborough. The Town has designated its Board of Health as its designated FEMA Floodplain Administrator who implements the addressed commitments and requirements of the NFIP in town. The Town has adopted the Flood Insurance Rate Map (FIRM) dated from July 16th, 2014.[172] The Town's Floodplain District, described in the Town's	Effective The Town should seek to further limit development in the 100-year flood zones. It should work to score in the Community Rating System (CRS) under NFIP to enable its residents to obtain lower flood insurance rates. Westborough should educate its residents about NFIP. The Town is working on improving its process for carrying out the substantial improvement / substantial damage provisions of floodplain regulations, along with substantial damage claims. In the future, the Town will collaborate with Flood Hazard Management Program staff at the state level to ensure a post-

[171] "Community Overview: Westborough, Town of," NFIP Community Information System, accessed July 2, 2024.

[172] "WESTBOROUGH, TOWN OF," Msc.fema.gov, Federal Emergency Management Agency, accessed July 22, 2024, https://map1.msc.fema.gov/firm?id=25027C0641F, https://map1.msc.fema.gov/firm?id=25027C0642F, https://map1.msc.fema.gov/firm?id=25027C0643F, https://map1.msc.fema.gov/firm?id=25027C0644F, https://map1.msc.fema.gov/firm?id=25027C0661F, https://map1.msc.fema.gov/firm?id=25027C0662F, https://map1.msc.fema.gov/firm?id=25027C0663F, https://map1.msc.fema.gov/firm?id=25027C0664F, https://map1.msc.fema.gov/firm?id=25027C0666F, https://map1.msc.fema.gov/firm?id=25027C0668F, https://map1.msc.fema.gov/firm?id=25027C0831F, https://map1.msc.fema.gov/firm?id=25027C0832F, https://map1.msc.fema.gov/firm?id=25027C0851F, https://map1.msc.fema.gov/firm?id=25027C0852F.

Existing Measure	Description	Action	Effectiveness & Recommendations
Participation in National Flood Insurance Program (NFIP) (cont.)		Board of Health Flood Hazard Management Regulations, includes all special flood hazard areas (SFHAs) designated as Zone A, AE, AH, AO, or A99 in town and regulates and permits development within these areas.[173] The Town monitors building activity within the flood plain to ensure compliance with provisions of state building code. The Town's Board of Health currently administers and implements the substantial improvement / substantial damage (SI/SD) provisions of its floodplain management regulations after an event in compliance with the NFIP (CFR Title 44, Parts 59 through 65) and Massachusetts State Building Code (780 CMR) and in coordination with MassDCR floodplain management staff.	disaster plan is put in place to employ SI/SD provisions.

[173] "FLOOD HAZARD MANAGEMENT REGULATIONS," Westboroughma.gov, The Town of Westborough, Massachusetts, February 18, 2014, https://www.westboroughma.gov/DocumentCenter/View/1059/Flood-Plain-Regulations-PDF.

Existing Measure	Description	Action	Effectiveness & Recommendations
Board of Health Flood Hazard Regulations	These regulations require all development to be in compliance with state building code requirements for construction in floodplains.	These regulations are based off of the 2014 FEMA flood maps.	Effective
Stormwater Management policy and regulations	The Town's DPW and/or Conservation Commission review projects for consistency with MA DEP standards and local wetland regulations and performance standards. This helps ensure adequate on-site retention and recharge and reduces the burden on the NPDES MS4 permitted stormwater system.	Westborough has a Stormwater Management Bylaw which also addresses erosion control in town; this bylaw is included as Article 54 in the Town's General Bylaws and was amended at the Fall 2024 Special Town Meeting. A related Discharges to Municipal Storm Drain System bylaw is also included as Article 55 in the Town's General Bylaws. Westborough also participates in the Central Massachusetts Stormwater Coalition.	Somewhat effective No changes recommended

Existing Measure	Description	Action	Effectiveness & Recommendations
Open Space and Recreation Plan	This local plan identifies significant natural resources to ensure their protection. Following Massachusetts Department of Conservation and Recreation guidance for the development of OSRPs, this document does not focus on specific hazards. Open Space Plans can provide many tools. The Town must commit to making the land acquisitions and regulatory changes which are included in this plan's action items. It also must give increased attention to preserving undeveloped flood-prone areas and associated lands.	Westborough's Open Space and Recreation Plan was last updated in 2018.	Effective This plan expired in May 2024. Westborough should prepare a plan update as per Massachusetts Department of Conservation and Recreation guidance. Where allowable, it should use the update process to integrate hazard mitigation activities and recommendations into the plan.

Existing Measure	Description	Action	Effectiveness & Recommendations
NPDES MS4 Compliance Program	This program includes the upgrade of municipal sewer systems and system inputs to reduce or eliminate CSOs (combined sewer overflows) and illicit connections to comply with NPDES (National Pollutant Discharge Elimination System) requirements.	Westborough is implementing a program to ensure compliance with NPDES requirements. Recent actions which the Town has taken under this program include a storm drain assessment and mapping program, drainage improvement projects, street sweeping, and public outreach activities. Approximately 90% of the Town is on municipal sanitary sewer.	Very effective No changes recommended
Local wetlands protection bylaw and regulations	This bylaw and these regulations build upon the State's Wetlands Protection Act and related regulations. They add regulatory oversight provisions for development within the jurisdictional wetland buffer zone which increase attention to alteration of wetlands and the opportunity to preserve wetland capacity and quality.	Westborough has a Non-Zoning Wetlands Protection Bylaw as Article 45 of the Town's General Bylaws. This bylaw and its regulations are intended to protect wetlands to a greater degree than required under the Massachusetts Wetlands Protection Act. In 2024, the town voted to adopt a revised wetland bylaw.	Very effective

Existing Measure	Description	Action	Effectiveness & Recommendations
Drainage system cleaning and preventive maintenance	The Town plans to keep municipal drainage facilities (storm drains, culverts, etc.) in good order.	Westborough performs street sweeping and catch basin cleaning throughout the year.	Very effective
Tree Trimming	The Town completes maintenance of trees to reduce the likelihood of vegetative debris problems during and after storm events.	Westborough conducts roadside mowing from April-November to remove juvenile trees. Tree trimming (take-downs and clearing dead branches) takes place in accordance with the program the Town coordinates with National Grid.	Effective
Drainage maintenance, replacement and upgrade	The Town maintains existing culverts and drains through regular maintenance and (in some cases) beaver controls; it also replaces / expands culverts where needed to allow for adequate stormwater flow.	Westborough has historically maintained and replaced problem drains/culverts when needed and as funding allows. In 2022, the Town conducted a comprehensive inspection and assessment of 200 culverts, allowing a condition assessment and prioritization of improvements. Implementation projects to date include culvert work on Upton Road and upcoming culvert replacement work on Bowman Lane.	Effective Current efforts in town are comprehensively planned, but implementation is limited by available resources. Westborough should allocate additional local funds and seek other resources to implement its drainage improvement program on a more aggressive timeline.

Existing Measure	Description	Action	Effectiveness & Recommendations
Sewer system infiltration/inflow study	The Town assesses its sanitary sewer system for infiltration/inflow problems.	Assessments and repairs are ongoing.	Very effective
Dam upgrades	The Town repairs and makes improvements to Town-owned dams.	The Upper Spillway Rehabilitation Project for the Upper Sandra Pond Dam was completed in 2023.	Effective Westborough should continue to monitor conditions at Significant Hazard Town-owned dams and should continue to make improvements and repairs as they are needed.
CodeRED system	CodeRed is an emergency warning system that sends voicemail/text/email alerts to residents (text/email alerts are optional).	Town officials are able to alert residents when information is received that a natural or man-made disaster is impending. They utilize the CodeRed system as a reverse 911 to alert and notify town residents about natural or manmade disasters as well as other hazard-related information during instances such as the COVID-19 pandemic.	Effective Westborough should complete NWS StormReady certification and should adopt StormReady emergency notification practices to supplement CodeRED.

Existing Measure	Description	Action	Effectiveness & Recommendations
Debris Management Plan	This plan provides policies and procedures for the removal and disposition of debris caused by natural disaster events.	Westborough completed its debris management plan in 2008.	Somewhat Effective Westborough should update its existing plan to account for changes in the built environment and the Town's capabilities.
Sewer pump resilience upgrades	The Town makes upgrades to sanitary sewer pumps to increase resilience to disasters.	Upgrades are ongoing at multiple sewer pump stations.	Effective Westborough should allocate additional local funds and seek other resources to implement its sewer pump generator replacement program on a more comprehensive basis.
Emergency Preparedness Planning Guide	This guidebook provides Westborough-specific information to residents and other stakeholders for disaster preparedness and response and, to a more limited degree, mitigation.	This guide has been completed by the Local Emergency Planning Committee and has been distributed primarily on the Town's website.	Effective Westborough should evaluate the guide periodically as needed and should include additional mitigation materials as they are appropriate.

Existing Measure	Description	Action	Effectiveness & Recommendations
Climate Action Plan	This plan sets goals for the dramatic and continuous reduction of greenhouse gas emissions in Westborough for the upcoming 30 years. It aligns with Massachusetts greenhouse gas reduction goals and will help the Town take advantage of state programs. It also promotes actions which the Town can take to better address locally-prevalent climate impacts.	The Westborough Climate Action Plan was completed and accepted by the Select Board in 2021.	Effective The Town should continue implementing this plan and integrating it with other planning efforts.
Preflood Mitigation Program Standard Operating Procedure	This standard operating procedure of the Town's DPW ensures that all culverts, outfalls, and special concern flooding areas are inspected prior to a NOAA-identified flooding event.	This standard operating procedure began in March 2023. Culverts, outfalls, and special concern flooding areas in town are inspected in the occurrence of IAW National Weather Service Watch, Warning, or Advisory conditions, in December through February each year as part of the Town's winter sector maintenance cycle, and at the discretion of the DPW Director at any time throughout the year.	Very Effective Westborough should continue to refine this standard operating procedure as is necessary, but no major changes to it are needed.

Existing Measure	Description	Action	Effectiveness & Recommendations
Public Works Infrastructure Resiliency Week Standard Operating Procedure	During this standard operating procedure, the entire Town DPW staff participates and each Town DPW division inspects infrastructure under their purview.	This standard operating procedure began in March 2023. It occurs at the end of March each year, prior to the Town's summer cycles of its sector maintenance program.	Very Effective
Master Plan	This plan is a living, dynamic document that describes the Town's past, the Town's present, and how the Town imagines itself in the future. It also assesses existing community assets and resources and considers current and projected future conditions in order to establish a shared community vision that is documented in the form of goals and policy recommendations.	Westborough adopted its most recent Master Plan and created the Master Plan Implementation Committee in September 2021. This plan has been integrated with other town plans. The Town has begun implementing some of this plan's recommendations, such as completing a Downtown Development Plan. Westborough's Downtown Development Plan was completed in June 2024. This plan is a guide for the future of zoning, traffic, and public safety in town.	Effective The Town should continue implementing this plan and integrating it with other planning efforts.

Existing Measure	Description	Action	Effectiveness & Recommendations
Municipal Vulnerability Preparedness (MVP) Plan	This plan is a guide for climate resiliency implementation projects in town. It includes a vulnerability assessment and an action-oriented resiliency plan. This plan makes the town eligible for MVP Action Grant funding.	Westborough's Municipal Vulnerability Preparedness Plan was completed in 2020.	Effective The Town should continue implementing this plan and integrating it with other planning efforts.
Continuity of Operations Plan and the Massachusetts Fire and EMS Mobilization Plan	The Continuity of Operations Plan helps fire departments maintain critical services and meet their organizational missions. The Statewide Fire / EMS Mobilization Plan is a guide that helps communities gain access to fire and EMS services from outside of their district in the event of district-level mutual aid being exhausted or close to exhausted.	The Continuity of Operations Plan for Massachusetts Fire District 14, which includes Westborough, was completed in March 2020. The Statewide Fire / EMS Mobilization Plan was last updated in December 2019.	Effective Westborough will continue training and community outreach related to fire safety.

Existing Measure	Description	Action	Effectiveness & Recommendations
State Building Code	Compliance with the state building code means that buildings in town meet the minimum established requirements for structural strength, sanitation, and efficiency and are safe for regular use as well as during hazard events and other emergency situations.	The Town's Planning Board, Zoning Board of Appeals, and Building Inspector work to implement compliance with the state building code. The new update to the state building code (the 10th Edition of the Base Building Code (Massachusetts Amendments)) became effective on October 11th, 2024 and was concurrent with the previous edition through June 30th, 2025.	Very Effective
Zoning Bylaw (land use regulations)	The Town's zoning bylaw establishes zoning districts and overlay districts in town as well as defines use regulations, density and dimensional requirements, nonconforming uses and structures, development regulations, and special regulations in town.	The Town's current zoning bylaw was adopted at the March 2023 Town Meeting and has been amended since.	Effective
Subdivision Regulations (land use regulations)	These Planning Board rules describe how the Town regulates the development of subdivisions in Town to ensure public safety and welfare.	The Town's current subdivision regulations were adopted by the Westborough Planning Board in December 1990 and were last revised in November 2000.	Effective

6.0 Status of Mitigation Measures From 2017 Plan

Section 6.0 helps meet the following FEMA local mitigation plan requirements:

- *E2. "Was the plan revised to reflect changes in priorities and progress in local mitigation efforts?" (Requirement 44 CFR § 201.6(d)(3))*

During this hazard mitigation plan update process, the local HMP team in Westborough provided updates on the status of mitigation measures from the Town's 2017 Hazard Mitigation Plan. Certain measures were incomplete as of 2026 and were deemed as still being relevant; These relevant measures were re-incorporated in the 2026 Hazard Mitigation Plan action strategy if they are anticipated to be effective. The changes in the Town's priorities from the 2017 plan to this plan are noted in the **bolded** passages from the "2026 Notes" column in the table below. These changes in community priorities, including that culverts in the West Main Street/Kay Street/Adams Street area are not as high of a priority due to high situational awareness of this area, that only continued maintenance, and not engineering, is needed on Flanders Road near #165, that an engineering study is not needed at Milk Street (Route 135) at Route 9, that there have not been flooding issues recently in the Maynard Street area at the Assabet River or in the Meadow Road area, and that engineering is required to remedy the flooding issue in the Rogers Road/Forest Lane area, have resulted from reassessments of specific hazards-related challenges described in the 2017 plan.

Table 39: Status of Mitigation Measures from 2017 Plan

Structure & Infrastructure Strategies			
2017 Task	**2026 Status**	**2026 Notes**	**Include in 2026 Plan?**
Tree trimming needed to protect utility wires from storm damage	Ongoing	The Town has hired a qualified arborist in the time since the completion of the 2017 HMP update and receives very few calls relating to hazardous trees. Town DPW staff and National Grid are on top of handling downed and hazardous trees; the Town has a wonderful relationship with National Grid. There has been a significant improvement in response to downed and hazardous trees during storm events in town because of the Town's change in strategy. The Town should strive to review tree work in the wetland resource area buffer zone.	YES
Replace emergency generators and switch gear at water and sewer facilities; long-term capital plan needed as existing equipment ages	Ongoing	This is an ongoing process in town, it is quite an investment. The Town has replaced 6 emergency generators in the last 3 years; roughly 2 emergency generators per year are being replaced.	YES

2017 Task	2026 Status	2026 Notes	Include in 2026 Plan?
Drainage improvements in the West Main Street/Kay Street/Adams Street area; partly within 500-year flood zone from unnamed brook; upstream detention area could alleviate flooding	In Progress	This area was identified as a priority culvert replacement area in the Town's recently completed town-wide culvert assessment. Town DPW staff have cleaned and investigated this area, have upkept it so that it does not flood, and monitor it during each flood event. **There is high situational awareness of this area, so culverts in this area are now not as high of a priority as culverts in other areas of town.**	YES
Continue to monitor conditions at the Town-owned Upper and Lower Sandra Pond dams (Significant Hazard); maintain and/or improve as needed	Ongoing	A Town Meeting vote authorized an Operations and Maintenance plan for these dams; this 2017/2018 plan and a 2018 Emergency Action Plan for these dams have been approved by and are on file with the Massachusetts Office of Dam Safety (ODS). An inspection of these dams is completed every 5 years; the last inspection was completed in December 2023. Additional inspections of parts of the water supply components of the Lower Sandra Pond Dam which were not completed in 2023 need to be completed; repairs or improvements to the dam should be completed as they are required.	YES
Engineering study to evaluate potential new well sites to enhance drought resilience	In Progress	The Town is currently in the process of developing one new well.	YES
Engineering study to identify mitigation options for flooding on Flanders Road near #165; partly within 100-year flood zone and wetlands; Flanders Road is a primary evacuation route	In Progress	**There is no need for engineering in this area, only continued maintenance is needed. The work which has been completed here has helped alleviate flooding. Four drainage easements have been obtained from property owners by the Town so that Town DPW staff can complete work within these easements.**	YES
Engineering study to identify mitigation options for flooding on Chauncy Street near Oak Street; partly within 100-year flood zone and is adjacent to Chauncy Lake	In Progress	This area was identified as a high-priority area for culvert replacement in the Town's recently completed town-wide culvert assessment.	YES

2017 Task	2026 Status	2026 Notes	Include in 2026 Plan?
Engineering study to identify mitigation options for East Main Street at MBTA viaduct; near 100-year flood zone and area is barely above Cedar Swamp/Rutters Brook wetland	Ongoing	This area requires a lot of maintenance; specifically, the outfalls at the East Main Street Bridge which feed into Cedar Swamp require maintenance. The culverts in this area which help water pass under the railroad and get to Cedar Swamp Pond are constantly maintained by the Town in partnership with the MBTA, and this maintenance should be continued.	YES
Engineering study to identify mitigation options for Milk Street (Route 135) at Route 9; near 100-year flood zone, wetlands, and unnamed brook; these are primary evacuation routes	Ongoing	**An engineering study for this area is not needed, as the area has been thoroughly investigated and cleaned;** required maintenance has been done here and should be continued. The Town pays close attention to issues here, and it has mitigated them significantly because Route 135 and Route 9 are major evacuation routes.	YES
Drainage improvements in the Nourse Street (Route 30)/Jasper Street/Glen Street area; partly within 500-year flood zone from two unnamed brooks; upstream detention area could alleviate flooding; Route 30 is an evacuation route	No movement on this action yet	The Town may want to look into working with Grafton to address this issue.	YES
Drainage improvements in the West Main Street (Route 30)/Jasper Street area; partly within 500-year flood zone from unnamed brook; Route 30 is an evacuation route	Ongoing	This is a problem area, but Town DPW staff does perform maintenance at it. There is a culvert here that is probably undersized; Town DPW staff make sure that is clear and clean.	YES
Drainage improvements in the Harvey Lane/O'Neil Drive/Chestnut Street area and adjacent part of West Main Street (Route 30); partly within 100-year flood zone from unnamed brook; Route 30 is an evacuation route	Ongoing	Increased maintenance has occurred in this area, but nothing has been done in terms of upgrades here.	YES

2017 Task	2026 Status	2026 Notes	Include in 2026 Plan?
Drainage improvements in the Upton Road area near Sandra Pond; partly within 100-year flood zone from Sandra Pond/Westborough Reservoir	In Progress	The Town has received a grant from the DOER for a project to replace networking culverts in this area, which has 2 critical well sites within it.	YES
Drainage improvements in the Bowman Street/Bowman Lane area; partly within 100-year flood zone from Jackstraw Brook and Sandra Pond/Westborough Reservoir	In Progress	Culvert replacement work is anticipated to occur in this area in 2025. The Town needs to set easements here.	YES
Drainage improvements in the Meadow Road area; adjacent to 100-year flood zone	No movement on this action yet	**There have not been issues on this road, and therefore possible work in this area has dropped off the Town's radar.**	NO
Drainage improvements in the Maynard Street area at the Assabet River; partly within 100-year flood zone	No movement on this action yet	**Maintenance occurs in this area, but there have been no issues here since the last HMP update in 2017.**	NO
Drainage improvements in the Warren Street/Morse Street/Upton Road area; partly within 100-year flood zone from Jackstraw Brook; some mitigation activities have been completed but are not considered sufficient to protect from major storms	In Progress	The Town has received a grant from the DOER for a project to replace networking culverts in this area.	YES
Drainage improvements in the Rogers Road/Forest Lane area; adjacent to 100-year flood zone from wetlands; adjacent to Senior Center, Hastings Elementary School and Cedar Estates Housing Authority complex	In Progress	The previous Conservation Director and previous Conservation Commission chair in town have discussed this action. These issues are related to the culvert issue at the railroad, which has raised the floodplain elevation significantly and has prevented use of the athletic complex. **This is still a priority, but to remedy this issue, the floodplain would have to be raised at the playing field; this would require some engineering.**	NO

PREPAREDNESS, COORDINATION & RESPONSE ACTION STRATEGIES			
2017 Task	**2026 Status**	**2026 Notes**	**Include in 2026 Plan?**
Continue to participate in National Flood Insurance Program (NFIP) (or other) training offered by the State and/or FEMA that addresses flood hazard planning and management	Ongoing	The Town is in good standing with the NFIP.	YES
Investigate Community Rating System (CRS) benefits and requirements and decide whether to participate	No movement on this action yet	The Town has not yet investigated the CRS but is interested in it; the Sustainable Westborough Committee may be interested into researching the CRS and if the Town should participate.	YES
Road information coordination and planning for snow removal	Ongoing	The Town has implemented a Snow Operations Standard Procedure within the past 4 years which keeps DPW staff organized during and after snow events in town.	YES
Evacuation Plan updates; plan should consider needs of seniors and zero-vehicle households as per EJ section	In Progress	The Town needs to re-address evacuation planning and incorporate the needs of seniors and zero-vehicle households into this planning. The Town has completed a Community-Wide Transportation Needs Assessment.	YES
Continue to coordinate with other water systems to ensure backup water supply from MWRA through neighboring towns; plan for treatment incompatibilities if backup system is needed	In Progress	Work to complete this action is in progress, as there is still a need to ensure backup water supply for the Town. Not much has changed regarding this action since the last town HMP update in 2017; the Town's water system does not have a connection with the MWRA (Massachusetts Water Resources Authority), but it does connect with Southborough's water system. The Town is investigating the possibility of connecting with the MWRA's water system for emergency water supply purposes.	YES

EDUCATION & AWARENESS STRATEGIES			
2017 Task	**2026 Status**	**2026 Notes**	**Include in 2026 Plan?**
Provide information to residents and businesses on water conservation (to conserve water for drinking and firefighting), and snow/roof safety (past snows have seen home roof collapses)	Ongoing	The Town has updated its water restriction requirements. It has not snowed much in town in the past several years, but the Town would be reactive in the case of severe snowstorms and should work on becoming more proactive in preparing for these events.	YES
Update the Emergency Preparedness Planning Guide periodically; emphasize home-based mitigation activities such as tree trimming, extreme temperature safety, defensible space, etc…; core content should be translated to predominant foreign language(s) as per EJ section	No movement on this action yet	The Town should provide outreach on emergency preparedness to residents through its social media accounts.	YES
Continue education program mandated under NPDES MS4 permit that emphasizes storm drain safety/clearance and related drainage and stormwater topics	Ongoing	The Town's DPW sends out online notification letters to over 130 residences to encourage them to not dump into big holding areas. The Town's Conservation Department sends yearly letters to 300 businesses relating to stormwater maintenance.	YES

LOCAL PLAN & REGULATION STRATEGIES			
2017 Task	**2026 Status**	**2026 Notes**	**Include in 2026 Plan?**
Review and update local plans and development review processes (planning, zoning, stormwater management, conservation, etc.) to ensure new construction will not be affected by hazards	In Progress	There has not been much review of the recently adopted stormwater bylaw for the Town. The Town is considering adopting an LID bylaw, as this is one of the Town's Master Plan action items. The Town is also currently producing LID regulations which will be part of the Planning Board's rules and regulations. The Town should encourage LID best practices in its plans and development review processes. The Town's Zoning Bylaw was recently updated to include more of a focus on hazards which could affect the Town. Stormwater regulations for the Town are currently being produced and are anticipated to be finalized in 2025. A stormwater utility for the Town was approved in the spring of 2023, and the first stormwater utility bills in town were sent out in July 2024.	YES
Monitor implementation of Hazard Mitigation Plan	In Progress	The implementation of the 2017 update to the Westborough HMP has been ad-hoc. Town officials should meet once a year to discuss progress on the mitigation strategies from this 2026 HMP plan update.	YES
Update Open Space and Recreation Plan (soon to be expired) to include mitigation goals	Completed	The Westborough OSRP was updated in 2018 and expired in May of 2024.	YES
Update Debris Management Plan (2008)	No movement on this action yet	This plan still needs to be updated.	YES

7.0 Mitigation Strategy

The Westborough Hazard Mitigation Planning team developed a list of mitigation strategies (both new and previously identified by local officials) and prioritized them using the criteria described below. This list of factors is broadly derived from FEMA's STAPLE+E feasibility criteria.

7.1 Priority and Impact

Section 7.1 helps meet the following FEMA local mitigation plan requirements:

- *C5. "Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction?" (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))*

Real world considerations were brought into the analysis to inform the priority ranking process for the different mitigation strategies. Factors considered in this step include costs and cost effectiveness (including eligibility and suitability for outside funding), timing, political and public support, and local administrative burden. Each strategy was ranked as being high, medium, or low priority.

- High priority strategies have obvious mitigation impacts that clearly justify their costs and to a large degree can be funded, can be completed in a timely fashion, can be administered effectively, and are locally supported.
- Medium priority strategies have some clear mitigation impacts that generally justify their costs and generally can be funded, can be completed in a timely fashion, can be administered effectively, and are locally supported.
- Low priority strategies have relatively low mitigation impacts that do not necessarily justify their costs and may have difficulty being funded, being completed in a timely fashion, being administered effectively, and garnering local support.

Costs and cost effectiveness – in order to maximize the effect of mitigation efforts using limited funds, priority is given to low-cost strategies. For example, regular tree maintenance is a relatively low-cost operational strategy that can significantly reduce the length of time of power outages during a winter storm. Strategies that have clear and viable potential funding streams, such as FEMA's Hazard Mitigation Grant Program (HMGP), are also given higher priority.

Time required for completion – Projects that are faster to implement, either due to short work duration, current or near-term availability of funds, and/or ease of permitting or other regulatory procedures, are given higher priority.

Political and public support – Strategies are given higher priority if they have political and/or public support which is shown through public feedback, prioritization in previous regional and local plans, initiatives that were locally initiated or adopted, and/or prioritization in the Municipal Vulnerability Preparedness Program Community Resilience Building workshop process.

Administrative burden – Strategies that are realistically within the administrative capacity of the Town and its available support network (CMRPC, local non-profit organizations, regional collaborative associations etc.) are prioritized. Grant application requirements, grant administrative requirements (including audit requirements), procurement, and staff time to oversee projects are all considered when figuring out the administrative burden of a strategy.

Impact – The HMP Core Team's consideration of each strategy included an analysis of the mitigation impact each can provide, regardless of cost, political support, funding availability, and other constraints. The intent of this step is to separately evaluate the theoretical potential benefit of each

strategy to answer the question: if cost were no object, what strategies have the most benefit? Factors considered in this analysis include the number of hazards each strategy helps mitigate (more hazards equals higher impact), the estimated benefit of the strategy in reducing loss of life and property (more benefit equals higher impact), and the geographic extent of each strategy's benefits (other factors being equal, a larger area equals higher impact).

- High impact actions help mitigate several hazards, substantially reduce loss of life and property (including loss of critical facilities and infrastructure), and/or aid a relatively large portion of the community.
- Medium impact actions help mitigate multiple hazards, somewhat reduce loss of life and property (including loss of critical facilities and infrastructure), and/or aid a sizeable portion of the community.
- Low impact actions help mitigate a single hazard, lead to little or no reduction in loss of life and property (including loss of critical facilities and infrastructure), and/or aid a highly localized area.

7.2 Estimated Cost

Each implementation strategy is provided with a rough cost estimate based on available third party or internal estimates and past experience with similar projects. Each includes hard costs (construction and materials), soft costs (engineering design, permitting, etc.), and where appropriate Town staff time (valued at appx. $25/hour for grant applications, administration, etc.). Projects that already have secured funding are noted. Detailed and current estimates were generally not available, so costs are summarized within the following ranges:

- Low – less than $50,000
- Medium – between $50,000 – $100,000
- High – over $100,000

7.3 Expected Timeline

Section 7.3 helps meet the following FEMA local mitigation plan requirements:

- *C5. "Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction?" (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))*

Each strategy is provided with an estimated length of time it will take for implementation. For strategies for which funding has been secured, a specific future timeline is provided for when completion is expected. However, most strategies do not currently have funding, and thus it is difficult to know exactly when they will be completed. For these projects, an estimate is provided for the amount of time it will take to complete the project once funding becomes available. Each strategy has a timeframe of either a specified period of less than 5 years, a 5+ year timeframe, or an ongoing timeframe.

7.4 Strategy Types

Mitigation strategies included in this plan are subdivided into the following four broad categories which can help facilitate local implementation discussions, especially regarding budget considerations and staff roles/responsibilities:

Structure and Infrastructure Projects relate to constructing "brick & mortar" infrastructure and

building improvements in order to eliminate or reduce hazard threats or in order to mitigate the impacts of hazards. Examples of this type of project include drainage system improvement, dam repair, and generator installation. Structure and infrastructure improvements tend to have the greatest level of support at the local level but are highly constrained by funding limits.

Preparedness, Coordination and Response Actions ensure that a framework exists to facilitate and coordinate the administration, enforcement and collaboration activities described in this plan. They integrate disaster prevention/mitigation and preparedness into every relevant aspect of town operations, including the operations of the Police Department, Fire Department, EMD, EMS, DPW, Planning Board, Conservation Commission and Select Board; they also help the Town coordinate with neighboring communities where appropriate. Recommendations in this category often help standardize generally practiced activities.

Education and Awareness Programs help raise awareness of overall or hazard-specific risk and generate support for individual or community-wide efforts to reduce risk. Education and awareness seek to affect broad patterns of behavior. Awareness-building activity tends to have a fairly slow effect, although in the end it can provide extraordinary benefits with relatively little cash outlay.

Local Plans and Regulations propose updates to or formally update or establish local bylaws, ordinances and other regulations to protect vulnerable resources and prevent future natural hazard impacts on these resources. Local plans can also review the effectiveness of past mitigation projects, programs, procedures, and policies so that strategies for making them more effective in the future can be formed. An example of a project which fits under this category is incorporating mitigation planning into master plans, open space plans, capital improvement plans, facility plans, and other town plans.

Planning and regulatory activity tends to provide extraordinary benefits to towns with relatively little cash outlay. However, in smaller communities where planning activities are largely the purview of volunteers, outside assistance from the state or regional levels may be required to maximize the benefits of planning. Political support may be difficult to achieve for some planning and regulatory measures, especially those that place new constraints on land use.

In addition to describing action items in each of these categories, the row for each strategy also identifies what hazard(s) the strategy is intended to address. Each row also identifies the lead organizations who serve as the primary points of contact for coordinating efforts associated with the corresponding strategy and identify potential funding sources for implementing the strategy.

7.5 Strategy Goals

Section 7.5 helps meet the following FEMA local mitigation plan requirements:

- *C3. "Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?" (Requirement 44 CFR § 201.6(c)(3)(i))*

For each of the strategy types included above, there is an associated mitigation goal. The goals are as follows:

Structure and Infrastructure Projects – Harden and adapt the Town's current infrastructure to withstand hazards in the near-term and the long-term, incorporating nature-based strategies whenever feasible and desirable to build a more resilient municipality.

Preparedness, Coordination and Response Actions – Improve the Town's emergency and municipal service capabilities to effectively respond to and recover from natural disasters, as well as to build and establish relationships with stakeholders to ensure the continuation of essential services in the event of a disaster.

Education and Awareness Programs – Educate and inform the public about the threats of natural hazards and climate change; provide the resources for individual and community preparedness and foster a whole community response to natural hazards and climate change.

Local Plans and Regulations – Adopt and approve plans and legislation that prioritize climate resiliency and hazard mitigation; incorporate principles of resiliency within local and regional planning and legislative actions.

7.6 Town of Westborough 2026 Hazard Mitigation Strategies

Section 7.6 helps meet the following FEMA local mitigation plan requirements:

- *C3. "Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?" (Requirement 44 CFR § 201.6(c)(3)(i));*
- *C4. "Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?" (Requirement 44 CFR § 201.6(c)(3)(ii));*
- *C5. "Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction?" (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii)); and*
- *D2. "Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)?" (Requirement 44 CFR § 201.6(c)(4)(i))*

The Town has decided to prioritize the following mitigation strategies. The columns of the table below reflect the criteria described above. In the "Who (Agencies Involved)" column, the lead agency for each strategy is **bolded**.

OVERALL GOAL: The overall goal of these mitigation strategies is to facilitate activity within the Town of Westborough that reduces the loss of people's lives, property in town, and environmental resources in town as well of the risk of these losses in the case of natural hazard occurrences. Please view section 8.4, Potential Federal and State Funding sources, for more information on the funding sources listed below.

Table 40: Town of Westborough 2026 Hazard Mitigation Strategies

Structure & Infrastructure Strategies							
Actions	**Hazards Addressed**	**Agencies Involved**	**Potential Funding Sources**	**Priority**	**Impact**	**Estimated Cost**	**Expected Timeline**
Enhance coordination relating to needed tree trimming throughout town to protect utility wires from storm damage. Review tree work in wetland resource area buffer zone.	SS, ST, HU	National Grid, private property owners, **Tree Warden,** Conservation	Utility (National Grid), Local (capital funds, conservation operating budget, town meeting), Private (property owners)	High	High	Medium	0-2 years, then ongoing

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Replace emergency generators and switch gear at water and sewer facilities; long- term capital plan needed as existing equipment ages	All	**DPW**	Local (capital funds, DPW operating budget, town meeting), Federal (Emergency Management Performance Grant (EMPG), Hazard Mitigation Grant Program (HMGP) federal earmarks), State (Municipal Vulnerability Preparedness (MVP) Action Grant, state earmarks)	High	High	High	5+ years
Complete drainage improvements in the West Main Street / Kay Street / Adams Street area; this area is partly within the 500-year flood zone of an unnamed brook. An upstream detention area could alleviate flooding in this area.	FL, SS, ST, HU	**DPW**, Conservation	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks), State (MVP Action Grant, state earmarks)	Medium	Medium	High	1-2 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Enhance the monitoring of conditions at the Town-owned, Significant Hazard Upper and Lower Sandra Pond dams; enhance the maintenance of and/or improve these dams as is needed.	DF	**DPW**, Conservation, Health Department	Local (capital funds, DPW, conservation, and health department operating budgets, town meeting), State Grants (MA DCR Dam and Seawall Grant)	Medium	Medium	High	0-3 years, then ongoing
Complete an engineering study to evaluate potential new well sites in town which could enhance the Town's resilience to drought.	DR, WF	**DPW**	Local (capital funds, DPW operating budget, town meeting), State (State Revolving Fund)	Medium	Low	High	3-5 years
Enhance maintenance to prevent and identify mitigation options for flooding on Flanders Road near #165; this area is partly within wetlands and the 100-year flood zone. Flanders Road is a primary evacuation route.	FL, SS, ST, HU	**DPW**, Conservation	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks), State (Hazard Mitigation Grant Program (State) (HMGP), state earmarks)	Low in terms of replace-ment. High in terms of mainte-nance.	Medium	Low	3-5 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Complete an engineering study to identify mitigation options (such as culvert replacement) for flooding on Chauncy Street near Oak Street; this area is partly within the 100-year flood zone and is adjacent to Chauncy Lake.	FL, SS, ST, HU	**DPW**, Conservation	Local (capital funds, DPW and conservation operating budgets, town meeting), Federal (National Culvert Removal, Replacement, & Restoration Grant (NCRRRG), FEMA FMA Grant, federal earmarks) State (MVP Action Grant, state earmarks)	High	High	High	3-5 years
Complete an engineering study to identify mitigation options for East Main Street at the MBTA viaduct; this area is near the 100-year flood zone and is barely above Cedar Swamp and the Rutters Brook Wetland. Enhance maintenance here as well.	FL, SS, ST, HU	**DPW**, MBTA, Conservation	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, Emergency Watershed Protection Program (EWP), federal earmarks) State (Chapter 90 Program (Transportation Capital Improvement Projects) (Chpt. 90), Division of Ecological Restoration Priority Project Program, state earmarks, MBTA operating budget)	High	High	High	3-5 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Enhance maintenance to prevent flooding at Milk Street (Route 135) at Route 9; this area is near the 100-year flood zone, wetlands, and an unnamed brook. Route 135 and Route 9 are primary evacuation routes.	FL, SS, ST, HU	MassDOT, **DPW**, Conservation	Local (DPW and conservation operating budgets) State (Hazard Mitigation Grant Program (State) (HMGP), state earmarks, MassDOT operating budget)	Medium	Medium	Low	3-5 years
Complete drainage improvements in the Nourse Street (Route 30) / Jasper Street / Glen Street area; this area is partly within the 500-year flood zone of two unnamed brooks. An upstream detention area could alleviate flooding in this area. Route 30 is an evacuation route.	FL, SS, ST, HU	**DPW**, Conservation, MassDOT	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks), State (Hazard Mitigation Grant Program (State) (HMGP), state earmarks)	Medium / High	Medium	High	3-5 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Complete drainage improvements in the West Main Street (Route 30) / Jasper Street area; this area is partly within the 500-year flood zone of an unnamed brook. Route 30 is an evacuation route.	FL, SS, ST, HU	**DPW**, Conservation, MassDOT	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks), State (Hazard Mitigation Grant Program (HMGP), state earmarks)	Low	Medium	High	3-5 years
Complete drainage improvements in the Harvey Lane / O'Neil Drive / Chestnut Street area and the adjacent part of West Main Street (Route 30); this area is partly within the 100-year flood zone of an unnamed brook. Route 30 is an evacuation route.	FL, SS, ST, HU	**DPW**, Conservation, MassDOT	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks), State (Hazard Mitigation Grant Program (HMGP), state earmarks)	Low	Medium	High	3-5 years
Complete drainage improvements in the Upton Road area near Sandra Pond; this area is partly within the 100-year flood zone of Sandra Pond / Westborough Reservoir.	FL, SS, ST, HU	**DPW**, Conservation	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks), State (Hazard Mitigation Grant Program (HMGP), state earmarks)	High	High	High	3-5 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Complete drainage improvements in the Upton Road area near Sandra Pond; this area is partly within the 100-year flood zone of Sandra Pond / Westborough Reservoir.	FL, SS, ST, HU	**DPW**, Conservation	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks), State (Hazard Mitigation Grant Program (HMGP), state earmarks)	High	High	High	3-5 years
Complete drainage improvements in the Bowman Street / Bowman Lane area; this area is partly within the 100-year flood zones of Jackstraw Brook and Sandra Pond / Westborough Reservoir. Easements need to be set in this area.	FL, SS, ST, HU	**DPW**, Conservation	Local (stormwater enterprise fund, DPW and conservation operating budgets), Federal (FEMA FMA Grant, federal earmarks) State (Hazard Mitigation Grant Program (HMGP), MVP Action Grant, state earmarks)	High	High	High	3-5 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Complete drainage improvements in the Warren Street / Morse Street / Upton Road area; this area is partly within the 100-year flood zone of Jackstraw Brook. Some mitigation activities have been completed in this area, but they are not considered sufficient to protect this area from major storms.	FL, SS, ST, HU	**DPW**, Conservation	Local (stormwater enterprise fund, DPW and conservation operating budgets), State (Hazard Mitigation Grant Program (State) (HMGP), state earmarks)	High	High	High	1-2 years
Install lightning rods at the Town Hall and the Forbes Municipal Building to address lightning strikes.	LG	**DPW**	Local (capital funds, DPW operating budget, town meeting), Federal (FEMA BRIC, Public Assistance, and HMGP programs)	Low	Medium	Low	1-2 years
Complete the development of a recently purchased property in town to act as a Community Center and a shelter with generator support / self-sustaining power generation in times of emergency.	All	Fire, **Council on Aging**	Local (capital funds, town meeting, fire department and Council on Aging operating budgets), Federal (federal earmarks), State (MVP Action Grant, state earmarks)	High	High	High	3-5 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Create additional egresses where necessary to expand emergency response capabilities in town, especially in heavily forested woods where firefighting ability is currently hindered.	WF, SS, ST, FL	**Fire**	Local (capital funds, fire department operating budget, town meeting), Federal (Fire Prevention & Safety Grant Program (AFG) (FP&S), Homeland Security grant funding through CRHSAC and EOPSS), State (state earmarks)	High	High	Medium / High	1-2 years
Complete additional inspections of the portions of the water supply components of the Lower Sandra Pond Dam that were inaccessible during the most recent inspection of the dam (as is described in the "Lower Sandra Pond Dam Phase 1 Inspection / Evaluation Report" from December 19th, 2023); these include below water portions of the gatehouse, water supply pipes, and valves. Pending the results of these additional inspections, complete repairs or improvements as they are required.	DF	**DPW**, MA Office of Dam Safety, Pare Corporation, Conservation, Health Department	Local (capital funds, town meeting, DPW, conservation, and health department operating budgets), Federal (Rehabilitation of High Hazard Potential Dam Program (State Dam Safety Divisions) (HHPD), federal earmarks), State (MA DCR Dam and Seawall Grant, state earmarks, MA Office of Dam Safety operating budget)	High	High	High	1-3 years

Preparedness, Coordination & Response Action Strategies							
Actions	**Hazards Addressed**	**Agencies Involved**	**Potential Funding Sources**	**Priority**	**Impact**	**Estimated Cost**	**Expected Timeline**
Enhance participation in National Flood Insurance Program (NFIP) or other training offered by the State and/or FEMA that addresses flood hazard planning and management.	FL, SS, ST, HU	DPW, LEPC, Planning, BOH, **Conservation**	Local (capital funds, conservation, DPW, LEPC, planning, and BOH operating budgets, town meeting)	High	Low	Low	0-2 years, then ongoing
Investigate the benefits and requirements of the Community Rating System (CRS) and decide whether to participate in this program or not.	FL, SS, ST, HU	DPW, LEPC, **Planning**	Local (capital funds, planning, LEPC, and DPW operating budgets, town meeting)	Low	Low	Low	1-2 years
Enhance road information coordination as well as planning for snow removal.	SS	**DPW;** MassDOT, Mass State Police, CMRPC	Local (capital funds, DPW operating budget, town meeting), Federal (PROTECT program, federal earmarks) State (State Transportation Improvement Program (STIP), LPA, DLTA, state earmarks, MassDOT and Mass State Police operating budgets), Private Contracts	High	High	Low	0-2 years, then ongoing

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Complete evacuation Plan updates. Evacuation planning efforts for the Town should consider the needs of seniors and zero-vehicle households; information about these populations in town is included in this plan's Environmental Justice and Vulnerable Populations Section.	All	**LEPC**, DPW, CMRPC, MassDOT, NRT Transportation	Local (capital funds, DPW and LEPC operating budgets, town meeting), Federal Grants (Homeland Security grant funding through CRHSAC and EOPSS)	High	High	Low	1-2 years (update every 5 years)
Enhance coordination with other water systems to ensure that there is a backup water supply for the Town from the MWRA which runs through neighboring towns. Plan for treatment incompatibilities if a backup system is needed.	DR, WF	**DPW**, MRWA, Southborough, Northborough	Local (capital funds, DPW operating budget, town meeting)	High	High	High	0-3 years, then ongoing
Formalize a priority list of sites for the Town to aim to purchase based their potential to mitigate flood risks and other climate related impacts. Reference the 2023 Sudbury Valley Trustees' "Conservation in the SuAsCo" StoryMap in formalizing this priority list.	All	**Land Prioritization Committee**	Local (capital funds, land prioritization committee operating budget, town meeting)	Medium / High	Medium / High	Low to formalize list, High to acquire properties	0-2 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Increase the level of monitoring of pump stations and other sewer and water infrastructure during extreme weather events. Improve the town's ability to monitor this infrastructure and alert town staff if there is an issue.	FL	**DPW**, Fire	Local (capital funds, DPW and fire department operating budgets, town meeting), Federal (Homeland Security grant funding through CRHSAC and EOPSS), state earmarks	Medium	High	High	3-5 years
Investigate the best way to mitigate flooding and protect pump stations and other sewer infrastructure. Consider physical infrastructure upgrades, such as flood walls and other barriers.	FL	**DPW**	Local (sewer / water enterprise funds, DPW operating budget), Federal (FEMA BRIC, FMA Grants)	Medium	High	High	3-5 years
Coordinate with the operator of Westborough Healthcare (formerly Kindred Westborough) to make sure that the Town's emergency services and this operator have a plan in case a flood occurs at this site.	FL	DPW, **Fire**	Local (capital funds, fire department and DPW operating budgets, town meeting)	Low	Low	Low	1 year

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Identify and keep pace with best practices in information technology relating to protecting people and infrastructure from natural hazards.	All	**IT**, Fire, Police	Local (capital funds, IT, fire department, and police department operating budgets, town meeting), State (MVP Action Grant, state earmarks), Federal (Homeland security grant funding through CRHSAC and EOPSS)	High	High	Medium	0-1 years, then ongoing
Use the results of the town-wide culvert assessment to prioritize culvert upsizing, culvert replacement, or other next steps (such as conducting inspections and removing sand from swamp areas at culverts) to minimize the impacts of hazards.	FL	**DPW**	Local (capital funds, DPW operating budget, town meeting)	Medium	Medium	High	3-5 years
Strengthen the Town's communication and educational collaboration with the MBTA to ensure that the culverts along the MBTA rail line are properly and consistently maintained.	FL	**DPW**, MBTA	Local (capital funds, DPW operating budget, town meeting)	High	Medium	Low	0-1 years, then ongoing

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Form a coalition with surrounding towns to engage with MassDOT in developing strategies to prevent highway runoff pollution from entering town water supplies.	FL, DR	**DPW**, DPWs in neighboring towns, MassDOT	Local (capital funds, DPW operating budgets in Westborough and surrounding towns, town meeting)	High	High	Low	1-2 years, then ongoing
Complete a town-wide drainage study that examines basins and dams to help with addressing more frequent high intensity natural hazard events.	FL, DF, DR, ST	**DPW**	Local (capital funds, DPW operating budget, town meeting) State (MVP Action Grant), Federal (FEMA FMA, BRIC Grants)	High	High	Medium / High	3-5 years
Consider completing a study to identify options for feeding a portion of the clean water discharge from the Town's wastewater treatment plant back into the Town's water supply.	DR	**DPW**	Local (capital funds, DPW operating budget, town meeting) State (Mass DEP Statewide Water Management Act Grant, MVP Action Grant), Federal (FEMA BRIC Grant)	Low / Medium	Medium	Low / Medium to study, High to implement	3-5 years
Consider utilizing green infrastructure, nature-based-solutions (such as bioswales), and/or on-site infiltration to help with stormwater mitigation in town, including in the Hundreds neighborhood and other low-lying areas of town which are prone to stormwater flooding.	DR, FL	DPW, **Planning**	Local (capital funds, planning and DPW operating budgets, town meeting), State (MVP Action Grant)	Low / Medium	Medium	Low to study, High to implement	1-2 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Expand redundancy of public safety and emergency services in different areas of town as flooding, intense storm events, and other crises become more frequent. This can allow different parts of town to respond effectively to a disaster if one part of the town is most severely hit and can address the current emergency response issues in efficiently reaching the east side of town.	All	**Fire**, Police, DPW	Local (capital funds, fire department, police department, and DPW operating budgets, town meeting), Federal (FEMA BRIC Grant, CDBG)	High	High	High	5+ years
Complete a feasibility study to consider creating additional substations to house Fire Department, Police Department, and DPW equipment in other areas of town than they are currently stored.	All	**Fire**, Police, DPW	Local (capital funds, fire department, police department, and DPW operating budgets, town meeting), Federal (FEMA BRIC Grant, CDBG)	High	High	Low to study, High to implement	1-2 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Create back-up plans for communication infrastructure in case of emergency.	All	**DPW**, National Grid, Eversource, Fire	Local (capital funds, DPW and fire department operating budgets, town meeting), Federal (Homeland Security grant funding through CRHSAC and EOPSS), State (Support and Incentive Grants, state earmarks)	Medium	High	Low	1-2 years
Consider moving utility lines underground to protect them from weather-related damages.	All	**DPW**, National Grid, Eversource, Fire	Local (capital funds, DPW and fire department operating budgets, town meeting), Federal (Homeland Security grant funding through CRHSAC and EOPSS), State (Hazard Mitigation Grant Program (State) (HMGP), state earmarks)	Medium	Medium	Low to study, High to implement	1-2 years
Enhance collaboration with the Central Massachusetts Mosquito Control Project.	IS	**DPW**	Local (capital funds, DPW operating budget, town meeting)	High	Medium	Low	0-2 years, then ongoing
Assess and manage the health of wetlands and waterways to prevent water quality issues.	DR, FL	**Conservation**, Planning, DPW	Local (capital funds, conservation, planning, and DPW operating budgets, town meeting), State (Statewide Water Management Act Grant, MVP Action Grant)	High	High	Low to assess, Medium / High to manage	0-2 years, then ongoing

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Consider options for increasing the number of cooling spots in town.	DR, XT	**Planning**	Local (capital funds, planning operating budget, town meeting)	Medium	Medium	Low	1-2 years
Complete pilot Lake Chauncey Algae Bloom Study. Develop a management plan to treat and prevent future algae blooms at Lake Chauncey as well as other surface waters in town. Provide education to the public on the harms of algae.	IS	**Conservation**, Planning, DPW	Local (capital funds, conservation, planning, and DPW operating budgets, town meeting), State (MVP Action Grant)	High	High	Medium	1-2 years
Investigate establishing community gardens for residents to use.	IS, XT	**Planning**	Local (capital funds, planning operating budget, town meeting)	Low	Medium	Low to investi-gate, Medium / High to establish	1-2 years
Identify potential locations for pollinator gardens in town.	IS	**Planning**	Local (capital funds, planning operating budget, town meeting)	Low	Medium	Low	1-2 years

Education & Awareness Strategies							
Actions	**Hazards Addressed**	**Agencies Involved**	**Potential Funding Sources**	**Priority**	**Impact**	**Estimated Cost**	**Expected Timeline**
Provide information to residents and businesses on water conservation (to conserve water for drinking and firefighting) and snow/roof safety (as past snows in town have led to home roof collapses).	DR, WF, SS	**DPW**, LEPC	Local (capital funds, DPW and LEPC operating budgets, town meeting)	Medium	Medium	Low	1-2 years, then ongoing
Update the Town's Emergency Preparedness Planning Guide periodically; emphasize home-based mitigation activities such as tree trimming, extreme temperature safety, and creating defensible space in social media outreach. The core content of this guide should be translated into foreign languages commonly spoken in town, including Portuguese, Spanish, Chinese, and Arabic.	All	**LEPC**	Local (capital funds, LEPC operating budget, town meeting) State (EEA Planning Assistance Grant)	High	Medium	Low	1-2 years, then ongoing

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Enhance education program mandated under NPDES MS4 permit that emphasizes storm drain safety and clearance as well as related drainage and stormwater topics.	FL, SS, ST, HU	**DPW**, Conservation	Local (capital funds, DPW and conservation operating budgets, town meeting)	Medium	Medium	Low	1-2 years, then ongoing
Utilize outreach within the existing networks in town, including Westborough Connects, the Interfaith Association, and the Housing Association. Implement strategies to work with these organizations to spread important information town-wide.	All	**All Town Departments**	Local (capital funds, operating budgets for all town departments, town meeting)	Medium	Low	Low	0-2 years, then ongoing

Local Plan & Regulation Strategies							
Actions	**Hazards Addressed**	**Agencies Involved**	**Potential Funding Sources**	**Priority**	**Impact**	**Estimated Cost**	**Expected Timeline**
Review and update local plans and development review processes for stormwater management and conservation to ensure that new construction will not be affected by hazards and to encourage LID (low impact development) best practices.	All	**All Town Departments**	Local (stormwater utility fee)	Medium	High	Low	1-3 years, then ongoing
Review and update the zoning bylaw and related local plans and development review processes to ensure that new construction will not be affected by hazards and to include LID (low impact development) best practices.	All	**All Town Departments**	Local (capital funds, operating budgets for all town departments, town meeting)	Medium	High	Low	1-3 years, then ongoing
Monitor the implementation of the Hazard Mitigation Plan. Once a year, meet to discuss the progress of this plan's mitigation strategies.	All	**All Town Departments**	Local (capital funds, operating budgets for all town departments, town meeting)	Medium	High	Low	At least yearly / as hazards affecting the Town occur

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Update the Open Space and Recreation Plan (which expired in 2024) to include mitigation goals.	All	**Planning**, Parks, Conservation	Local (capital funds, planning, parks, and conservation operating budgets, town meeting)	Medium	Low	Medium / High	1-2 years
Update the Debris Management Plan (2008).	HU, EQ, SS, ST	**DPW**	Local (capital funds, DPW operating budget, town meeting)	Medium	Medium	Low	1-2 years
Produce an integrated invasive species and pest management plan for the Town.	IS	**Conservation**, DCR, SuAsCo	Local (conservation operating budget, town meeting, capital funds) State (MVP Action Grant)	Medium	Medium / High	Medium	3-5 years
Complete and implement a town-wide Language Access Plan in order to ensure that there is equitable knowledge and access to services, emergency plans, and general town information. Make a summary of the Town's Hazard Mitigation Plan available in languages other than English (specifically, Portuguese, Spanish, Chinese, and Arabic).	All	**Planning**	Local (capital funds, planning operating budget, town meeting), State (DLTA, EEA Planning Assistance Grant, Community One Stop)	High	Medium / High	Low / Medium	1-2 years

Actions	Hazards Addressed	Agencies Involved	Potential Funding Sources	Priority	Impact	Estimated Cost	Expected Timeline
Inventory unreinforced masonry and brick buildings in town which may be vulnerable to earthquakes. Conduct a study which identifies ways that these buildings can meet the Massachusetts State Building Code's seismic standards. Consider making agreements with businesses in town to use reinforced office buildings on upland, glacial till soils as emergency shelters in the case of earthquakes affecting the Town. Consider using the Fales and/or Mill Pond Schools as earthquake shelters as well.	EQ	**Building Department,** Planning	Local (building department and planning operating budgets), State (state earmarks), Federal (National Earthquake Hazards Reduction Program's State Assistance Program)	Low	Medium	Low	0-3 years, then ongoing

Note: Mitigation strategies with an ongoing expected timeline after their initial expected timeline are hazard mitigation actions that the Town should continually work on advancing and/or periodically work on once they have begun.

'Hazards Addressed' abbreviations:

DF	Dam Failure	DR	Drought, Including Changes in Groundwater
EQ	Earthquakes	FL	Flooding, Including Changes in Groundwater
HU	Hurricanes	IS	Invasive Species
OT	Other	SS	Severe Snowstorms / Ice Storms / Nor'easters
ST	Severe Thunderstorms / Wind / Tornadoes	WF	Wildfire
XT	Extreme Temperatures		

'Agencies Involved' abbreviations (these abbreviations are also used in the 'Potential Funding Sources' column):

BOS	Board of Selectmen	CC	Conservation Commission
CMRPC	Central Massachusetts Regional Planning Commission	DPW	Department of Public Works
EMD	Emergency Management Director	PB	Planning Board

LEPC	Local Emergency Planning Committee	ZBA	Zoning Board of Appeals

8.0 Plan Adoption, Implementation, and Maintenance

8.1 Plan Adoption

A public meeting was held on August 20th, 2024 as part of the Select Board's meeting in order to detail the Westborough Hazard Mitigation Plan update process to that date and to solicit comments and feedback from the public and the Select Board on the draft plan which was then being developed. The draft plan was provided to the Town for distribution and posted on the Town's website for three weeks starting on August 27th, 2024 for public review and input. The Plan was then submitted to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency (FEMA) for their review. Upon receiving conditional approval of the plan by FEMA, the final plan was adopted by vote of the Westborough Select Board and certified on February 24th, 2026.

8.2 Plan Implementation

Section 8.2 helps meet the following FEMA local mitigation plan requirements:

- *A4. "Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information?" (Requirement 44 CFR § 201.6(b)(3)); and*
- *E2. "Was the plan revised to reflect changes in priorities and progress in local mitigation efforts?" (Requirement 44 CFR § 201.6(d)(3)).*

The Town of Westborough has completed the 2020 Westborough Municipal Vulnerability Preparedness Plan, the 2021 Westborough Master Plan, and the 2018 Westborough Open Space and Recreation Plan. Findings from the 2026 Westborough Hazard Mitigation Plan update, including the data, ideas, and strategies incorporated into the plan, may be integrated into future iterations of all of these plans as well as into updates to the Town's 2008 Debris Management Plan, updates to the Town's Emergency Preparedness Planning Guide, an integrated invasive species and pest management plan for the Town, a language access plan for the town, zoning updates for the Town, and other planning mechanisms and documents.

The implementation of the 2026 plan update began upon its formal adoption by the Select Board and approval by MEMA and FEMA. Town departments and boards responsible for ensuring the development of policies, ordinance revisions, and programs as described in Sections 6 and 7 of this plan will be notified of their responsibilities immediately following this plan's approval. The local Hazard Mitigation Planning Team in town will oversee the implementation of this plan.

Incorporation with Other Planning Documents

Findings from the 2017 Westborough Hazard Mitigation Plan were incorporated into other planning mechanisms and policies in town besides this plan update, including the Town's 2020 Municipal Vulnerability Preparedness (MVP) Plan, the Town's 2021 Master Plan, and the Town's 2021 Comprehensive Emergency Management Plan. The Town's 2017 HMP informed descriptions of past climate-related events in the Town's 2020 MVP plan[174] as well as descriptions of anticipated future climate change impacts in town, existing hazard mitigation protection measures,

[174] Central Massachusetts Regional Planning Commission, "Town of Westborough Municipal Vulnerability Preparedness Summary of Findings," page 11.

and high priority HMP strategies in the Town's 2021 Master Plan;[175] It also informed an overall heightened focus on as well as guidance relating to the threat of natural hazards in these planning documents, including the incorporation of hazard mitigation-related strategies as 2021 Master Plan strategies. Existing plans, studies, reports, and municipal documents completed by and/or relating to the Town were incorporated throughout this planning process. The following key documents were reviewed as part of the planning process, and information from these documents was incorporated into this plan update:

- ***Westborough Comprehensive Emergency Management Plan*** (particularly the critical infrastructure section) – the critical infrastructure section of this plan was used to help identify infrastructure components in town that have been identified as crucial to the function of the Town; this resource was also used to identify potentially vulnerable populations and potential emergency response shortcomings.
- ***Regional Evacuation Plan*** – Funded by United States Department of Homeland Security via the Commonwealth of Massachusetts and the Central Region Homeland Security Advisory Council, this regional evacuation plan prepared by CMRPC was used to identify evacuation routes and emergency shelters. This plan will soon be updated by CMRPC.
- ***Westborough Open Space and Recreation Plan*** – This Plan was used to identify the natural context within which mitigation planning takes place; it proved useful for this planning process insofar as it identified water bodies, rivers, streams, infrastructure components (i.e., water and sewer, or the lack thereof), and population trends. This information was incorporated into this plan to ensure that the Town's mitigation efforts would be sensitive to the surrounding environment. It should be noted that this plan has expired and is in the process of being updated.[176]
- ***Westborough Zoning Bylaw*** –The Zoning Bylaw was used in this planning process to identify the actions that the Town is already taking (such as implementing and enforcing floodplain regulations) that reduce the potential impacts of a natural hazard and to make sure that this plan's mitigation strategies do not duplicate existing successful efforts.[177]
- ***Westborough Master Plan*** – This plan was used to identify the main priorities for the Town so that the Hazard Mitigation Plan's strategies can align with these priorities.[178]
- ***Westborough Municipal Vulnerability Preparedness Plan –*** Recommendations from this plan deemed important to hazard mitigation by the planning team in town were incorporated into the Hazard Mitigation Plan's mitigation strategies.[179]
- ***ResilientMass State Hazard Mitigation and Climate Adaptation Plan*** - This plan was used to

[175] VHB in association with Landwise, "Westborough, MA Master Plan," Westboroughma.gov, The Town of Westborough, September 2021, https://www.westboroughma.gov/DocumentCenter/View/2099/WBoro-MP_Final_10132021, pages 197-198, 203, and 272.
[176] The Town of Westborough, "Seven Year Open Space & Recreation Plan," Town.westborough.ma.us, The Town of Westborough, accessed July 8, 2024, https://www.town.westborough.ma.us/DocumentCenter/View/1118/Town-of-Westborough-2018-Open-Space-Recreation-Plan-PDF.
[177] "Chapter Z: Zoning Bylaw," Ecode360.com, The Town of Westborough, accessed July 8, 2024, https://ecode360.com/37952912#37952912.
[178] VHB in association with Landwise, "Westborough, MA Master Plan"
[179] Central Massachusetts Regional Planning Commission, "Town of Westborough Municipal Vulnerability Preparedness Summary of Findings"

ensure that the town's HMP data and priorities are consistent with the State's data and priorities.[180]

- ***2022 Massachusetts Climate Change Assessment*** - This plan was used to ensure that the town's HMP data and priorities, especially in the hazards section of the plan, are consistent with the State's data and priorities.[181]
- ***2025 Massachusetts Statewide Comprehensive Housing Plan*** - This plan was used to ensure that the town's HMP data and priorities, especially in the development trends section of the plan, are consistent with the State's data and priorities.[182]

Additionally, this plan incorporated information from the 2014 FIRM maps for Westborough and the 2023 Worcester County Flood Insurance Study.

After this plan has been approved by both FEMA and the Westborough Select Board, a link to the plan will be emailed to all Town staff, boards, and committees; along with this link, the Town staff, boards, and committees will be sent a reminder to review the plan periodically and work to incorporate its contents, especially the action plan, into other town planning processes and/or documents. In addition, during annual monitoring meetings for the Hazard Mitigation Plan implementation process, the local Hazard Mitigation Team will review whether any of these plans are in the process of being updated. If so, the Hazard Mitigation Team will remind people working on these plans and/or documents of the Hazard Mitigation Plan and will encourage them to incorporate information and strategies from the Hazard Mitigation Plan into their efforts. The Hazard Mitigation Team will also review current town programs and policies to ensure that they are consistent with the mitigation strategies described in this plan. Information from the Hazard Mitigation Plan will also be incorporated into updates of the Town's Comprehensive Emergency Management Plan.

[180] "ResilentMass Plan: 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan"
[181] "2022 Massachusetts Climate Change Assessment"
[182] HOUSING ADVISORY COUNCIL, "A HOME FOR EVERYONE: A Comprehensive Housing Plan for Massachusetts 2025 – 2029," Mass.gov, Executive Office of Housing and Livable Communities, 2025, https://www.mass.gov/doc/a-home-for-everyone/download.

8.3 Plan Monitoring and Evaluation

Section 8.3 helps meet the following FEMA local mitigation plan requirements:

- *D1. "Is there discussion of how each community will continue public participation in the plan maintenance process?" (Requirement 44 CFR § 201.6(c)(4)(iii));*
- *D2. "Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)?" (Requirement 44 CFR § 201.6(c)(4)(i)); and*
- *D3. "Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?" (Requirement 44 CFR § 201.6(c)(4)(ii))*

The Town will review and update the Hazard Mitigation Plan every five years (with the next plan update starting three-and-a-half years after the adoption of this plan update) through forming an HMP planning team and working with a contractor to complete the update. The planning process for future updates of this plan will be the similar to the planning process for this plan update, will be overseen by the Town's Emergency Management Director, and will include holding several meetings of the local HMP planning team to review and update the critical infrastructure inventory, hazards descriptions, existing protection measures matrix, and mitigation strategies in the plan, a public presentation, and a public comment period. The Town's Emergency Management Director will also call meetings of all responsible parties to review, track, and monitor the progress of the Hazard Mitigation Plan on a yearly basis and/or as is needed based on the occurrence of hazard events. Any substantial revisions made to the plan will be made open for public comment and/or will be presented on at a Select Board meeting which is open to the public. Parties identified as responsible for specific mitigation actions will be asked to submit their reports relating to these actions in advance of town hazard mitigation planning meetings.

Town hazard mitigation planning meetings will involve evaluation, assessment, tracking, and monitoring of the most recent HMP plan update. Responsible parties will review the plan's effectiveness at achieving its goals and stated purpose at these meetings. The following questions will serve as the criteria that are used to evaluate the plan:

Plan Mission and Goal

- Is the Plan's stated goal and mission still accurate and up to date, reflecting any changes to local hazard mitigation activities?
- Are there any changes or improvements that can be made to the goal and mission?

Hazard Identification and Risk Assessment

- Have there been any new occurrences of hazard events since the plan was last reviewed? If so, these hazards should be incorporated into the Hazard Identification and Risk Assessment.
- Have any new occurrences of hazards varied from previous occurrences in terms of their extent or impact? If so, the stated impact, extent, probability of future occurrence, or overall assessment of risk and vulnerability should be edited to reflect these changes.
- Is there any new data available from local, state, or federal sources relating to the impact of previous hazard events or the probability of future hazard occurrences? If so, this information should be incorporated into the plan.

- How will progressing climate change impact the risk of each natural hazard? What impacts do hotter, wetter, and more variable weather have on each natural hazard?

Existing Mitigation Strategies

- Are the current strategies effectively mitigating the effects of any recent hazard events?
- Has there been any damage to property caused by natural hazards since the plan was last reviewed?
- How could the existing mitigation strategies be improved to reduce the impacts of recent occurrences of hazards? If there are improvements which should be made, these should be incorporated into the plan.

Proposed Mitigation Strategies

- What progress has been accomplished for each of the previously identified proposed mitigation strategies?
- How have any recently completed mitigation strategies affected the level of impact in town of hazards that have occurred since the strategy was completed?
- Should the criteria for prioritizing the mitigation strategies in the plan be altered in any way?
- Should the priority given to individual mitigation strategies be changed, based on any recent changes to financial and staffing resources and/or recent hazard events?

Review of the Plan and Integration with Other Planning Documents

- Is the current process for reviewing the Hazard Mitigation Plan effective? Could it be improved?
- Are there any Town plans in the process of being updated that should have the content of this Hazard Mitigation Plan incorporated into them?
- How can the current Hazard Mitigation Plan be better integrated with other Town planning tools and operational procedures, including the zoning bylaw, the Comprehensive Emergency Management Plan, and the Capital Improvement Plan?

Plan tracking and monitoring will be accomplished by a group of town stakeholders led by the Town's Emergency Management Director who have similar to if not the same credentials as the local HMP planning team for this plan update. When this team meets, they will review the mitigation strategies table from this plan update, will update it with any progress on the strategies which has been made since the plan update was adopted, and will discuss priorities for mitigation strategies which have not yet been implemented. They will also discuss how the data, ideas, and strategies from this plan update will be incorporated into other planning mechanisms and documents actively being worked on in town, including but not limited to updates to the Town's Master Plan, Open Space and Recreation Plan, Comprehensive Emergency Management Plan, and zoning bylaw as well as Municipal Vulnerability Preparedness program efforts in town. Following these meetings, it is anticipated that the HMP planning team in town may decide to reassign the roles and responsibilities for implementing mitigation strategies to different Town departments and/or revise the goals and objectives contained in the most recent plan update. The Town also has the option to work with a contractor to help facilitate the tracking and monitoring of the plan.

Public participation will be a critical component of the Hazard Mitigation Plan maintenance process. Any substantial revisions to the plan will be made open for public comment and/or will be presented

on at a Select Board meeting which is open to the public. Plan implementation will be approved through standard capital planning, Town Meeting, and/or other publicly accessible local approval processes. The public will be notified of any changes to the Plan via the meeting notices board at Town Hall, and copies of the revised Plan will be made available to the public at Town Hall.

8.4 Potential Federal and State Funding Sources

8.4.1 Federal Funding Sources

The following is a summary of the programs which are the primary sources for federal funding of hazard mitigation projects and activities in Massachusetts:

Table 41: Federal Hazard Mitigation Funding Sources

Program	Type of Assistance	Availability	Managing Agency	Funding Source
National Flood Insurance Program (NFIP)	Pre-disaster insurance	Any time (pre & post disaster)	DCR Flood Hazard Management Program	Property Owner, FEMA
Community Rating System (CRS) (Part of the NFIP)	Flood insurance discounts	Any time (pre & post disaster)	DCR Flood Hazard Management Program	Property Owner
Hazard Mitigation Grant Program (HMGP)	Post-disaster cost-share grants	Post disaster program	MEMA	75% FEMA / 25% non- federal
Building Resilient Infrastructure and Communities (BRIC)	National, competitive cost-share grant program for projects & planning	Annual, pre-disaster mitigation program	MEMA	75% FEMA / 25% non- federal
Flood Mitigation Assistance (FMA) Program	Cost share grants for pre-disaster planning & projects	Annual pre-disaster grant program	MEMA	75% FEMA / 25% non- federal
Public Assistance	Post-disaster aid to state & local governments	Post Disaster	MEMA	FEMA, plus a non-federal share
Small Business Administration (SBA) Mitigation Loans	Pre- & Post- disaster loans to qualified applicants	Ongoing	MEMA	Small Business Administration
Emergency Management Performance Grant (EMPG)	Pre- & post-disaster management and implementation grants	Annual	MEMA	50% FEMA / 50% non-federal match
Homeland Security Grant Program (HSGP)	Funding to prevent, respond to, and recover from acts of terrorism	Annual	MEMA	FEMA

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Hazard Mitigation Grant Program Post-Fire (HMGP-PF)	Cost-share post-wildfire disaster mitigation measures	Annual, within six months after a Fire Management Assistance Grant declaration	FEMA	75% FEMA / 25% non-federal
Assistance to Firefighters Grants (AFG)	Training & equipment for wildfire-related hazards	Annual	FEMA	FEMA
Fire Prevention & Safety Grant Program (AFG) (FP&S)	Cost-share funding to support projects that protect people from fire-related hazards	Annual	FEMA	95% FEMA / 5% non-federal
Fire Management Assistance Grants (FMAG)	Cost-share funding to mitigate & manage major disasters caused by fire	Any time (pre- & post disaster)	FEMA	75% FEMA / 25% non-federal
National Dam Safety Program (State Assistance Grant Program) (NDSP)	Funding to improve dam safety & state dam safety programs	Annual	FEMA	FEMA, Bipartisan Infrastructure Law
Rehabilitation of High Hazard Potential Dam Program (State Dam Safety Divisions) (HHPD)	Cost-share funding to plan and rehabilitate high hazard potential dams	Annual	FEMA	65% FEMA / 35% non-federal
National Earthquake Hazards Reduction Program's State Assistance Program (NEHRP)	Cost-share funding for pre-earthquake risk management	Annual	FEMA	75% FEMA / 25% non-federal
Emergency Food and Shelter Program (EFSP)	Grant funding for supplemental food & shelter for those experiencing / at risk of experiencing homelessness	Annual	FEMA	FEMA

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Public Health Crisis Response Cooperative Agreement (PHCRCA)	Funding to support surge needs of existing public health programs responding to public health emergencies	Annual for approved by unfunded (ABU) roster	CDC	Varies
Army Corp of Engineers Planning Assistance	Water supply, conservation, wetlands, & dam safety funding	Any time (pre & post disaster)	U.S. Army Corps of Engineers	50% Federal / 50% non-federal
Forest Service Community Wildfire Defense Grant (USDA-FSCWDG)	Grant funding to plan for and reduce wildfire risk	Annual	USDA-FS	75% USDA / 25% non-federal
Emergency Watershed Protection Program (EWP)	Technical assistance and funding for helping communities mitigate natural disaster risks which affect watersheds	Ongoing	USDA-NRCS	75% USDA / 25% non-federal (90% USDA / 10% non-federal in limited resource areas)
Agricultural Management Assistance (Drought Mitigation Funding Program) (AMA)	Technical assistance for agricultural producers to manage financial risks	Ongoing	USDA-NRCS	75% USDA / 25% non-federal
USDA Community Facilities Direct Loan & Grant Program (Rural Development) (CFDLGP)	Funding for improving essential community facilities	Annual	USDA-RD	Varies
National Culvert Removal, Replacement, & Restoration Grant (NCRRRG)	Competitive grant funding to replace, remove, and repair culverts or weirs	Annual	US DOT	Varies
Bridge Investment Program (BIP)	Competitive grant program for improving the conditions of existing bridges	Annual	US DOT	80% FHWA / 20% other

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT)	Discretionary program which includes Competitive Resilience Improvement Grants and planning grants	Annual	US DOT	Varies (generally, up to 80% federal share)

This FEMA web page describes several funding opportunities: FEMA Grants | FEMA.gov. The programs listed in the above table are described in more detail below.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) AND COMMUNITY RATING SYSTEM (CRS) (PART OF THE NFIP)

The National Flood Insurance Program (NFIP) provides insurance to communities required to manage and adopt mitigation practices for high flood-risk areas. The Community Rating System (CRS) incentivizes communities to incorporate flood management practices and mitigation strategies through discounted flood insurance rates; Incentives are available on a voluntary and participatory basis to encourage communities to meet the minimum requirements of the NFIP. In encouraging communities to meet NFIP's minimum requirements, CRS can extend the availability of funding to homeowners, businesses, and renters for whom flood insurance may not be accessible. CRS allocates insurance discount rates according to a community's demonstrated efforts to implement the program's three goals:

- Reduce flood damage to insurable properties;
- Strengthen and support NFIP; and
- Incentivize proactive floodplain management.

Communities can earn CRS points based on their implementation of various flood mitigation initiatives, including but not limited to: (1) restricting development on flood prone areas, (2) extending public risk communication with flood warning systems, and (3) enhancing infrastructural resilience to flood damage. Please refer to | The National Flood Insurance Program (floodsmart.gov) and Community Rating System | FEMA.gov for more information.

HAZARD MITIGATION ASSISTANCE (HMA)

The Hazard Mitigation Assistance (HMA) grant programs provide funding opportunities for pre- and post-disaster mitigation. While the statutory origins of these programs differ, all share the common goal of reducing the risk of loss of life and property from natural hazards. Brief descriptions of the HMA grant programs can be found below. For more information on the individual programs, or to see information related to a specific fiscal year, please click on one of the program links.

Hazard Mitigation Grant Program (HMGP)

The Hazard Mitigation Grant Program (HMGP) assists in implementing long-term hazard mitigation measures following Presidential disaster declarations. Funding is available under this program to implement projects in accordance with state, tribal, and local priorities. Please refer to Hazard Mitigation Assistance Grants | FEMA.gov for additional information.

HMGP funds may be used to fund projects that will reduce or eliminate the losses from future disasters. Projects completed under this program must provide a long-term solution to a problem; for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight a flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. Examples of eligible HMGP projects include, but are not limited to:

- Acquisition of real property from willing sellers and demolition or relocation of buildings to convert this property to open space use;
- Retrofitting structures and facilities to minimize damages from high winds, earthquakes, flooding, wildfires, or other natural hazards;
- Elevation of flood prone structures;
- Development and initial implementation of vegetative management programs;
- Minor flood control projects that do not duplicate the flood prevention activities of other federal agencies;
- Localized flood control projects, such as certain ring levees and floodwall systems, that are designed specifically to protect critical facilities; and
- Post-disaster building code related activities that support building code officials during the reconstruction process.

Hazard Mitigation Grant Program Post-Fire (HMGP-PF)

The Hazard Mitigation Grant Program Post-Fire (HMGP-PF) is a program aimed at providing financial funding to localities to reduce risk of damage from future fires after a given area has experienced a fire. Funds are determined through benefit-cost analysis software. For more information, please refer to: Hazard Mitigation Grant Program Post Fire | FEMA.gov.

Building Resilient Infrastructure and Communities (BRIC)

The Building Resilient Infrastructure and Communities (BRIC) program aims to categorically shift the federal focus away from reactive disaster spending and toward research-supported, proactive investment in community resilience. Examples of BRIC projects are projects that demonstrate innovative approaches to partnerships, such as shared funding mechanisms, and/or project design. For example, an innovative BRIC project may bring multiple funding sources or in-kind resources from a range of private and public sector partners. Or an innovative project may offer multiple benefits to a community in addition to the benefit of risk reduction. The BRIC program has replaced the Pre-Disaster Mitigation (PDM) grant program. More information on the BRIC program can be found here: Building Resilient Infrastructure and Communities | FEMA.gov.

The Massachusetts Emergency Management Agency (MEMA) coordinates BRIC applications for municipalities within the Commonwealth. Links to MEMA resources and BRIC application materials can be found here: Building Resilient Infrastructure and Communities (BRIC) & Flood Mitigation Assistance (FMA) Grant Programs | Mass.gov.

Note: the FEMA BRIC program is currently not being funded as of May 2025.

FLOOD MITIGATION ASSISTANCE (FMA)

Flood Mitigation Assistance (FMA) provides funds on an annual basis so that measures can be taken

to reduce or eliminate risk of flood damage to buildings insured under the National Flood Insurance Program. Please refer to the FMA website: Flood Mitigation Assistance Grant Program | FEMA.gov.

The following types of FMA grants are available to states and communities:

- **Project Scoping Grants** are designed to develop mitigation strategies and obtain data to prioritize, select, and develop complete applications in a timely manner that result in either an improvement in the capability to identify appropriate mitigation projects or in the development of an application-ready mitigation project for FMA or another program.
- **Planning Grants** to prepare flood mitigation plans; Only NFIP-participating communities with approved flood mitigation plans can apply for FMA project grants.
- **Technical Assistance Grants** are awards of up to $50,000 federal cost share for recipients to which FEMA obligated at least $1 million federal share the previous FMA cycle.
- **Project Grants** to implement measures to reduce flood losses, such as the elevation, acquisition, or relocation of NFIP-insured structures. States are encouraged to prioritize FMA funds for applications that include repetitive loss properties (structures with 2 or more losses each with a claim of at least $1,000 within any ten-year period since 1978).

MEMA coordinates FMA applications for municipalities within the Commonwealth. Links to MEMA resources and FMA application materials can be found here: Building Resilient Infrastructure and Communities (BRIC) & Flood Mitigation Assistance (FMA) Grant Programs | Mass.gov.

DISASTER ASSISTANCE

Disaster Assistance is money or direct assistance to individuals, families, and businesses whose property has been damaged or destroyed and whose losses are not covered by insurance. It is meant to help with critical expenses that cannot be covered in other ways. This assistance is not intended to restore damaged property to its condition before the disaster. While some housing assistance funds are available through FEMA's Individuals and Households Program, most disaster assistance from the Federal government is in the form of loans administered by the Small Business Administration.

Disaster Assistance Available from FEMA

Assistance from FEMA in the event of a disaster declaration is grouped into the following 3 categories:

A. Housing Needs

- **Temporary Housing** (a place to live for a limited period of time): Money is made available to rent a different place to live, or a government-provided housing unit when rental properties are not available.
- **Repair**: Money is available to homeowners to repair damage from the disaster to their primary residence that is not covered by insurance. The goal is to make the damaged home safe, sanitary, and functional.
- **Replacement**: Money is available to homeowners to replace their home destroyed in the disaster that is not covered by insurance. The goal is to help the homeowner with the cost of replacing their destroyed home.
- **Permanent Housing Construction**: Direct assistance or money is made available for the construction of a home. This type of help occurs only in insular areas or remote locations

specified by FEMA, where no other type of housing assistance is possible.

B. Other than Housing Needs

- Money is available for necessary expenses and serious needs caused by a disaster, including:
  - Disaster-related medical and dental costs;
  - Disaster-related funeral and burial costs;
  - Clothing;
  - Household items (room furnishings, appliances);
  - Tools (specialized tools or protective clothing and equipment) required for people's jobs;
  - Necessary educational materials (computers, schoolbooks, supplies);
  - Fuels for primary heat source (heating oil, gas);
  - Clean-up items (wet/dry vacuums, dehumidifiers);
  - Expenses relating to disaster-damaged vehicles;
  - Moving and storage expenses related to the disaster (moving and storing property to avoid additional disaster damage while disaster-related repairs are being made to the home);
  - Other necessary expenses or serious needs as determined by FEMA; and
  - Other expenses that are authorized by law.

C. Additional Services

- Crisis Counseling
- Disaster Unemployment Assistance
- Legal Services
- Special Tax Considerations

For additional information, please refer to: Get Assistance After a Disaster | FEMA.gov.

DISASTER LOANS AVAILABLE FROM THE U.S. SMALL BUSINESS ADMINISTRATION

The U.S. Small Business Administration (SBA) can make federally subsidized loans to repair or replace homes, personal property, or businesses that sustained damages not covered by insurance. The Small Business Administration can provide the following three types of disaster loans to qualified homeowners and businesses:

- Physical damage loans: Loans to cover repairs and replacement of physical assets damaged in a declared disaster.
- Mitigation assistance: Funding to cover small business operating expenses after a declared disaster.
- Economic injury disaster loans: Loans which provide economic relief to small businesses and nonprofit organizations that have suffered damage to their home or personal property.

- Military reservist loans: Loans to help eligible small businesses with operating expenses to make up for employees on active duty leave.

For many individuals, the SBA disaster loan program is the primary form of disaster assistance. Please find more information about this loan program here: Disaster assistance | U.S. Small Business Administration (sba.gov).

DISASTER ASSISTANCE FROM OTHER ORGANIZATIONS AND ENTITIES

Home | disasterassistance.gov is a secure, user-friendly U.S. Government web portal that consolidates disaster assistance information in one place. If individuals need assistance following a Presidentially declared disaster which has been designated for individual assistance, they can now go to DisasterAssistance.gov to register for receiving assistance online. Local resource information to help keep citizens safe during an emergency is also available. Currently, 17 U.S. Government agencies, which sponsor almost 70 forms of assistance, contribute to the portal.

DisasterAssistance.gov speeds up the application process by feeding common data to multiple online applications. Application information is shared only with those agencies individuals identify and is protected by the highest levels of security. DisasterAssistance.gov will continue to expand to include forms of assistance available at federal, state, tribal, regional, and local levels.

EMERGENCY MANAGEMENT PERFORMANCE GRANT (EMPG)

The Emergency Management Performance Grant (EMPG) provides resources for state, local, tribal, and territorial emergency response organizations required for the National Preparedness System. EMPG supports efforts in building and strengthening capabilities in areas related to protection, mitigation, prevention, response and recovery. In fiscal year 2024, this grant had a total available funding of $319.55 million. Please find more information about this grant program at the link here: Emergency Management Performance Grant | FEMA.gov.

HOMELAND SECURITY GRANT PROGRAM (HSGP)

The Homeland Security Grant Program (HSGP) provides a suite of grant opportunities in support of efforts in the mitigation of, prevention of, protection from, and recovery from terrorist and other threats at the state, local, tribal, and territorial levels. As of the 2024 fiscal year, the program, including its three separate grants, had $1.008 billion in funding. The three grants available under this program are:

- The State Homeland Security Program (SHSP);
- The Urban Area Security Initiative (UASI); and
- Operation Stonegarden (OPSG).

Please find more about this program at the link here: Homeland Security Grant Program | FEMA.gov.

ASSISTANCE TO FIREFIGHTERS GRANTS (AFG) AND FIRE PREVENTION & SAFETY GRANT PROGRAM (FP&S)

The FEMA Assistance to Firefighters Grants (AFG) program provides funds to equip and train emergency personnel to recognized standards, enhance operations efficiencies, foster interoperability, and support community resilience. Under AFG, funds may be available for equipment, vehicles, and/or training that can be used to mitigate and/or respond to wildfire-related hazards. AFG also has a Fire Prevention and Safety (FPS) component which funds public

outreach programs and prevention activities, which can emphasize wildfire mitigation. More about these programs can be found at these links: Assistance to Firefighters Grants Program | FEMA.gov, Fire Prevention and Safety (FP&S) | FEMA.gov.

FIRE MANAGEMENT ASSISTANCE GRANTS (F-MAG)

The Fire Management Assistance Grants (F-MAG) Program supports firefighting efforts in cases of fire-related disasters impacting public and private forests as well as grasslands at the state, local and tribal levels. For more information on this program, please refer to: Fire Management Assistance Grants | FEMA.gov.

NATIONAL DAM SAFETY PROGRAM (STATE ASSISTANCE GRANT PROGRAM) (NDSP)

The National Dam Safety Program (NDSP) provides financial assistance to strengthen the individual dam safety programs of states and territories. In the 2024 fiscal year, this program distributed $24.2 million among 49 states and Puerto Rico. For more information on this program, please refer to: Grant Assistance to States | FEMA.gov.

REHABILITATION OF HIGH HAZARD POTENTIAL DAM PROGRAM (STATE DAM SAFTEY DIVISIONS) (HHPD)

The Rehabilitation of High Hazard Potential Dams Program (HHPD) provides technical, planning, design, and construction assistance in the form of grants for the rehabilitation of high hazard potential dams in eligible states and territories. For more information, please refer to: Rehabilitation Of High Hazard Potential Dam (HHPD) Grant Program | FEMA.gov.

NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM'S STATE ASSISTANCE PROGRAM (NEHRP)

The National Earthquake Hazards Reduction Program's State Assistance Program (NEHRP) provides funding to localities for the reduction of risk associated with earthquakes. This is done through two grants:

- Individual State Earthquake Assistance (ISEA) and
- Multi-State National Earthquake Assistance (MSNEA).

More information about this program can be found at this link: National Earthquake Hazards Reduction Program's State Assistance Program | FEMA.gov.

EMERGENCY FOOD AND SHELTER PROGRAM (EFSP)

The Emergency Food and Shelter Program (EFSP) assists and expands upon the work of local nonprofit and governmental social service organizations to provide shelter, food, and other services to people experiencing or at risk of hunger and/or homelessness. For more information, please refer to: Emergency Food and Shelter Program | FEMA.gov.

PUBLIC HEALTH CRISIS RESPONSE COOPERATIVE AGREEMENT (PHCRCA)

The Center for Disease Control and Prevention's Public Health Crisis Response Cooperative Agreement (PHCRCA) allows for opportunities for state, local, and tribal government to receive funding in response to public health emergencies. For more information, please refer to: The Centers for Disease Control and Prevention's Public Health Crisis Response Cooperative Agreement Program Awards (hhs.gov).

ARMY CORP OF ENGINEER PLANNING ASSISTANCE

Under the authority provided by Section 22 of the Water Resources Development Act of 1974 (PL 93-251), as amended, the U.S. Army Corps of Engineers can provide states, local governments, other non-federal entities, as well as eligible Native American Indian tribes, assistance in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. Typical studies funded under this program are only at the planning level of detail; they do not include detailed engineering designs intended for project construction. The program can encompass many types of planning studies which address water resources issues. Types of studies conducted in recent years under the program include the following: water supply/demand, water conservation, water quality, environmental/conservation, wetlands evaluation/restoration, dam safety/failure, flood damage reduction, coastal zone protection, and harbor planning. For more information, please refer to: Planning Assistance to States, U.S. Army Corps of Engineers, New England District.

FOREST SERVICE COMMUNITY WILDFIRE DEFENSE GRANT (USDA-FSCWDG)

The Forest Service Community Wildfire Defense Grant Program (USDA-FSCWG) provides funding and assistance to at-risk local communities and tribes to reduce wildfire risk. Funding and assistance under this program are primarily used to revise and develop community wildfire protection plans and to assist in implementing new projects described in said plans. For more information on this program, please refer to: Community Wildfire Defense Grant Program | US Forest Service (usda.gov).

EMERGENCY WATERSHED PROTECTION PROGRAM (EWP)

The Emergency Watershed Protection Program (EWP) provides technical and financial assistance to localities in response to imminent life- and property-threatening natural disasters which negatively impact local watersheds. For more information about this program, please refer to: Emergency Watershed Protection | Natural Resources Conservation Service (usda.gov).

AGRICULTURAL MANAGEMENT ASSISTANCE (DROUGHT MITIGATION FUNDING PROGRAM) (AMA)

Agricultural Management Assistance (AMA) is a program to help farmers build on and diversify their agricultural practices. The program is available in 16 states that have had historically low rates of participation in the Federal Crop Insurance Program. AMA covers up to 75% of funds needed to install conservation practices on farms, with a cap of $50,000 per individual participant in a given fiscal year. For more information, please refer to: Agricultural Management Assistance | Natural Resources Conservation Service (usda.gov).

USDA COMMUNITY FACILITIES DIRECT LOAN & GRANT PROGRAM

The UDSA Community Facilities Direct Loan & Grant program provides affordable funding to develop essential community facilities in rural areas. An essential community facility is defined as a facility that provides an essential service to the local community for the orderly development of the community in a primarily rural area, and does not include private, commercial or business undertakings. Rural areas including cities, villages, and townships and towns, including Federally Recognized Tribal Lands, with no more than 20,000 residents according to the latest U.S. Census Data are eligible for this program. Program funds can be used to purchase, construct, and / or

improve essential community facilities, purchase equipment, and pay related project expenses. For more information on this program, please refer to: Community Facilities Direct Loan & Grant Program | Rural Development (usda.gov).

NATIONAL CULVERT REMOVAL, REPLACEMENT, & RESTORATION GRANT (NCRRRG)

The National Culvert Removal, Replacement, and Restoration Grant Program (NCRRRG) (Culvert Aquatic Organism Passage (AOP) Program) assists eligible tribes, states and local governments in issues related to culverts and weirs to improve and/or restore passage for anadromous fish in freshwater waterways. Anadromous fish are those that spawn in freshwater but live most of their lives in saltwater. More information about this program can be found at this link: Aquatic Organism Passage - Culvert Hydraulics - Hydraulics - Bridges & Structures - Federal Highway Administration (dot.gov).

BRIDGE INVESTMENT PROGRAM (BIP)

The Bridge Investment Program (BIP) provides the opportunity for governments at all levels to receive funding to repair and restore aging bridge infrastructure. BIP grant applications have a maximum grant award of 80% of the total eligible bridge project costs. For more information regarding this program, please refer to: BIP - Funding Programs - Management and Preservation - Bridges & Structures - Federal Highway Administration (dot.gov).

PROMOTING RESILIENT OPERATIONS FOR TRANSFORMATIVE, EFFICIENT, AND COST-SAVING TRANSPORTATION PROGRAM (PROTECT)

The Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (Protect) Program is a program established by the Bipartisan Infrastructure Law (BIL) which funds resilience-building activities for surface transportation, such as plans (including evacuation plans) and infrastructure improvements, which increase reliance to natural hazards and climate change. For more information regarding this program, please refer to: Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) | US Department of Transportation and Bipartisan Infrastructure Law - Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program Fact Sheet | Federal Highway Administration (dot.gov).

8.4.2 State Funding Sources

The following is a summary of state funding opportunities for hazard mitigation projects and activities in Massachusetts:

Table 42: State Hazard Mitigation Funding Sources

Program	Type of Assistance	Availability	Managing Agency	Funding Source
604b Water Quality Management Planning Grant Program	Grants focused on nonpoint source pollution assessment and watershed planning	Annual	Mass DEP	State funding (match not required but recommended)
Section 319 Nonpoint Source Competitive Grants Program	Competitive grant program funding projects that address the prevention, control, and abatement of nonpoint source (NPS) pollution	Annual	Mass DEP	State funding
Water Quality Monitoring Grant Program	Reimbursement funding for monitoring and/or data collection efforts that support water quality assessments	Annual	Mass DEP	State funding
Statewide Water Management Act Grant	Reimbursement grant funding for projects to help public water suppliers plan and manage water use	Annual	Mass DEP	Reimbursement grant
Massachusetts Gap Energy Grant Program (Gap III)	Program providing grant assistance (up to $200,000 per community) for implementing energy efficiency and clean energy generation projects at water and wastewater plants	Annual (likely)	Mass DEP	State funding
State Revolving Fund	Low-interest loans	Annual	Mass DEP	Municipal funding with state loan

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Municipal Vulnerability Preparedness (MVP) Action Grants	Competitive climate adaptation grants	Annual	EEA	75% EEA / 25% non-state match
Planning Assistance Grants (EEA PAG)	Competitive grants that support efforts to plan, regulate (zone), and act to conserve and develop land consistent with the Massachusetts Sustainable Development Principles	Annual	EEA	75% EEA / 25% non-state match
Dam and Seawall Repair or Removal Program	Competitive grants for dam and seawall repair and removal, as well as construction loans	Annual	EEA	State funding
Massachusetts Land & Water Conservation Fund Grant Program (LWCF)	Federal grant program to help improve access to and protection for public lands and waters	Annual	DCS	Federal program that funds up to 50% of total costs for acquisition, development, and renovation
Local Acquisitions for Natural Diversity (LAND)	Financial assistance to municipalities for the acquisition of conservation land	Annual	DCS	Reimbursement grant, the reimbursement rate varies per town
Drinking Water Supply Protection Grant (DWSP)	Competitive grants for protection of drinking water supplies	Annual	DCS	State funding
Land and Recreation Grants and Loans	Varies, though primarily grant funding for conservation and recreation projects	Varies, generally annually	DCS	Varies

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Land Conservation Assistance Grant Program	Financial assistance for permanently protecting land	Annual (Likely)	DCS	90% state reimbursement / 10% other
Forest Legacy Grant Program (USDA-FS) (FLGP)	Grant funding to protect environmentally important forestland from conversion	Annual	DCR	75% USDA FS / 25% non-federal
Culvert Replacement Municipal Assistance Grant Program	Competitive grants for replacing an undersized, perched, and/or degraded culvert located in an area of high ecological value	Annual	DER	State funding
Division of Ecological Restoration Priority Project Program	State competitive grant program that funds projects that restore and protect the state's rivers, wetlands, and watersheds (priority projects may differ each year)	Annual	DER	State funding
Mass Wildlife Habitat Management Grant Program (MWHMGP)	Reimbursement grant funding to assist municipalities in enhancing wildlife habitat and increasing recreational opportunities on protected lands	Annual	DFW	USDA NRCS
Agricultural Climate Resiliency and Efficiencies Program (ACRE)	Competitive reimbursement grant funding that supports practices that mitigate the agricultural sector's vulnerability to climate change	Annually through Climate Smart Agriculture Program (CSAP)	MDAR	MDAR

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Agricultural Preservation Restriction Program (APR)	Financial assistance in exchange for permanent deed restriction to protect lands' agricultural viability	Any time for owners of at least 5 acres of farmland	MDAR	MDAR
Hazard Mitigation Grant Program (State) (HMGP)	Sub-grant programs for the Hazard Mitigation Grant Program	Annual	MEMA	State funding
Community Development Block Grants (CDBG)	Competitive community development grants	Annual	EOHLC	US Department of Housing and Urban Development
Emergency Solutions Grant (ESG)	Competitive grant funding designed to support services that assist those experiencing / at risk of experiencing homelessness	Annual	EOHLC	MA EOHLC
Mass Works	Competitive infrastructure grants	Annual	EOED	State funding
Community Preservation Act (CPA)	Establishes a local community preservation fund through tax surcharge to support a variety of project related to conservation and housing	Ongoing	Department of Revenue (DOR)	Statewide Community Preservation Trust Fund / Local Community Preservation Fund
Special appropriations and legislative earmarks	Varies	Infrequent, after natural disasters or legislature vote	Massachusetts General Legislature	State funding
District Local Technical Assistance (DLTA)	Funding to support planning and technical assistance for housing, economic growth, and regional projects	Varies, generally annually	Massachusetts General Legislature, CMRPC	State funding

Program	Type of Assistance	Availability	Managing Agency	Funding Source
Local Planning Assistance (LPA)	Planning and technical assistance	Annual	CMRPC	Planning assistance hours
Support and Incentive Grant	Reimbursement grant funding designed to assist in providing enhanced 911 service	Annual	MA EOPSS	MA EOPSS
Municipal Small Bridge Program	Competitive grants for small bridge replacement, preservation, and rehabilitation projects	Annual	MassDOT	State funding
Chapter 90 Program (Transportation Capital Improvement Projects) (Chpt. 90)	Reimbursable grants to support capital improvements on local public ways	Ongoing	MassDOT	State funding
State Transportation Improvement Program (STIP)	Competitive funding opportunity for transportation projects along federal-aid roadways	Annually updated five-year programming document	MassDOT	MassDOT
Complete Streets (CS)	Reimbursement grant funding to provide safe and accessible options for all travel modes	Annually available to municipalities that adopt a Complete Streets Policy	MassDOT	State funding
Drought Resiliency and Water Efficiency Grant Program	Funding for reducing indoor and outdoor water use, improving water loss control, and increasing drought management and planning in public water systems across the state	Annual	EEA	State funding

The Community Grant Funder web page includes the municipal grant programs listed above, as well as other funding opportunities: Community Grant Finder | Mass.gov. The programs listed in the above table are described in more detail below.

604B WATER QUALITY MANAGEMENT PLANNING GRANT PROGRAM

The 604B Water Quality Management Planning Grant Program provides funding opportunities to regional planning agencies, councils of governments, conservation districts, counties, cities and towns, federally and state recognized tribes, and other substate public planning agencies and interstate agencies to determine and correct water quality issues in Massachusetts. For more information on this program, please refer to: Grants & Financial Assistance: Watersheds & Water Quality | Mass.gov.

SECTION 319 NONPOINT SOURCE COMPETITIVE GRANTS PROGRAM

Section 319 of the Clean Water Act provides funding opportunities for the prevention, control, and abatement of nonpoint source (NPS) pollution. These grants are available to eligible Massachusetts public or private organizations, including: state and federally recognized tribes, regional planning agencies, councils of governments, counties, conservation districts, cities and towns, other substate public planning agencies, and interstate agencies. To be eligible for this program, these entities' projects must: include measures that address the prevention, control, and abatement of NPS pollution, target major sources of NPS pollution within a watershed, contain an appropriate method for evaluating the project results, and address activities in the current Massachusetts NPS Management Program Plan. For more information on this program, please refer to: Grants & Financial Assistance: Watersheds & Water Quality | Mass.gov.

WATER QUALITY MONITORING GRANT PROGRAM

The Water Quality Monitoring Grant Program provides funding opportunities to eligible entities and organizations to increase the amount of data on water quality in Massachusetts. For more information, please refer to: Grants & Financial Assistance: Watersheds & Water Quality | Mass.gov.

STATEWIDE WATER MANAGEMENT ACT GRANT

The Statewide Water Management Act Grant provides grant funding for projects which improve the ecological conditions of specific watersheds and projects aimed at reducing water demand. Specifically, projects funded under this program must: improve or increase instream flow, keep wastewater local, relate to stormwater management, reduce impervious cover and/or improve water quality, relate to water supply operational improvements, improve habitat, reduce wastewater inflow and infiltration, and/or be another type of project which can be demonstrated to mitigate the impacts of water withdrawals. This program awards approximately 10 grants a year and has a reimbursement rate of 80%. Grants are awarded to eligible public water suppliers and municipalities with Water Management Act permits. For more information, please refer to: Water Management Act Grant Programs for Public Water Suppliers | Mass.gov.

MASSACHUSETTS GAP ENERGY GRANT PROGRAM (GAP III)

Through a partnership between the Massachusetts Department of Energy Resources (DOER) and the Massachusetts Clean Energy Center (MassCEC), the Massachusetts Gap Energy Grant Program (Gap III) provides funding to fill the last financial "gap" needed for clean energy projects spearheaded by a variety of organizations to promote clean and efficient energy projects. In 2022, the GAP III program awarded a total of $8.1 million in grants. For more information about this program, please refer to: Massachusetts' Gap Energy Grant Program | Mass.gov.

PLANNING ASSISTANCE GRANTS (EEA PAG)

Executive Office of Energy and Environmental Affairs Planning Assistance Grant (EEA PAG) program grants are available to municipalities and regional planning agencies acting on their behalf to financially support efforts to conserve and develop land consistent with the Massachusetts Sustainable Development Principles. Top priorities of the program include: zoning for sustainable housing production, mitigation of climate change through zoning and other regulatory actions, and zoning that results in permanent land conservation. For more information about these grants, please refer to: Planning Assistance Grants | Mass.gov.

STATE REVOLVING FUND

This statewide loan program through the Massachusetts Department of Environmental Protection assists communities in funding local drinking water, wastewater, and stormwater infrastructure improvements.

MUNICIPAL VULNERABILITY PREPAREDNESS ACTION GRANT PROGRAM

The Municipal Vulnerability Preparedness (MVP) Action Grant program offers financial resources to municipalities that are seeking to advance priority climate adaptation actions to address impacts resulting from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate change-related events. Towns are eligible for this competitive grant program after successfully completing an MVP planning grant. A variety of project types are eligible for funding under this program, but projects must address local vulnerabilities to climate change and incorporate MVP Core Principles. Grant application information can be found here: MVP Action Grant | Mass.gov. The MVP Core Principles can be found here: https://www.mass.gov/doc/mvp-core-principles/download.

DAM AND SEAWALL REPAIR OR REMOVAL PROGRAM

The EEA funds projects for the repair and removal of dams, levees, seawalls, and other forms of inland and coastal flood control under the Dam and Seawall Repair or Removal Program. For additional information, please refer to Dam and Seawall Repair or Removal Program Grants and Funds | Mass.gov.

LAND & WATER CONSERVATION FUND GRANT PROGRAM (LWCF)

The Land & Water Conservation Fund Grant Program (LCWF) provides up to 50% of total project funding to eligible municipalities, tribes, and state agencies for park, trail and conservation area related projects. For more information, please refer to: Massachusetts Land and Water Conservation Fund Grant Program | Mass.gov.

LOCAL ACQUISITIONS FOR NATURAL DIVERSITY (LAND)

The Local Acquisitions for Natural Diversity (LAND) grant program assists cities and towns in acquiring new lands for conservation and passive recreation purposes. Grants are awarded at a maximum of $500,000 with reimbursement rates ranging from 52% to 70%. For more information, please refer to: Local Acquisitions for Natural Diversity (LAND) Grant Program | Mass.gov.

DRINKING WATER SUPPLY PROTECTION GRANT (DWSP)

The Drinking Water Supply Grant (DWSP) program provides financial assistance to public water systems and municipal water departments for the purchase of land or interests in land for the following purposes: 1) protection of existing DEP-approved public drinking water supplies; 2)

protection of planned future public drinking water supplies; or 3) groundwater recharge. This is a reimbursement program. For more information, please refer to Drinking Water Supply Protection Grant Program | Mass.gov.

LAND AND RECREATION GRANTS AND LOANS

The Massachusetts Division of Conservation Services (DCS) manages several grant and loan programs that enable land preservation, natural resources conservation, and public recreation. Municipalities with an active Open Space and Recreation Plan are generally eligible to apply for these programs. Preserving natural open space can buffer natural systems from development impacts, protect open spaces from future development, and maintain ecosystem services like natural flood mitigation. The full list of DCS grant programs can be found here: Land and Recreation Grants & Loans | Mass.gov.

LAND CONSERVATION ASSISTANCE GRANT PROGRAM

The Land Conservation Assistance Grant Program from the Massachusetts Division of Conservation Services (DCS) provides reimbursement funding to municipalities, qualified 501(c)(3) land trusts, tribal governments, and other public entities for the permanent protection of land as well as to Regional Planning Agencies (RPAs) and qualified 501(c)(3) land trusts which assist these entities in this goal. Eligible activities under this program include preparing grant applications for permanently protecting land, completing other tasks which progress transactions which permanently protect land, developing or updating municipal Open Space and Recreation Plans, and planning for developing and/or renovating a park to help with a grant application to DCS. For more information on this program, please refer to: Apply to the Land Conservation Assistance Grant Program | Mass.gov.

FOREST LEGACY GRANT PROGRAM (USDA-FS) (FLGP)

The Forest Legacy Grant Program (FLGP) is a voluntary grant funding opportunity for private landowners to either sell their land outright or to sell a conservation restriction on their land. A conservation restriction is a legally binding agreement which limits the types of land use on a property, in this case restricting land to forestry, recreation, or another conservation-related use. For more information about this program, please refer to: Forest Legacy Program | Mass.gov.

CULVERT REPLACEMENT MUNICIPAL ASSISTANCE GRANT PROGRAM

The Culvert Replacement Municipal Assistance Grant program provides a funding opportunity for local governments to replace undersized, perched, and/or degraded culverts in areas of high ecological value. For more information on this program, please refer to: Culvert Replacement Municipal Assistance Grant Program | Mass.gov.

DER PRIORITY PROJECTS

The Priority Project Program is an opportunity under the Division of Ecological Restoration (DER) for organizations to receive technical assistance, consulting, and/or direct grant funding for wetland and river restoration projects through a state-wide, competitive process. DER chooses high-priority projects that bring significant ecological and community benefits to the Commonwealth. DER's most recent call for applications solicited projects that focus on cranberry bog wetland restoration, dam removal and river restoration, coastal wetland restoration projects, or a combination of these topics. More information on the Priority Projects program can be found here: Become a DER Priority Project | Mass.gov. This program can be used to remove significant or high hazard dams that communities no longer want to maintain; the removal of these dams

may improve the health and resilience of aquatic systems.

MASS WILDLIFE HABITAT MANAGEMENT GRANT PROGRAM (MWHMGP)

The Mass Wildlife Habitat Management Grant Program (MWHMGP) is a program dedicated to the protection and restoration of wildlife habitat. MWHMGP awards grants ranging from $10,000 to $75,000 to private landowners for habitat restoration projects. The program places emphasis on the protection of endangered species, the expansion of outdoor recreation opportunities, and the enhancement of ecological communities disproportionally susceptible to climate change. For more information about this program, please refer to: MassWildlife Habitat Management Grant Program | Mass.gov.

AGRICULTURAL CLIMATE RESILIENCY AND EFFICIENCIES PROGRAM (ACRE)

The Agricultural Climate Resiliency and Efficiencies Program (ACRE) is a competitive grant program available to eligible farmers that funds materials and labor to improve climate and economic resilience and forwards the goals of the Massachusetts Local Food Action Plan. For more about this program, please refer to: Agricultural Climate Resiliency & Efficiencies (ACRE) Program | Mass.gov.

AGRICULTURAL PRESERVATION RESTRICTION PROGRAM (APR)

The Agricultural Preservation Restriction (APR) program is a voluntary program that allows farmers to be paid the difference between the "fair market value" and the "agricultural value" of their farms in exchange for a permanent deed restriction by the state. This restriction is meant to prevent any use of the property that will negatively impact the land's future agricultural viability. To qualify for this program, a farm must be at least 5 acres in size, must have been actively devoted to agriculture for at least the past 2 tax years, and must produce at least $500 in gross sales per year for the first five acres plus $5 for each additional acre or 50 cents per each additional acre of woodland and/or wetland; there are various other considered criteria which farms must meet to qualify for this program. For more information on this program, please refer to: Agricultural Preservation Restriction (APR) Program Details | Mass.gov.

HAZARD MITIGATION GRANT PROGRAM (STATE) (HMGP)

The Hazard Mitigation Grant Program (HMGP) provides funds to areas after a natural disaster with the purpose of lowering the risk of damage and loss of life from future natural disasters. This grant program seeks to reduce the reliance on taxpayer-funded federal assistance for disaster recovery. For more information about this program, please refer to: Hazard Mitigation Grant Program (HMGP) | Mass.gov.

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

The Community Development Block Grant (CDBG) program remains the principal source of revenue for many communities to use in identifying solutions to address physical, economic, and social deterioration in lower-income neighborhoods and communities. CDBG is primarily a housing and community development program administered through the Executive Office of Housing and Livable Communities (EOHLC). The program can fund certain critical infrastructure projects, and necessary housing improvements that benefit populations who may be more vulnerable to certain natural hazards. The program can also fund the rehabilitation of municipal buildings serving low- and moderate-income populations, which in many cases also serve as Emergency Operations Centers for their communities. For more information, please refer to: Community Development Block Grant (CDBG) | Mass.gov.

EMERGENCY SOLUTIONS GRANT (EFG)

The Emergency Solutions Grant (EFG) program funds necessary services to help house/rehouse those who are homeless or at risk of homelessness and to provide shelter for those in need of emergency shelter. For more information on this program, please refer to: Emergency Solutions Grant Program (ESG) | Mass.gov.

MASSWORKS INFRASTRUCTURE PROGRAM

The MassWorks Infrastructure Program provides a one-stop shop for municipalities and other eligible public entities seeking public infrastructure funding to support economic development and job creation. Although this program is not specific to natural hazards per se, infrastructure enhancements under MassWorks can address identified hazard mitigation needs. The MassWorks Infrastructure Program is administered by the Executive Office of Housing and Economic Development, in cooperation with the Department of Transportation and Executive Office for Administration & Finance. For additional information on this program, please refer to MassWorks Infrastructure Program | Mass.gov.

COMMUNITY PRESERVATION ACT (CPA)

The Community Preservation Act (CPA) is a smart growth tool that helps communities preserve open space and historic sites, create affordable housing, and develop outdoor recreational facilities. CPA also helps strengthen the state and local economies by expanding housing opportunities and construction jobs for the commonwealth's workforce and by supporting the tourism industry through preservation of the commonwealth's historic and natural resources. All communities in Massachusetts pay into statewide Community Preservation Trust fund through a real estate excise tax. However, communities must set up a local Community Preservation Fund and governing committee to utilize the trust fund. CPA projects can build local resilience by protecting open spaces and/or creating affordable housing; these types of projects can benefit residents who may be the most vulnerable to natural hazards. More information on the CPA program can be found here: CPA: An Overview | Community Preservation Coalition.

SPECIAL APPROPRIATIONS AND LEGISLATIVE EARMARKS

Although there is no separate state disaster relief fund in Massachusetts, the state legislature may enact special appropriations for those communities sustaining damages following a natural disaster that are not large enough for a Presidential disaster declaration. Since 2011, Massachusetts has issued 12 state of emergency declarations. Additionally, individual legislators may seek specific project funding for projects through the legislative budgeting and appropriations process.

DISTRICT LOCAL TECHNICAL ASSISTANCE

District Local Technical Assistance (DLTA) is funding allocated by the Massachusetts General Assembly (Legislature) to the Central Massachusetts Regional Planning Commission (CMRPC) to provide technical assistance to member communities on eligible projects. DLTA planning dollars help cities and towns take on necessary projects that they don't have the staff capacity to address on their own and partner with neighboring communities to tackle shared projects with reduced administrative burden.

According to the most recent guidelines of the Commonwealth's DLTA program, a proposed project must fall into one of the following four (4) general priority categories to be considered eligible for technical assistance:

1. Planning Ahead for Housing;

2. Planning Ahead for Growth;
3. Technical Assistance to support Community Compact Cabinet Activities including Regionalization; and
4. Supporting the Housing Choice Initiative

The goal of the DLTA Fund is to direct funds to projects and activities that result in change in the municipality/municipalities receiving DLTA Fund services, whether in law, regulation, program management, or practice, that serve to further the objectives listed above. Community Compact Cabinet (CCC) best practices should include both those that the Commonwealth of Massachusetts is seeking to fund as part of the CCC program as a first priority and best practices that explicitly align with CCC best practices but are not best practices identified in a signed CCC agreement. COVID-19 relief / recovery activities that fall under the above priority categories are eligible. For more information, please refer to 2024 District Local Technical Assistance (DLTA) Call for Concepts - CMRPC.

LOCAL PLANNING ASSISTANCE

The Local Planning Assistance (LPA) program was initiated to improve the direct services of CMRPC to its member communities. Under the LPA program, each CMRPC community annually receives a set number of hours of technical assistance to be used in any reasonable planning project authorized by the community's CMRPC commissioner.

SUPPORT AND INCENTIVE GRANT

The Support and Incentive Grant provides opportunity funding to public safety answering points (PSAPs) and regional emergency communication centers (RECCs) in providing enhanced 9-1-1 service. Entities eligible for the Support Grant include: primary or regional public safety answering points, regional secondary public safety answering points, and regional emergency communication centers. To be eligible for the Incentive Grant, a regional public safety answering point or regional emergency communication center must be expanding. For more on this program, please refer to: Apply for the Support & Incentive Grant | Mass.gov.

MUNICIPAL SMALL BRIDGE PROGRAM

The Municipal Small Bridge Program offers funding opportunities to Massachusetts municipalities for small bridge replacement, preservation, and rehabilitation projects. For more information about this program, please refer to: Municipal Small Bridge Program | Mass.gov.

CHAPTER 90 FUNDS

The statewide Chapter 90 program reimburses communities for roadway improvement projects, such as projects relating to resurfacing and related work, preliminary engineering (including State Aid/Consultant Design Agreements), right-of-way acquisition, shoulders, side road approaches, landscaping and tree planting, roadside drainage, structures (including bridges), sidewalks, traffic control and service facilities, and street lighting (excluding operating costs), as well as for such other purposes specifically authorized. Maintaining and upgrading critical infrastructure and evacuation routes is an important component of hazard mitigation. For more information, please refer to Chapter 90 Program | Mass.gov.

STATE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

The State Transportation Improvement Program (STIP) is an annual list of transportation infrastructure projects funded and planned through the combined effort of MassDOT and other

state agencies. For more information on this program, please refer to: State Transportation Improvement Program (STIP) | Mass.gov.

COMPLETE STREETS (CS)

The Complete Streets (CS) Funding Program provides grants to municipalities in Massachusetts for projects that improve safety and accessibility for all modes of transportation. To qualify for the program, municipalities must pass a Complete Streets Policy and develop a Prioritization Plan. After these requirements have been met, municipalities can apply for up to $500,000 in construction funding. For more information about this program, please refer to: Complete Streets Public Overview (site.com).

DROUGHT RESILIENCY AND WATER EFFICIENCY GRANT PROGRAM

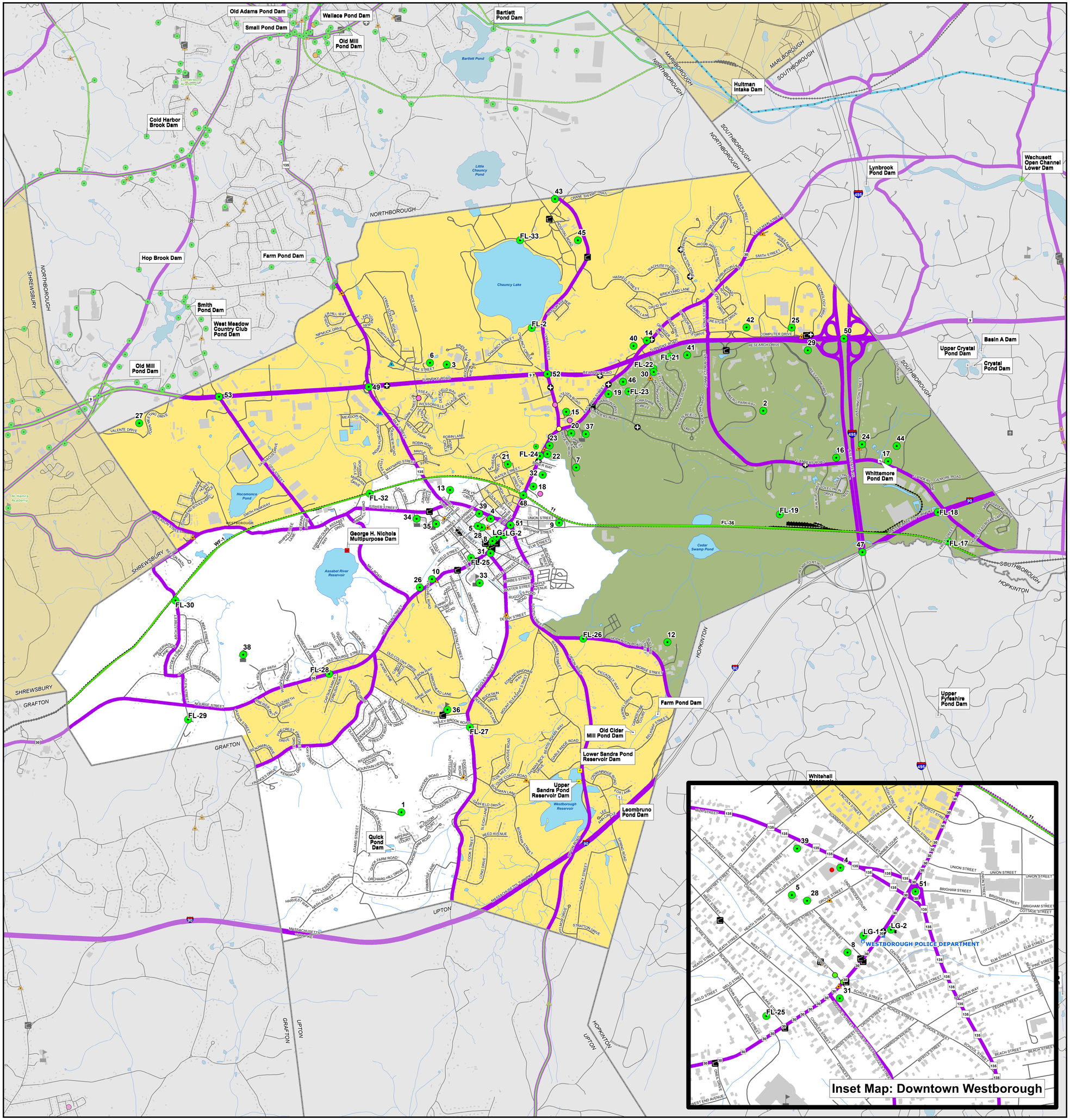
The Drought Resiliency and Water Efficiency Grant Program aims to provide funding for projects that will help the Commonwealth become more climate resilient, specifically by reducing indoor and outdoor water use, improving water loss control, and increasing drought management and planning in public water systems across the state. Target awards are up to $50,000 per project, with potential for larger awards depending on the number of applications received. This grant program helps implement actions in the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP). For more information about this program, please refer to: COMMBUYS.

APPENDIX A

Maps

Hazard Mitigation Plan
Map 1
Critical Infrastructure and Facilities
Town of Westborough, Massachusetts

January 2025



Legend

- Assisted Living
- Clinics
- Elderly Housing
- Emergency Shelters
- End Of Life Facilities
- Nursing/Rest Homes
- Daycare
- Electric Distribution
- EOC
- Courts
- Airports
- Town Halls
- Local Police
- Fire Station
- Schools (Pre-K through High School)
- Aqueducts
- Active Rail Line

MA Environmental Justice Populations 2020

- Minority
- Minority and Income

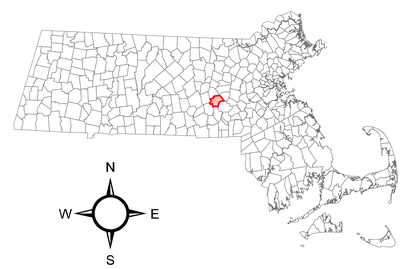
- Town Boundaries
- Structures
- Water Bodies
- Streams
- Roads
- Regionwide Evacuation Routes

Dams (2/2012)

- High Hazard
- Significant Hazard
- Low Hazard
- N/A

Locally Defined

- Critical Infrastructure
- Critical Infrastructure
- Critical Infrastructure



0.55 0.275 0 0.55 1.1 Miles

Data provided by participating municipalities, CMRPC, massDOT, MassGIS, FEMA and NOAA.
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CMRPC Central Massachusetts Regional Planning Commission

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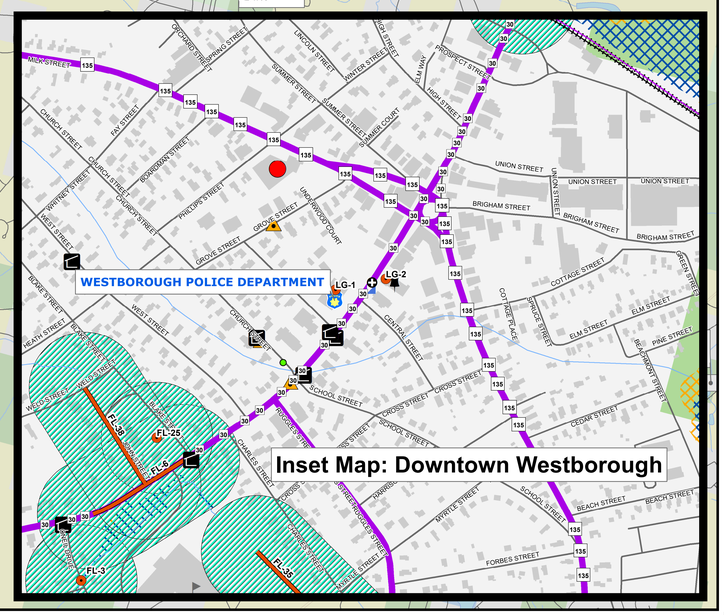
Hazard Mitigation Plan

Map 2
Hazards
Town of Westborough, Massachusetts

February 2025

Old Adams Pond Dam
Small Pond Dam
Wallace Pond Dam
Old Mill Pond Dam
Bartlett Pond Dam
Hultman Intake Dam
Cold Harbor Brook Dam
Hop Brook Dam
Farm Pond Dam
Smith Pond Dam
West Meadow Country Club Pond Dam
Old Mill Pond Dam
George H. Nichols Multipurpose Dam
Lynbrook Pond Dam
Wachusett Open Channel Lower Dam
Upper Crystal Pond Dam
Basin A Dam
Crystal Pond Dam
Whittemore Pond Dam
Upper Fyfeshire Pond Dam
Farm Pond Dam
Old Cider Mill Pond Dam
Lower Sandra Pond Reservoir Dam
Upper Sandra Pond Reservoir Dam
Leombruno Pond Dam
Quick Pond Dam
Whitehall Reservoir Dike

NORTHBOROUGH
SHREWSBURY
GRAFTON
UPTON
HOPKINTON
SOUTHBOROUGH
MARLBOROUGH



Legend

- Assisted Living
- Clinics
- Elderly Housing
- Emergency Shelters
- End Of Life Facilities
- Nursing/Rest Homes
- Daycare
- Electric Distribution
- EOC
- Courts
- Water Treatment Plant
- Waste Water Treatment Plant
- Airports
- Town Halls
- Local Police
- Fire Station
- Schools (Pre-K through High School)
- Aqueducts
- Active Rail Line
- Transmission Lines by Type
- Pipeline/Arbitrary Extension

- Town Boundaries
- Structures
- Water Bodies
- Streams
- Roads
- Regionwide Evacuation Routes

Hazards

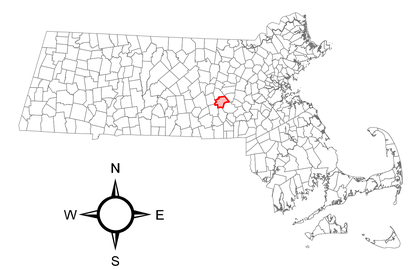
Dams (2/2012)
- High Hazard
- N/A

FEMA DFIRM Flood Zones
- 100-year Flood Area*
- 500-year Flood Area
- Repetitive Loss Property Areas
- NOAA Historic Hurricane Tracks (1842-2022)

USDA Wildfire Hazard Potential, Version
- 1: Very Low
- 2: Low
- 3: Moderate
- 4: High
- 5: Very High
- 6: Non-burnable
- 7: Water

Locally Defined Hazards

- Hazard
- Hazard
- Possible Flood Area
- Hazard



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CMRPC
Central Massachusetts Regional Planning Commission

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Hazard Mitigation Plan
Map 3
Vulnerable Critical Infrastructure and Facilities
Town of Westborough, Massachusetts
February 2025

Wallace Pond Dam
Old Mill Pond Dam
Bartlett Pond Dam
Hultman Intake Dam
Cold Harbor Brook Dam
Wachusett Open Channel Lower Dam
Lynbrook Pond Dam
Hop Brook Dam
Farm Pond Dam
Smith Pond Dam
West Meadow Country Club Pond Dam
Old Mill Pond Dam
Upper Crystal Pond Dam
Basin A Dam
Crystal Pond Dam
George H. Nichols Multipurpose Dam
Whittemore Pond Dam
Upper Fyfeshire Pond Dam
Farm Pond Dam
Old Cider Mill Pond Dam
Lower Sandra Pond Reservoir Dam
Leombruno Pond Dam
Upper Sandra Pond Reservoir Dam
Quick Pond Dam
Whitehall Reservoir Dam

NORTHBOROUGH
SOUTHBOROUGH
MARLBOROUGH
SHREWSBURY
GRAFTON
UPTON
HOPKINTON

Inset Map: Downtown Westborough
WESTBOROUGH POLICE DEPARTMENT

Legend

- Assisted Living
- Clinics
- Elderly Housing
- Emergency Shelters
- End Of Life Facilities
- Nursing/Rest Homes
- Daycare
- Electric Distribution
- EOC
- Courts
- Airports

- Town Halls
- Local Police
- Fire Station
- Schools (Pre-K through High School)
- Aqueducts
- Active Rail Line

MA Environmental Justice Populations 2020
- Minority
- Minority and Income

- Town Boundaries
- Structures
- Water Bodies
- Streams
- Roads
- Regionwide Evacuation Routes

Hazards

Dams (2/2012)
- High Hazard
- Significant Hazard
- Low Hazard
- N/A

FEMA DFIRM Flood Zones
- 1% Annual Chance Flood Hazard or Regulatory Floodway
- 0.2% Annual Chance Flood Hazard

- High Slope (15% and above)
- Repetitive Loss Property Areas
- NOAA Tornado Tracks (as of 9/2021)

IBTrACS Historical Hurricane Tracks (1842-2020)

Locally Defined

- Hazard
- Vulnerable Critical Infrastructure
- Vulnerable Critical Infrastructure/ Hazard
- Non-vulnerable Critical Infrastructure
- Non-vulnerable Critical Infrastructure/ Hazard

- Hazard
- Vulnerable Critical Infrastructure
- Vulnerable Critical Infrastructure/ Hazard
- Non-vulnerable Critical Infrastructure

- Possible Flood Area
- Hazard
- Vulnerable Critical Infrastructure
- Non-vulnerable Critical Infrastructure

N
W
E
S

0.55 0.275 0 0.55 1.1 Miles

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CMRPC Central Massachusetts Regional Planning Commission

Key to Locally Identified Hazards and Critical Infrastructure and Facilities in Appendix A Maps

Facility/Infrastructure/Hazard	Type	Map ID	Vuln. (Town)	In Hazard Zone (GIS)
Dam Failure – Whittemore Dam on Flanders Road	H	DF-1	N/A	N/A
Dam Failure – Leombruno Pond Dam on Fox Lane	H	DF-2	N/A	N/A
Flooding - 165 Flanders Rd	H	FL-1	N/A	N/A
Flooding - Oak and Chauncy and Chauncey Street Culvert	H and CI/H	FL-2	N/A	N/A
Flooding – ONeil Drive	H	FL-3	N/A	N/A
Flooding – Harvey Lane	H	FL-4	N/A	N/A
Flooding – Chestnut Street	H	FL-5	N/A	N/A
Flooding – West Main Street	H	FL-6	N/A	N/A
Flooding – Warren Street	H	FL-7	N/A	N/A
Flooding – Upton Rd @ Morse Street	H	FL-8	N/A	N/A
Flooding – Bowman Lane	H	FL-9	N/A	N/A
Flooding – Maynard Street	H	FL-10	N/A	N/A
Flooding – East Main Street	H	FL-11	N/A	N/A
Flooding – Milk Street	H	FL-12	N/A	N/A
Flooding – West Main Street	H	FL-13	N/A	N/A
Flooding – Kay Street	H	FL-14	N/A	N/A
Flooding – West Main St @ Jasper Street	H	FL-15	N/A	N/A
Flooding – Rte 30, Glen St, Jasper Street	H	FL-16	N/A	N/A
Flooding – Fruit Street Culvert	CI/H	FL-17	Y	Y
Flooding – Twin 56 Inch Culverts Under Mass Pike	CI/H	FL-18	Y	Y
Flooding – Transflow Twin 48 Inch Culverts	CI/H	FL-19	Y	Y
Flooding – Friberg Parkway Detention Basin	H	FL-20	N/A	N/A
Flooding – Hundreds Road Culvert	CI/H	FL-21	Y	Y
Flooding – Longmeadow Road Culvert	CI/H	FL-22	Y	Y
Flooding – Park Village Twin Culverts	CI/H	FL-23	Y	Y
Flooding – Rutters Brook Culvert	CI/H	FL-24	Y	Y
Flooding – Saint Steven's Church Culvert	CI/H	FL-25	Y	Y
Flooding – Hopkinton Road Culvert	CI/H	FL-26	Y	Y
Flooding – Ruggles Street Culvert	CI/H	FL-27	Y	Y
Flooding – Nourse Street Culvert	CI/H	FL-28	Y	Y
Flooding – Glen Street Culvert	CI/H	FL-29	Y	Y
Flooding – Arch Street Box Culvert at Railroad	CI/H	FL-30	Y	Y
Flooding – Route 9 / Route 135 Underpass	H	FL-31	N/A	N/A
Flooding – Assabet River Culvert / Railroad Tracks / Sewer Easement	CI/H	FL-32	Y	Y
Flooding – Lake Chauncey Outlet Control Structure	CI/H	FL-33	Y	Y
Flooding – East Main Street / McDonalds Corridor	H	FL-34	N/A	N/A
Flooding – High School Drainage Swale	H	FL-35	N/A	N/A
Flooding – Railroad Culverts	CI/H	FL-36	Y	Y

Flooding – Cedar Swamp Pond Outlet	H	FL-37	N/A	N/A
Flooding – John Street	H	FL-38	N/A	N/A
Flooding – Longmeadow Road	H	FL-39	N/A	N/A
Invasive Species – Water invasives (including water chestnuts, water cress species)	H	IS-1	N/A	N/A
Invasive Species – Lake Chauncey eutrophication / algal bloom	H	IS-2	N/A	N/A
Lightning Strike – Forbes Municipal Building (Schools and Buildings Departments, Police Station) – lightning strike at generator	CI/H	LG-1	Y	Y
Lightning Strike – Town Hall – lightning strike at pump station	CI/H	LG-2	Y	Y
Microburst – Route 9 at 200 Turnpike Road to Flanders Road at the Southborough Line	H	MB-1	N/A	N/A
Severe Snow/Ice – Upton Road, near Westborough Reservoir, snow/ice/falling trees hazard	H	SS-1	N/A	N/A
Severe Snow/Ice – MassPike snow/ice/slush	H	SS-2	N/A	N/A
Wildfire – MBTA line (1/2 mile east of Milk Street Bridge to Grafton Line)	CI/H	WF-1	N/A	N/A
Communications – Faye Mountain Repeater Site	CI	1		
Communications – Friberg Parkway Repeater Site	CI	2		
Communications – MEMA Repeater Site, Oak St	CI	3		
Communications – Fire Station / Emergency Operations Center	CI	4		
Communications – Regional Emergency Communication Center	CI	5		
Public Works – DPW Yard and Office	CI	6		Y
Town Facilities – Senior Center (is a heating/cooling center, is being replaced)	CI	7		
Town Facilities – Public Library (is a heating/cooling center)	CI	8		
Town Facilities – New Senior Center / Recreation Center	CI	9		
Town Facilities – Westborough Golf Club Building	CI	10		
Utilities – CSX/MBTA/AMTRAK railroad	CI	11	Y	Y
Utilities – EL Harvey transfer station	CI	12		
Utilities – National Grid substation	CI	13		
Utilities – National Grid substation	CI	14		
Assisted Living – Beaumont Rehabilitation and Skilled Nursing Center	CI	15		Y
Assisted Living – Whittier Rehabilitation Hospital	CI	16	Y	Y
Assisted Living – NE Center for Autism	CI	17	Y	Y
Assisted Living – Westborough Healthcare	CI	18	Y	Y
Assisted Living – Highlands Gracious Living	CI	19		Y

Assisted Living – Housing Authority (elderly/disabled)	CI	20		
Assisted Living – Housing Authority (elderly/disabled)	CI	21		
Assisted Living – Housing Authority (special needs)	CI	22		Y
Daycare – Knowledge Beginnings	CI	23		
Daycare – Miss Tanya's Woodland School	CI	24		
Daycare – Next Generation Children's Center	CI	25		
Daycare – The Methodist Preschool	CI	26		
Daycare – YMCA Center for Child Dev.	CI	27		
Daycare – YWCA of Central Mass.	CI	28		
Daycare – Little Reflections at Westborough	CI	29		
Daycare – Miss Tanya's Longmeadow School	CI	30		Y
Daycare – Miss Tanya's Nursery School	CI	31		
School – eBridge Montessori School	CI	32		
School – Westborough High School (is an emergency shelter)	CI	33		Y
School – Sarah W. Gibbons Middle School	CI	34		
School – Armstrong Elementary School	CI	35		
School – Fales Elementary School	CI	36		
School – Hastings Elementary School	CI	37		
School – Mill Pond School	CI	38		
Emergency Shelters – Westborough Inn (is a temporary emergency shelter)	CI	39		
Emergency Shelters – Extended Stay America, East Main Street (is a temporary emergency shelter)	CI	40		
Emergency Shelters – Extended Stay America, Connector Road (is a temporary emergency shelter)	CI	41		
Emergency Shelters – Extended Stay America, Computer Drive (is a temporary emergency shelter)	CI	42		
Emergency Shelters – Sharp Building (state run emergency assistance shelter)	CI	43		
Emergency Shelters – Gurdwara Sahib (is a temporary emergency shelter)	CI	44		
Zara Cisco Brough Center	CI	45		
Park Village	CI	46	Y	Y
Bridge – Interstate 90 at Interstate 495	CI	47		
Bridge – 50 East Main Street	CI	48		Y
Bridge – Route 135 at Route 9	CI	49		Y
Bridges – Route 9 at Interstate 495	CI	50		
Intersection – Route 135 at Route 30, Rotary	CI	51		
Intersection – Route 9 at Lyman Street	CI	52		
Intersection – Route 9 at Otis Street	CI	53		Y

APPENDIX B

Public Survey

Materials and

Results

Appendix B helps meet the following FEMA local mitigation plan requirements:

- *A1. "Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?" (Requirement 44 CFR § 201.6(c)(1))*
- *A2. "Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process?" (Requirement 44 CFR § 201.6(b)(2)); and*
- *A3. "Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval?" (Requirement 44 CFR § 201.6(b)(1))*

CENTRAL MASSACHUSETTS
Regional Planning Commission

Westborough Hazard Mitigation Plan Community Survey

Westborough Hazard Mitigation Plan

In July 2023, the Town of Westborough started the planning process to update its Hazard Mitigation Plan (HMP). An updated HMP will help the Town identify strategies to reduce its vulnerability to hazards like flooding, winter storms, and drought. Climate change may shift the extent and severity of certain natural hazards, including those that already impact Westborough.

By participating in this survey, you will help the Town of Westborough understand the current and future natural hazards that residents are most concerned about.

1. Check all that apply.

- [ ] I live in Westborough.
- [ ] I work in Westborough.
- [ ] I frequently visit Westborough.

2. Has your family or property, in Westborough, been impacted by any of the following natural hazards? Select all that apply:

- [ ] I have not been impacted by natural hazards in Westborough
- [ ] Winter Storms / Ice
- [ ] Thunderstorms, Microbursts, and/or Extreme Wind
- [ ] Tornadoes
- [ ] Flooding
- [ ] Extreme Heat / Extreme Cold
- [ ] Drought
- [ ] Wildfire / Brushfire
- [ ] Hurricanes
- [ ] Earthquakes
- [ ] Poor Air Quality
- [ ] Invasive Species
- [ ] Other (please specify)

3. Where have you observed hazard impacts in Westborough, and what were those impacts?

Examples: flooding on specific roads, drought/effects on water supply, extended power outages, trees down on roads, beaver dams affecting property and septic systems due to flooding from dams.

4. How much do you think the impacts of natural hazards and climate change will threaten your personal health, safety, or property?

- ◯ I think natural hazards and climate change will negatively impact my life.
- ◯ I'm not sure how natural hazards and climate change will impact my life.
- ◯ I don't think that I personally will be impacted by natural hazards and climate change.

5. If you are concerned about impacts to your life from natural hazards and/or climate change, what impacts are you most concerned about?

Examples: basement flooding, wells drying out / contamination of wells, ability to grow food

6. How concerned are you about the impacts that natural hazards and climate change will have on the Town of Westborough (the local infrastructure, economy, environment, and/or town residents)?

- ◯ Very concerned
- ◯ Somewhat concerned
- ◯ Unsure
- ◯ Somewhat unconcerned
- ◯ Not concerned at all

7. What community assets are you most concerned about when you consider the potential impact of natural hazards and climate change on the Town of Westborough? Rank the responses below in order from most concerned about (1) to least concerned about (5).

- ≡ ▲▼ Local natural resources and environments
- ≡ ▲▼ Resident health, safety, and property
- ≡ ▲▼ Local infrastructure
- ≡ ▲▼ Local business and the town economy
- ≡ ▲▼ Local government resources

8. Which of the following aspects of natural hazards and climate change would you like to learn more about? Select all that you are interested in.

- [ ] Impacts on well water quantity / quality
- [ ] Future flood risks
- [ ] Impacts on infrastructure
- [ ] Sustainability initiatives
- [ ] Public health impacts like increased risks of vector-borne disease (ex. Lyme disease, West Nile virus, EEE - Eastern equine encephalitis)
- [ ] Impacts on town budget and finances
- [ ] Impacts on wildlife
- [ ] Impacts on the health of local forests
- [ ] Impacts on future development
- [ ] Other (please specify)

9. What actions should the Town of Westborough take to cultivate local resilience to natural hazards?

Examples: increase local capacity to apply for hazard mitigation grant funding and implement hazard mitigation projects; improve storm water management; provide more education and outreach about how climate change could impact my life; encourage planting climate-resilient tree species; encourage cutting/trimming dead trees beside/hanging over roads; etc.

10. If you would like to stay informed about other opportunities to participate in Westborough's Hazard Mitigation planning process, please enter your E-mail address below.

Government Westborough

Take part in Westborough's hazard mitigation plan survey

By **Community Advocate** - January 5, 2024

Click me to copy current URL



Westborough is in the process of updating its Hazard Mitigation Plan. (Photo/Laura Hayes)

WESTBOROUGH – The town is in the process of updating its Hazard Mitigation Plan (HMP).

Residents are invited to take part in an online community survey to provide input.

In July 2023, the town started the planning process to update its HMP. An updated plan will help the town identify strategies to reduce its vulnerability to hazards such as flooding, winter storms and drought.

By participating in this survey, you will help the town understand the current and future natural hazards that residents are most concerned about.

Survey responses will be accepted until Jan. 31.

Access the survey via the town's website, www.westboroughma.gov.

Town of Westborough
January 4 at 10:48 AM ·

Help to make Westborough safer by filling out the Hazard Mitigation Plan Community Survey!

Westborough Fire Department
January 3 at 8:14 PM ·

Hello residents of the Town of Westborough, business owners, and those of you that work here. Many town departments have been working hard for several months to... See more



SURVEYMONKEY.COM

Westborough Hazard Mitigation Plan Community Survey



Posted on: January 4, 2024

Take The Hazard Mitigation Plan Survey and Help Keep Westborough Safe!



Help make Westborough safer by filling out the Hazard Mitigation Plan Community Survey!

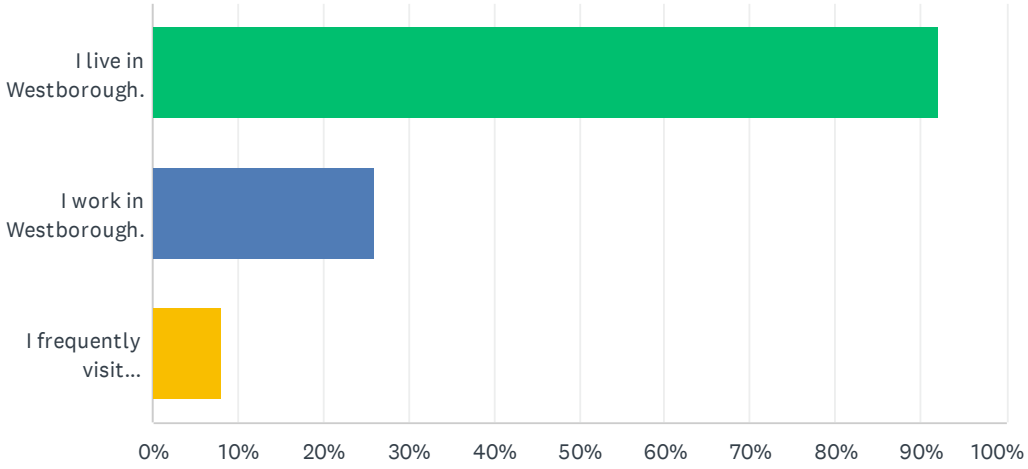
In July 2023, the Town of Westborough started the planning process to update its Hazard Mitigation Plan (HMP). An updated HMP will help the Town identify strategies to reduce its vulnerability to hazards like flooding, winter storms, and drought. Climate change may shift the extent and severity of certain natural hazards, including those that already impact Westborough.

By participating in this survey, you will help the Town of Westborough understand the current and future natural hazards that residents are most concerned about. Survey responses will be accepted until January 31st, 2024.

Access the Survey and help keep Westborough safe!

Q1 Check all that apply.

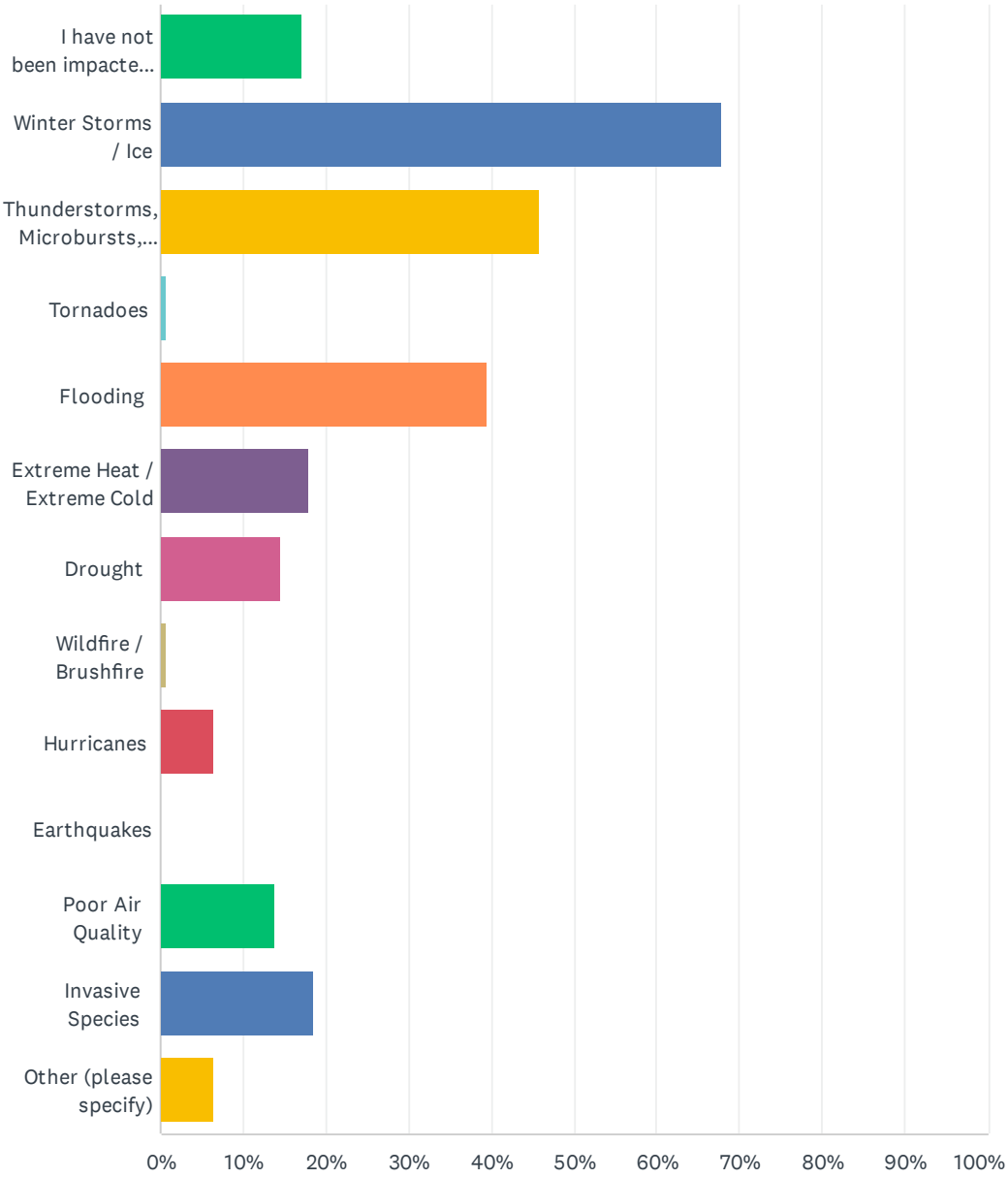
Answered: 269 Skipped: 0



ANSWER CHOICES	RESPONSES	
I live in Westborough.	92.19%	248
I work in Westborough.	26.02%	70
I frequently visit Westborough.	8.18%	22
Total Respondents: 269		

Q2 Has your family or property, in Westborough, been impacted by any of the following natural hazards? Select all that apply:

Answered: 268 Skipped: 1



ANSWER CHOICES	RESPONSES	
I have not been impacted by natural hazards in Westborough	17.16%	46
Winter Storms / Ice	67.91%	182
Thunderstorms, Microbursts, and/or Extreme Wind	45.90%	123
Tornadoes	0.75%	2
Flooding	39.55%	106
Extreme Heat / Extreme Cold	17.91%	48
Drought	14.55%	39
Wildfire / Brushfire	0.75%	2
Hurricanes	6.34%	17
Earthquakes	0.00%	0
Poor Air Quality	13.81%	37
Invasive Species	18.66%	50
Other (please specify)	6.34%	17
Total Respondents: 268		

#	OTHER (PLEASE SPECIFY)	DATE
1	High radon levels	1/13/2024 7:32 AM
2	Increased fungal growth in mulch and cut tree stumps	1/11/2024 7:47 PM
3	Power outage	1/11/2024 3:11 PM
4	Why are we combining Natural hazards with Climate change? Natural hazards have been here all my life. Climate change has nothing to do with it. Do your own research rather than listen to these so called experts.	1/11/2024 2:20 PM
5	Power outage	1/11/2024 12:22 PM
6	Power outages	1/11/2024 12:12 PM
7	trees falling during storms/extreme wind	1/11/2024 11:33 AM
8	Extreme rain	1/11/2024 11:15 AM
9	Tree/limb falls, including damage to two of our cars, from winter storm	1/11/2024 10:57 AM
10	Never got such extensive flooding in the wetlands which has caused the basement to flood 4times since spring of ‘23	1/11/2024 10:46 AM
11	Trees down on roads	1/11/2024 10:43 AM
12	A. Flooding, and B. Excessive noise pollution REDACTED, and C. Increased truck traffic	1/5/2024 10:30 AM
13	Mosquito and tick born diseases	1/4/2024 7:11 PM
14	mosquitos	1/4/2024 11:20 AM
15	Power outages	1/4/2024 9:53 AM
16	Very wet yard	1/3/2024 8:37 PM
17	Radon	1/3/2024 8:36 PM

Q3 Where have you observed hazard impacts in Westborough, and what were those impacts?Examples: flooding on specific roads, drought/effects on water supply, extended power outages, trees down on roads, beaver dams affecting property and septic systems due to flooding from dams.

Answered: 203 Skipped: 66

#	RESPONSES	DATE
1	flooding downtown, trees down in neighborhood - hail storm led to roof replacement	4/2/2024 2:42 PM
2	Trees occasionally down, power lines sometimes impacted.	4/2/2024 2:37 PM
3	Lackey Street	3/17/2024 7:58 PM
4	On our street, Lackey Street, we experience routine flooding. Some years ago we were struck by a Gypsy Moth infestation that led to a number of trees dying off , exacerbated by drought.	3/17/2024 3:55 PM
5	Flooding by lake Chauncy on Oak Street.	3/16/2024 8:01 PM
6	Chancy rd and rte 30 under the railroad bridge	1/28/2024 7:00 PM
7	Rudders Brook - used to practically dry up in the summer-is more like a river year round. Trees down and beaver dams.	1/26/2024 12:59 PM
8	Mill Rd, natural spring near cresting hill from West Main St	1/23/2024 1:02 PM
9	Fisher Street has been lucky although I do know **REDACTED** has suffered flooding issues in the past. Storm runoff from the higher elevations is also an issue during extensive rain.	1/22/2024 7:47 AM
10	Fay Mountain neighborhood is terrible for flooding. It's most notable on the roads at the bottom of Wheeler Rd neighborhood (Cortland Drive, West Main Street). Water pools on lawns and seeps into homes. The way the neighborhood is sloped, water flows down and to the side. **REDACTED**. The water erodes the land and in one instance I know of, caused a 6 foot sinkhole **REDACTED.**	1/20/2024 8:57 AM
11	Tree limbs broke off due to ice- smaller ones fell in yard; larger ones took down power lines and blocked the road Combating several invasive plant species impacting trees (bittersweet is the worst) from conservation land	1/16/2024 10:22 PM
12	Flooding in roads, basements. Power outages from storms, invasive species taking over native species.	1/16/2024 9:52 AM
13	Flooding on Chauncey	1/16/2024 8:34 AM
14	Our roads were poorly cleaned / ploughed when there was 8 inches of snow on Jan 8th. This is not the first instance.	1/16/2024 7:50 AM
15	Slipping on icy roads when driving.	1/16/2024 5:59 AM
16	It's become normal for water restrictions in the summer due to drought. Power outages have also semmed to increase due to downed trees/branches.	1/15/2024 4:32 PM
17	Flooding on Kay Street, drought impact on water supply	1/15/2024 2:01 PM
18	Road flooding, frozen pipes in home, leaks in Armstrong school during rainstorms	1/14/2024 4:21 AM
19	Flooding on Chauncey St., water restrictions due to drought	1/13/2024 9:20 PM
20	drought effects causing water shortage and restriction	1/13/2024 5:47 PM
21	Flooding by Lake Chauncy - Chauncy Street	1/13/2024 7:32 AM
22	Water in basement, excessive water in yard, streets nearby, fences falling because they rot	1/12/2024 8:22 PM

	out because of extremely wet conditions and high water table.	
23	Downed trees, road flooding, people basements flooding	1/12/2024 8:19 PM
24	Behind house **REDACTED**	1/12/2024 4:30 PM
25	Nothing specific to report. Just generally notice that the expansion/contraction of the earth under the roadways tends to create a lot of cracks/potholes every winter/spring.	1/12/2024 4:14 PM
26	Flooding on Bowman near Sandra Pond	1/12/2024 2:24 PM
27	Flooding by Lake Chauncey. Several years back, there were extended power outages that required us to get a generator.	1/12/2024 11:43 AM
28	Flooding on Rt 135 - unable to drive home on that road and had to find an alternate route. Drought - unable to have a garden that year or enjoy regular summer activities (pool, splash pad, etc) Winter storms - a lot of snow left on Robin Road because it wasn't plowed often enough thus creating unsafe driving conditions for several days for residents and the school bus **REDACTED**	1/12/2024 10:01 AM
29	Aging trees in downtown Westboro seem to be a major problem. We own many of them along major power lines, and although notifying the power company, nothing has been done. It's way too pricey for a homeowner to manage alone. West main seems particularly vulnerable with 5or 6 transformers blowing in the last 4 years. Flooding downtown does seem capable of cutting off access out of town towards route 9- specifically around the creek at the HS, the railroad bridge E Main, the Rt 9 underpass 135 and the oak street access to Rte 9 by Chauncy. I also worry about drinking water quality.	1/12/2024 8:25 AM
30	I have not experienced any natural hazards in Westborough.	1/12/2024 7:59 AM
31	Flooding Rt 30 under Rt 9, very low water levels seen at Mill and Sandra ponds. Several years without lawn watering. One multi day power outage about 10 years ago.	1/12/2024 7:38 AM
32	**REDACTED** Westminster Way. Very often we see trees down.	1/11/2024 9:39 PM
33	Bowman Street trees down	1/11/2024 9:26 PM
34	Flooding on Rt. 135 & Rt. 9, Rt. 30 & Rt. 9	1/11/2024 8:58 PM
35	Flooding on the street and our basement.	1/11/2024 5:34 PM
36	I'm mainly aware of storms causing power outages from downed trees in various areas of town, depending on specific events. And also localized flooding. We do get snow and ice but seem to clear it pretty well.	1/11/2024 5:20 PM
37	Flooding in our basement on 2 occasions	1/11/2024 4:49 PM
38	Flooding on Longmeadow Rd is at times significant, affecting the entire neighborhood leading to water in the basement.	1/11/2024 4:43 PM
39	Flooding on roads and in our residence, downed trees, extended power outage, crop issues due to invasive species or pest cycles affected by climate, drought and extreme weather (temperatures, fluctuations, etc.) affecting vegetable growth and pest (animal and insect) behaviors.	1/11/2024 4:42 PM
40	Mainly trees down the roads and too close to the road in Ruggels St.	1/11/2024 4:39 PM
41	Trees down causing power outages Flooding due to lots of snow followed by rain	1/11/2024 3:23 PM
42	Unploughed internal roads unsafe to drive on due to snow and black ice	1/11/2024 3:11 PM
43	Flash flood	1/11/2024 3:06 PM
44	Armstrong School's roof has leaked and made the floors dangerously slippery.	1/11/2024 2:57 PM
45	Route 30 coming from Grafton is prone to trees on the road heading toward Mill Pond. There are often power outages, and those outages have affected the schools several times over the years.	1/11/2024 2:50 PM
46	Flooding on Chauncy St, trees down around town, flooding at Hastings Elementary School	1/11/2024 2:50 PM
47	Flooding under bridge on Rt 30 near Willow Street, Ruggles can be very icy/slippery in winter	1/11/2024 2:32 PM

	weather	
48	too much rain rots the roots of my black berries.	1/11/2024 2:32 PM
49	Microburst a few years ago, and flooding due to overflowing brook. Beavers are causing issues. The town has not dredged the brook in a decade.	1/11/2024 2:28 PM
50	Extreme wind opening the side door with enough force to somewhat break it, floods causing the basement to flood, poor air quality when the fumes came down from New York, Asian long-horned Beetles on school windows.	1/11/2024 2:25 PM
51	Hastings elementary just had a roof leakage bad enough to cause school closure due to heavy snow and rain.	1/11/2024 2:25 PM
52	extended power outages	1/11/2024 2:20 PM
53	Water heaters and pipes bursting during cold winters, water leakage, power outage REDACTED	1/11/2024 2:11 PM
54	power outages, some road closures	1/11/2024 2:10 PM
55	Flooding and trees down in our neighborhood as well as our children's elementary school	1/11/2024 2:08 PM
56	flooding and a bunch of stuff	1/11/2024 2:05 PM
57	Basement flooding	1/11/2024 2:04 PM
58	Trees down on roads	1/11/2024 1:51 PM
59	Town wide. Upton Rd. and Hopkinton Rd. specifically. Protect our well fields from flooding.	1/11/2024 1:49 PM
60	Flooding on specific roads, trees down.	1/11/2024 1:43 PM
61	flooding under the bridge on West Main St. impacting traffic	1/11/2024 1:32 PM
62	Power outages, down trees, primarily	1/11/2024 1:22 PM
63	Trees down in roads, puddling on grass	1/11/2024 1:21 PM
64	Power outages, a tall tree down in our yard in the most recent storm.	1/11/2024 1:20 PM
65	Flooding near intersection of Lyman and Chauncey Streets next to Lake Chauncey	1/11/2024 1:11 PM
66	Power outages due to tree limbs falling in Glen Street; Water flooding in underpasses; potholes in streets due to snow and rain	1/11/2024 1:07 PM
67	None	1/11/2024 1:06 PM
68	Water main break causing flooding resulting in damage to the yard.	1/11/2024 12:54 PM
69	Flooding on ruggles street	1/11/2024 12:46 PM
70	Flooding in my apartment building and my sons school. Microburst in the summer that knocked out power and there's.	1/11/2024 12:43 PM
71	Flooding on Rt 135. Power outages. Snow days for extreme cold.	1/11/2024 12:42 PM
72	Flooding , Droughts, Torndos	1/11/2024 12:32 PM
73	Flanders Rd. Chauncey St.	1/11/2024 12:30 PM
74	Asian jumping worms and blight in my vegetable garden; downed trees during wind/microbursts	1/11/2024 12:30 PM
75	Extended/frequent power outages; Excessive mosquito population limiting outdoor activities; Defoliation from spongy moth	1/11/2024 12:28 PM
76	Hastings Elementary School cancelled classes due to another issue with the buildings' roof.	1/11/2024 12:28 PM
77	A lot of homes on Byard Lane/Uhlman Drive seem to get flood.	1/11/2024 12:26 PM
78	Minor Street flooding due to catch basins (clogs). Multiple locations. Trees down resulting in power outages multiple locations. Water bans from drought.	1/11/2024 12:17 PM
79	icy parking lots in the school which pose a hazard for motor vehicle accidents as well as	1/11/2024 12:16 PM

	injuries due to falls	
80	Flooding on Ruggles	1/11/2024 12:13 PM
81	power outages- storms flooding- basement, roadways poor air quality- home, summertime invasive species- bittersweet, poison ivy on home property	1/11/2024 12:13 PM
82	I have seen some flooding but the storm drainage appears to do well in my neighborhood. We do get some water in our basement but we have a sump pump. Power outages make us unable to cook for the duration of the outage.	1/11/2024 12:12 PM
83	Trees down on property Fisher St.	1/11/2024 12:09 PM
84	Roads closed due to flooding or downed trees/wires, etc. Schools closed due to water damage, snow storms, poor travel conditions. Power outages due to wind, storm, and/or snow events. Difficulty traveling due to snow and ice. Pot holes, sometimes large and deep with potential to damage cars.	1/11/2024 12:08 PM
85	Trees down on roads/driveways	1/11/2024 12:05 PM
86	Flooding, extended power outages, trees down on roads	1/11/2024 12:01 PM
87	power outage, tree on roads	1/11/2024 11:58 AM
88	Flooding under the bridge on east main st	1/11/2024 11:54 AM
89	Flooding east Main Street by McDonald’s flooding by Westborough golf course	1/11/2024 11:50 AM
90	flooding on roads, trees down on roads, property damage due to flooding, trees down on property	1/11/2024 11:44 AM
91	Flooding in basement, ice dams, power outages, trees down	1/11/2024 11:43 AM
92	Flooding and trees down on roads. Flooding in basement	1/11/2024 11:43 AM
93	My classroom is super hot and we do not have air conditioning, so that is the only hazard I checked above and how it applies to me!	1/11/2024 11:37 AM
94	Summer droughts (water restrictions), extreme cold (higher heating bill), heavy rains (flooded streets), etc	1/11/2024 11:34 AM
95	I have observed flooding on the roads, downed trees from storms. There have been days when the air quality was poor and children were unable to go outside to play.	1/11/2024 11:31 AM
96	Flooding under RT 9 bridges. Flooding intersection of West St and Whitney St	1/11/2024 11:31 AM
97	Flooding in the basement due to poor landscaping and grading .	1/11/2024 11:30 AM
98	Water shortages, poor air quality preventing us from spending time outdoors, trees down, power outages	1/11/2024 11:28 AM
99	During sudden fast-falling snow, I have not been able to easily and safely get up ruggles hill home after picking up my kids or after town meeting, in my van. Extreme cold has caused pipe burst at home. Wind had downed many branches and occasional power outage. Invasive species means all the ash trees in the neighborhood are dead and falling hazards / blowing apart in the wind. Also certain bushes overtaking or blocking out other plant life.	1/11/2024 11:18 AM
100	Trees down on roads	1/11/2024 11:17 AM
101	Flooding on Westminster Way, at bottom of Main Street near high school. Snow on Westminster, Ward, Old Colony and Main Street downhill near Ward Lane to stop sign.	1/11/2024 11:16 AM
102	Flooding in my yard leads to increased mosquitoes/disease. Also leads to flooding in my basement despite sump pump - I’ve had to treat for mold due to moisture.	1/11/2024 11:16 AM
103	Flooding under bridges ...Milk st.	1/11/2024 11:15 AM
104	Flooding on specific roads and extended power outages	1/11/2024 11:10 AM
105	flooding on Flanders Ave	1/11/2024 11:10 AM
106	Flooding in the majority of yards on water street due to poor drainage options, many trees down in yards in the neighborhood, frozen roads, water restrictions and drought leading to	1/11/2024 11:09 AM

	poorer water quality	
107	Major flooding by the golf course	1/11/2024 11:09 AM
108	Invasive species taking over forests/neighborhoods. Flooding at chauncy.	1/11/2024 11:09 AM
109	Ice dam	1/11/2024 11:08 AM
110	ice/snow on roads during storms; poor air quality in school during Covid	1/11/2024 11:07 AM
111	Trees down on our driveway after thunderstorm	1/11/2024 11:06 AM
112	Extended power outages, trees down on roads	1/11/2024 11:06 AM
113	Flooding across Chauncy St Flooding on Canfield St at the site of the repaired water main break Drought causing frequent water bans	1/11/2024 11:05 AM
114	Trees down on roads, power outages	1/11/2024 11:04 AM
115	My basement the Brook in front of the high school	1/11/2024 11:04 AM
116	flooding on adams street	1/11/2024 10:59 AM
117	Trees or limbs down on roads and walkways, some usually short-duration flooding on roads. Ice on walkways can be longer duration and hazardous.	1/11/2024 10:57 AM
118	Flooding under the train bridge on rt 30 near the Dunkin Donuts in the center of town. Had to find an alternate way around.	1/11/2024 10:56 AM
119	Loss of power, trees on lackey and upton rd although much improved over the past 3-4 years.	1/11/2024 10:56 AM
120	ice storms = power outages, droughts = water restrictions, micro bursts = localized flooding, heat waves = hazards for outdoor activities, poor air quality due to CA fires, invasive flora and fauna, etc.	1/11/2024 10:55 AM
121	roads flooding, drought affecting watering my garden, power outages, trees down.	1/11/2024 10:55 AM
122	Dog owners not cleaning up waste causing rodent infestation. Extended power outages, trees down on roads, sidewalks not cleared by homeowners, cars parked on and blocking sidewalks.	1/11/2024 10:53 AM
123	Trees down on house; Trees down on roads; flooded basements	1/11/2024 10:53 AM
124	Nothing that stands out or would be considered unusual.	1/11/2024 10:51 AM
125	tree down on our lawn	1/11/2024 10:49 AM
126	Captain Samuel Forbush Road. DEC 2023	1/11/2024 10:49 AM
127	**REDACTED** there are often power outages de to down trees taking out power lines near the Lyman side of Haskell Street.	1/11/2024 10:48 AM
128	Extended power outages and downed trees with no plane in place on how to mitigate the downed trees	1/11/2024 10:46 AM
129	Flooding **REDACTED** basement on Hyder St	1/11/2024 10:46 AM
130	Trees down on roads	1/11/2024 10:46 AM
131	Droughts in summer	1/11/2024 10:46 AM
132	trees hovering over powerlines and roads as well as basement flooding	1/11/2024 10:46 AM
133	20 years in the house and the wetlands have never gotten as flooded as they have. So significant that we could have a foot plus throughout our entire backyard. Drainage needs work from Nourse st and old Nourse st.	1/11/2024 10:46 AM
134	Power is constantly lost on Lackey/Philmore street and takes days to be restored	1/11/2024 10:45 AM
135	Finish basement was flooded due to heavy snow and rain two years ago. Also sewer back up flooded finish basement	1/11/2024 10:45 AM
136	N/a	1/11/2024 10:44 AM
137	Nowhere	1/11/2024 10:43 AM

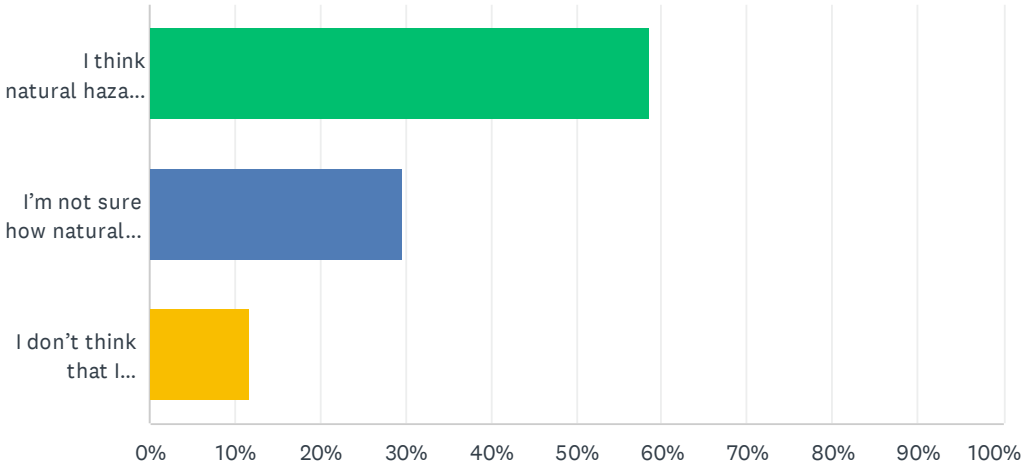
138	Trees down in roads and across our driveway, extended power outage a couple of years ago.	1/11/2024 10:43 AM
139	Trees down on roads	1/11/2024 10:43 AM
140	Flooding underneath Rt 9	1/11/2024 10:42 AM
141	Trees and fence down. Flooding in driveway	1/11/2024 10:41 AM
142	Drought of summer 2022, followed by winter - 2022/2023 - with no snow, killed many plants in our yard. Friends and neighbors reported the same thing.	1/10/2024 11:15 AM
143	Power outages along Rt 30 on the way to Grafton. Takes a lot of time for power to be restored, even when they are prepared. Flooding near McDonalds	1/8/2024 3:19 PM
144	Flooding by Lake Chauncy.	1/8/2024 6:09 AM
145	Adams Street	1/6/2024 7:12 PM
146	Flooding at Morse st and Upton road. Extended power outages on Morse st and upton road.	1/6/2024 3:22 PM
147	flooding on Main Street by golf course, flooding on Route 9 just west of Otis Street, watering bans every year.	1/6/2024 11:19 AM
148	Flooding along Upton Rd after heavy rains, water restrictions during long droughts	1/6/2024 7:29 AM
149	Trees down on roads, power outages, Flooding on roads, lawn issues in drought, trees falling in property, icy roads	1/5/2024 9:41 PM
150	Trees or limbs in road	1/5/2024 4:11 PM
151	Flooding under bridges, invasive bittersweet vines choking trees everywhere.	1/5/2024 3:34 PM
152	Milk st.	1/5/2024 1:18 PM
153	Trees down, ice damming on roof, drought's impact on trees	1/5/2024 1:09 PM
154	Indian Pond Road has experienced many power outages caused by snowstorms and thunderstorms	1/5/2024 11:49 AM
155	A. Flooding over the road at **REDACTED** Fisher St during almost EVERY rain event. This appears to be a conjunction of things happening: (1) no catch basin placed at the low spot outside **REDACTED** Fisher St, and (2) water runoff coming down the adjacent side road of Assabet Dr and ponding on Fisher St, and (3) the gutter downspouts **REDACTED** draining into the road (**REDACTED** lawns are flooding every time it rain), and (4) the two local stream swales **REDACTED** being over full from the water runoff from **REDACTED** and **REDACTED**, and (5) the water runoff from the high ends of Fisher St **REDACTED** draining down without a catch basin around **REDACTED.** As GHG emissions increase, we see more frequent severe rain events, all due to climate change. B. Excessive noise pollution **REDACTED.** This appears to be only somewhat better. I do believe that there is a door that is being propped open that is letting the internal manufacturing noise out, so to speak. You might be saying to yourself "that's not related to climate change", and I offer a counter argument that, yes it is, because **REDACTED** plastic and film manufacturing plant using oil-based materials contributing to increased emissions into the atmosphere and increased plastic pollution in the world. C. Increased truck traffic on Fisher St from the massive growth of commercial buildings on Otis St. Can we please make sure these trucks stay on Route 9, somehow? Perhaps a few signs on Otis St telling trucks to turn only up toward Route 9, and not down toward Fisher St? Trucks are constantly taking wrong turns, not reading dead end or tight turn signs, causing a lot of noise and air pollution with their diesel fumes. The increased diesel truck traffic is a direct contributor to emissions into the atmosphere and therefore a contributor to climate change.	1/5/2024 10:30 AM
156	Flooding of the brook near Brook Way toward Mill Pond, downed power lines multiple times in past year	1/5/2024 9:50 AM
157	flooding on Main Street (particularly near High Hills Nursery an the golf course and under the bridge)	1/5/2024 9:50 AM
158	Multiple ice dams on roof over the years. Microburst hit front lawn several years ago. The microburst knocked over a tree. The fallen tree damaged our home. My basement floods every spring - and has for decades.	1/5/2024 9:13 AM

159	I think the town does a good job of managing typical storms. I think the biggest risk are more extreme weather that was not previously typical that are becoming more common. I think the town needs to modify drainage to accommodate for more extreme rain/snow melts and increase management of trees near powerlines.	1/5/2024 9:01 AM
160	We had about $80,000 of water damage from ice dams in our home (several years ago)..	1/5/2024 7:31 AM
161	**REDACTED** Hopkinton Rd flooding issues every time it rains, then freezes and creates and ice rink.	1/5/2024 6:44 AM
162	Milk St. north of Rte. 9 has some kind of water tributaries running under land and get water in the basement Many power outages so had to buy a generator Lightning strike took out our main electrical line that had to be replaced from the pole to the house Lots of poison ivy in the area	1/5/2024 1:12 AM
163	Flooding of our backyard from rainstorms flooding **REDACTED** and running into our driveway and backyard. Microburst downing trees and damaging our home and other structures on the property. Downed electrical lines due to heavy winds.	1/4/2024 9:41 PM
164	Flooding on East Main Street at Route 9 overpass. Beaver dams in the culvert at East Main and Smith Street. Very low water levels in Sandra Pond. Hurricanes and blizzards downing power lines on East Main Street at Walker/Smith Street.	1/4/2024 8:27 PM
165	stream in backyard overflows during heavy rainstorms or winter rains when the stream bed freezes over	1/4/2024 7:34 PM
166	Flooding: Rt 30 under the train tracks, the path that goes under the train tracks (Water Street?), Fisher st at Otis floods to about 6" every time it rains more than a little, makes travel by foot/bike difficult. The hiking trails around stump pond are getting more impacted by high water level and require more bridges to avoid significant erosion. The heavy rains have occasionally been rough on vegetable plants, I have some concerns for local farmers.	1/4/2024 7:11 PM
167	Tree limbs down from storms.	1/4/2024 6:42 PM
168	Power outages .. trees down	1/4/2024 6:42 PM
169	Flooding and sometimes ice on Lackey Street. We live up from the Reservoir and have seen it being depleted in drought years. Our trees have been significantly impacted by Gypsy moths several years ago. We suffered poor air quality from Canadian wildfires last summer.	1/4/2024 4:36 PM
170	Extended power outages in old nourse area	1/4/2024 4:23 PM
171	Frequent power outages in Fay Acres area, sometimes for extended periods of time	1/4/2024 2:48 PM
172	Trees down affecting power and flooding from rain on roads/into basement	1/4/2024 2:28 PM
173	Pooling of water on Lackey St. Power line disruptions in storms. Bitter sweet in woods and along roadway.	1/4/2024 2:05 PM
174	Flooding at Mil street and route 9 underpass	1/4/2024 1:56 PM
175	Trees down, roof leaks/ice dams, road flooding, power outages	1/4/2024 1:50 PM
176	The bridge in Main Street floods and the center of town is inaccessible. Often barriers are too far down the street and should start sooner to avoid the backup and turn around by redirecting towards route 9. Trees down has been our 2nd issue.	1/4/2024 1:29 PM
177	Excessive snow forcing road closures	1/4/2024 1:01 PM
178	Trees down on road, flooding of property, including home, power outages for periods up to three continuous days	1/4/2024 12:58 PM
179	Flooding on East Main St. Flooding of what was dry land in Cedar Swamp due beaver dams and blocked culverts under the railroad, resulting in the town illegally removing a bridge on the Charm Bracelet without proper notification of the land or bridge owner!	1/4/2024 12:55 PM
180	Basement flooding from extreme rain events; closed roads, flooding, and trees down around town; loss of garden and plants due to drought	1/4/2024 12:55 PM
181	We often times have trees down on Arch Street. I have a tree that was supposed to be cut down, because it is a hazard, it's been 2 years now.	1/4/2024 12:44 PM
182	Have not observed any hazard impacts in my 30 years of living in Westborough	1/4/2024 12:43 PM

183	Haskell st.	1/4/2024 12:40 PM
184	Icing on sidewalks during and after snowstorms along with sidewalks being plowed in by town and private plows after being cleared by residents. Sidewalks are often not passable in the days and weeks after storms forcing residents onto the busy street while walking. Wind causing mild damage on roofs, and other structures, fences during thunder and wind storms. Loss of trees and plantings due to draught.	1/4/2024 12:27 PM
185	My workplace has had 3 frozen pipes burst in different places over the past 12 years. A microburst brought down several trees along the edge of the work property, damaging 2 cars.	1/4/2024 12:24 PM
186	Invasive species along **REDACTED,** snow plows breaking up asphalt and lawn around property, broken asphalt and debris collecting near storm water grates creating backups, mosquitos from wetland along **REDACTED** overhanging branches throughout town	1/4/2024 11:20 AM
187	Flooding: The marsh/wetlands on and bordering our property, and the small "river" that flows across our property regularly overflows into our back yard. It does not threaten our home, but it is a regular occurrence now when it used to only be 1 to 2 times per year. We continue to lose trees to strong storms. Again, the frequency is greater now than when we moved in 20 years ago. Stink bugs. Ugh.	1/4/2024 10:09 AM
188	water restrictions	1/4/2024 9:57 AM
189	Trees falling on power lines in our neighborhood; flooding at E Main under the RR bridge; ice dams in 2016 or 2017; drought in the summers; garage flooding during most rain storms;	1/4/2024 9:53 AM
190	Arch Street & Glen Street for flooding and downed trees and large branches from storms in all seasons	1/4/2024 8:55 AM
191	Ice storm had extended power outage (3 days)	1/4/2024 8:22 AM
192	Flooding in our backyard from storm water runoff	1/4/2024 7:30 AM
193	Trees down on our street, microburst in Westborough a few years back, drought, etc	1/4/2024 12:03 AM
194	Personally - Flooding in home for past 20+ years resulting from flooding of brook **REDACTED**. Generally - Annual issues with water supply.	1/3/2024 11:00 PM
195	Constant flooding on Longmeadow road, which is due to a poorly designed storm water system. Town does not properly maintain storm basins.	1/3/2024 10:44 PM
196	Town wide water bans due to drought, lack of snow the last 2 winters, high bacteria in Lake Chauncy.	1/3/2024 10:29 PM
197	Flooding on roads , tree fires From downed wires from storms . Ice damage	1/3/2024 9:20 PM
198	Parkman Street every time it rains	1/3/2024 8:50 PM
199	Trees down, flooding . Mill Rd and W Main St	1/3/2024 8:49 PM
200	Power outages.	1/3/2024 8:48 PM
201	Trees fall every storm at the sharp curve on Spring Road. Fearful of the day a tree falls on a car, bus or person.	1/3/2024 8:39 PM
202	Adams Street	1/3/2024 8:37 PM
203	In the past extended power outages. Recently local flooding in town streets	1/3/2024 8:35 PM

Q4 How much do you think the impacts of natural hazards and climate change will threaten your personal health, safety, or property?

Answered: 266 Skipped: 3



ANSWER CHOICES	RESPONSES	
I think natural hazards and climate change will negatively impact my life.	58.65%	156
I'm not sure how natural hazards and climate change will impact my life.	29.70%	79
I don't think that I personally will be impacted by natural hazards and climate change.	11.65%	31
TOTAL		266

Q5 If you are concerned about impacts to your life from natural hazards and/or climate change, what impacts are you most concerned about? Examples: basement flooding, wells drying out / contamination of wells, ability to grow food

Answered: 195 Skipped: 74

#	RESPONSES	DATE
1	flooding	4/2/2024 2:42 PM
2	Increased severe weather events.	4/2/2024 2:37 PM
3	Street flooding. Down power lines	3/17/2024 7:58 PM
4	Impact to our gardens from flooding and the need to wear boots to get to our mailbox.	3/17/2024 3:55 PM
5	Hot summers wilder storms. Insects.	3/16/2024 8:01 PM
6	Ability to grow food locally fruit trees bloom and then die with late frost.	1/28/2024 7:00 PM
7	Basement damp, yard wet.	1/26/2024 12:59 PM
8	Anything that impacts others impacts myself	1/22/2024 7:47 AM
9	Basement flooding, sinkholes, land erosion.	1/20/2024 8:57 AM
10	Weather-related property damage and extended power outages	1/16/2024 10:22 PM
11	basement flooding - this is constant on Cortland Drive and the specific surrounding neighborhood, ability to grow food due to droughts, ability to be outside due to poor air quality and asthmatic flare-ups that happen when air quality is poor	1/16/2024 10:28 AM
12	Temperature changes killing native species	1/16/2024 9:52 AM
13	Flooding or wind damage	1/16/2024 8:34 AM
14	Contamination and pollution	1/16/2024 7:50 AM
15	Crashing car.	1/16/2024 5:59 AM
16	Basement flooding due to more substantial storms. Previously 'native' trees dying off & becoming hazards.	1/15/2024 5:12 PM
17	I'm not particularly concerned about my immediate property. More so on the effects on the economy and the future that my kids will inherit.	1/15/2024 4:32 PM
18	Stream in backyard overflowing, flooding in basement of house, wind blowing the trees down into our house or around the neighborhood	1/15/2024 3:02 PM
19	Basement flooding	1/15/2024 2:01 PM
20	A lot of things both local and geopolitical	1/14/2024 3:55 PM
21	Heavy rains bring the ants in the house, slab foundation.	1/14/2024 4:21 AM
22	Increased risk for property damage from storms, extreme cold or heat literally impacting the safety of leaving the house/performing basic tasks outside, impact on the water supply.	1/13/2024 9:20 PM
23	n/a	1/13/2024 5:47 PM
24	Food-air-water quality for future generations	1/13/2024 7:32 AM
25	Unable to moderate comfortable temperature inside house, flooding basement, worry of large tree falling.	1/12/2024 9:52 PM

26	basement flooding, Tornadoes, Hurricane	1/12/2024 9:37 PM
27	Basement flooding, effects of high water table, damp foundation, mold?	1/12/2024 8:22 PM
28	Power outages and house damage (leaks, etc)	1/12/2024 8:19 PM
29	Extreme temperature swings	1/12/2024 4:30 PM
30	Water quality/quantity over time. Change in possible agricultural options (warmer/colder may affect what crops can be grown in the area).	1/12/2024 4:14 PM
31	More intense and unpredictable storms which lead to property damage, disruption in school, etc	1/12/2024 2:24 PM
32	Extreme temperatures, especially during the summer, making it difficult to be outside for long periods of time.	1/12/2024 11:43 AM
33	Water contamination, unprecedented heat waves, flooding, food shortages due to inability to grow crops, overloading the grid (electric)	1/12/2024 11:43 AM
34	Concerned about having breathable air, ability to grow food, ocean levels rising making many parts of Massachusetts uninhabitable, more frequent flooding in more areas of town, more frequent power loss	1/12/2024 10:01 AM
35	Quality of drinking water. Cooling house/flooding/ vegetation dying due to drought stress.	1/12/2024 8:25 AM
36	NA	1/12/2024 7:59 AM
37	Flooding, extreme temperatures	1/11/2024 10:17 PM
38	Flooding, extreme hot, frozen pipes.	1/11/2024 9:39 PM
39	Basement flooding, loss of local wildlife, changes in traditional weather patterns	1/11/2024 9:26 PM
40	Flooding in my garage and basement, roof leaks, chimney and roof damage, trees falling down on my home, drought and heat drying up food supply for coyotes who then turn to humans for food, Sandra pond drying up resulting in reduced water supply, excessive heat overworking my HVAC system resulting in premature failure and high costs, mosquitos/ticks/bees/coyotes injuring people if not controlled	1/11/2024 8:48 PM
41	Flooding, sustainable local farms, excessive heat, poor air quality.	1/11/2024 7:47 PM
42	While I may be inconvenienced, for the most part, I feel that I am fairly priveledged in that my life will probably not be majorly impacted by natural hazards and/or climate change. While I think it is VERY important to prepare and change our actions since other people will be impacted, I hope that we can remember that our inconvenience is not the same as other peoples' major impacts.	1/11/2024 5:42 PM
43	Basement flooding	1/11/2024 5:34 PM
44	I'm concerned about the swings between drought and heavy precipitation, ice and snow affecting power grids, but also plant and animal populations, and eventually our global food system. Plus invasive pest species killing forests and damaging fish species. And increased risk of both coastal and river flooding but also forest fires across New England.	1/11/2024 5:20 PM
45	basement flooding	1/11/2024 4:49 PM
46	Basement flooding	1/11/2024 4:43 PM
47	Extremes in weather, basement flooding, crops affected by extremes in temperature as well as precipitation or lack thereof. Increase in tics and tic Bourne illnesses.	1/11/2024 4:42 PM
48	Extreme heat, rain instead of snow which increases flooding, growing food	1/11/2024 4:12 PM
49	Heavy snow and unplowed roads.	1/11/2024 3:11 PM
50	Sudden changes in weather pattern, basement flooding, severe and frequent storms, more snows.	1/11/2024 3:06 PM
51	Driving to work is often tough when school is not delayed or cancelled when there is a bad snowstorm or bad flooding.	1/11/2024 2:57 PM

52	I don't love that the mosquitos often have to be sprayed in town as this spray affects the farms in town.	1/11/2024 2:50 PM
53	ability to grow food	1/11/2024 2:32 PM
54	I am not worried about climate change. The climate has always been changing.	1/11/2024 2:28 PM
55	basement flooding, being extremely hot, getting sick due to poor air quality	1/11/2024 2:25 PM
56	All of the above. Extreme weather, spread of disease in both people and plants, people displaced, food shortages, flooding, etc	1/11/2024 2:25 PM
57	ability to grow food, stop putting fluoride in our public water supply, flourine is a neurotoxin	1/11/2024 2:20 PM
58	Water contamination More illness Basement flooding Roof leakage Personal safety	1/11/2024 2:11 PM
59	reliability of the electric grid	1/11/2024 2:10 PM
60	My children’s school being damaged from old roof not being able to sustain poor weather conditions as well as my basement and yard.	1/11/2024 2:08 PM
61	Basement flooding	1/11/2024 2:04 PM
62	Trees falling	1/11/2024 1:51 PM
63	Water, Sewer, and storm water infrastructure. These are the most important items that our town supplies us with. We need to continue to improve them.	1/11/2024 1:49 PM
64	Wells drying out, contamination of wells,	1/11/2024 1:43 PM
65	Basement flooding,	1/11/2024 1:39 PM
66	Trees and power outages	1/11/2024 1:22 PM
67	Destruction from wind and flooding	1/11/2024 1:20 PM
68	I am most concerned about flooding, trees falling on my home, and food and water access significantly diminishing in my lifetime and in the lifetimes of my children.	1/11/2024 1:11 PM
69	Basement flood, trees falling on house	1/11/2024 1:06 PM
70	Water drying out; pollinators dying out	1/11/2024 1:00 PM
71	contamination of drinking water	1/11/2024 12:54 PM
72	Children’s health/wellbeing , more severe storms, air quality, storm water drainage, flooding	1/11/2024 12:46 PM
73	Contamination to water supply, structural damage, mold potential and promote insect infestations	1/11/2024 12:43 PM
74	Pollution, rising oceans, increasing temperatures, increased number of weather events, depletion of the ozone layer, access to clean water/food.	1/11/2024 12:42 PM
75	Basement flooding	1/11/2024 12:32 PM
76	Ability to grow food; damage to property from severe storms	1/11/2024 12:30 PM
77	Immediate: increased risk of mosquito-borne illness; Longer-term: Economic burdens of required response/repair to climate change	1/11/2024 12:28 PM
78	Feeling safe being outdoors.	1/11/2024 12:28 PM
79	Yes, basement flooding. The microburst was very scary and created a lot of damage to my property.	1/11/2024 12:26 PM
80	Closing some of roads because of flood and Power outage because everything works with power you can not cook and take shower	1/11/2024 12:22 PM
81	I think the town should think about ways to minimize (street) flooding , power outages (trees down). But it has to be balanced with resources/budget.	1/11/2024 12:17 PM
82	damage to the ecosystem as a whole and ability to sustain life	1/11/2024 12:16 PM
83	Ability to grow food, basement flooding, extended power outages	1/11/2024 12:13 PM

84	changes to ecosystem - trees and plants dying, pollinators, animal habitats	1/11/2024 12:13 PM
85	Power outages. It would be very helpful to have natural gas available since it is a cleaner, efficient energy source that can be used during an electrical outage (stove top cooking, etc). Also, this is more cost effective than oil heating and would provide additional income to the town of Westborough.	1/11/2024 12:12 PM
86	Ability to endure extreme temperatures. Increased drain on power grids leading to more frequent and longer outages as well as higher costs. Worsening air quality. Effects on food supply including availability and cost.	1/11/2024 12:08 PM
87	Unsure	1/11/2024 12:05 PM
88	basement damage, ability to stay warm in extreme cold	1/11/2024 11:58 AM
89	Ability to grow food. I plan on having. Garden	1/11/2024 11:54 AM
90	basement flooding, contamination of water supply / lack of water supply, drought conditions for landcapes and gardens, ability to grow food, contamination of natural bodies of water	1/11/2024 11:44 AM
91	Basement flooding / contamination of water supplies / low or diminished water supply / damage to infrastructure (trees felling power lines; roads washed out; water mains impacted... etc)	1/11/2024 11:44 AM
92	Basement flooding, trees falling	1/11/2024 11:43 AM
93	basement flooding, water contamination, food supply, ability to cool down and warm up	1/11/2024 11:37 AM
94	Extreme flooding and wildfires	1/11/2024 11:34 AM
95	I am concerned about extreme flooding and droughts affecting our farms	1/11/2024 11:31 AM
96	Flooding in basements, droughts which may affect food supply and damage to home, property and public buildings that I frequent because of extreme weather.	1/11/2024 11:31 AM
97	Basement flooding	1/11/2024 11:30 AM
98	Power outages, ability to grow food in our gardens, wind damage to our home	1/11/2024 11:28 AM
99	snow	1/11/2024 11:21 AM
100	Both water damage from too much rain (vs snow), and drought, high winds causing property damage, and icy hazardous driving and walking conditions	1/11/2024 11:18 AM
101	Basement flooding, water contamination.	1/11/2024 11:17 AM
102	Extended Power Outages & Internet connectivity	1/11/2024 11:17 AM
103	basement and garage flooding, backyard flooding, street flooding, and also draught making it harder to grow our own food. During draught, risk of brush fire.	1/11/2024 11:16 AM
104	Flooding, natural ecosystems, disease, food growth	1/11/2024 11:16 AM
105	Cost of utilities..ac in summer...water compromising my foundation and basement flooding	1/11/2024 11:15 AM
106	Basement flooding, down trees	1/11/2024 11:10 AM
107	drought that impacts more seriously ability to grow plants, consume, clean and increase in severe thunderstorms leading to more tornadic activity,	1/11/2024 11:09 AM
108	Flooding, exposure to mold, difficulty managing garden/growing food	1/11/2024 11:09 AM
109	Basement flooding	1/11/2024 11:09 AM
110	House flood	1/11/2024 11:08 AM
111	safe drinking water; overall environmental health; threats to species survival	1/11/2024 11:07 AM
112	Extreme cold if power goes out.	1/11/2024 11:06 AM
113	Safety and reliability of water sources	1/11/2024 11:05 AM
114	I am worried about flooding in some areas. I am also concerned about our schools not being airconditioned and the high temperatures that we have been getting in June, August and September.	1/11/2024 11:04 AM

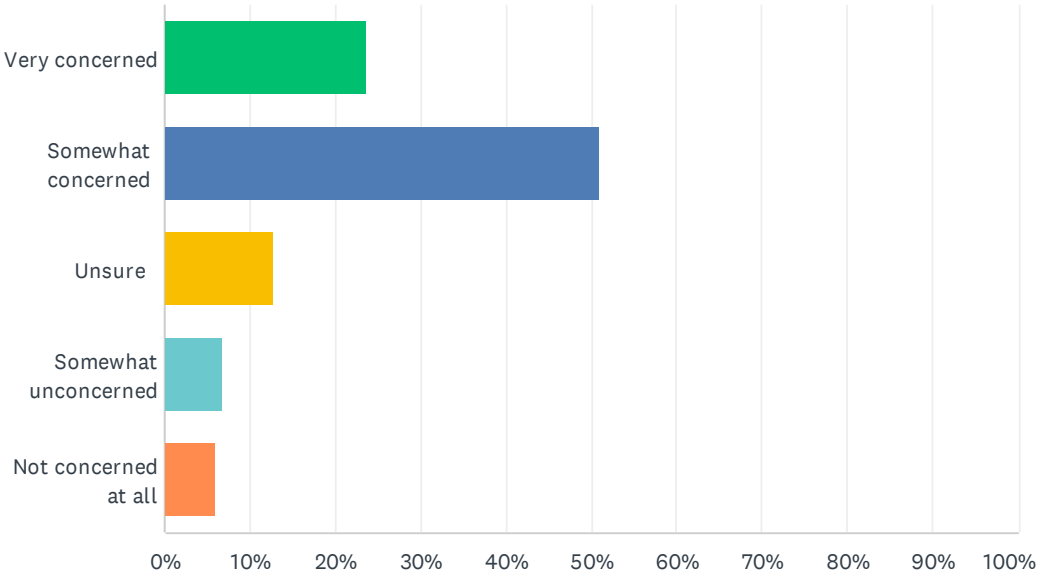
115	Basement flooding	1/11/2024 11:04 AM
116	basement flooding	1/11/2024 11:00 AM
117	Basement flooding and not being able to use wells.	1/11/2024 10:59 AM
118	Excessive rainfall (snowmelt) is causing recurring basement flooding potential, mostly managed, and runoff across residential property lines. Wind damage, either direct or via tree and limb falls, is a concern. Longer-term and broader concerns include town water supply, potential fire hazards from extensive forestation in the event of drought. Too much water too quickly or too little water for too long.	1/11/2024 10:57 AM
119	basement flooding, Impassible roads, power outages	1/11/2024 10:56 AM
120	I am concerned about natural hazards, I am NOT concerned about climate change. These are two very distinct topics and should NOT be joined together.	1/11/2024 10:55 AM
121	wells drying out, ability to grow food, road safety	1/11/2024 10:55 AM
122	Yard erosion, basement flooding, trees falling on house, cars parked on sidewalks damaging my septic pipes underneath, unsafe slippery pedestrian conditions because snow not cleared from sidewalk and cars are parked in sidewalk.	1/11/2024 10:53 AM
123	basement flooding, fallen tree's	1/11/2024 10:53 AM
124	The house we rent do not have good maintenance or insulation so the cold weather or the humidity is hard here.	1/11/2024 10:51 AM
125	Not concerned.	1/11/2024 10:51 AM
126	Our next generation.	1/11/2024 10:49 AM
127	Basement flooding, roof caving	1/11/2024 10:48 AM
128	Basement flooding	1/11/2024 10:48 AM
129	Ability to grow food and more Extreme weather problems	1/11/2024 10:46 AM
130	Baesment flooding	1/11/2024 10:46 AM
131	Extreme weather events.	1/11/2024 10:46 AM
132	Ability to garden, basement flooding, slick roadways	1/11/2024 10:46 AM
133	basement flooding	1/11/2024 10:46 AM
134	My yard is saturated!!!! Almost unusable.	1/11/2024 10:46 AM
135	We need power to do basic things, falling trees come close to our house	1/11/2024 10:45 AM
136	Natural hazards are always concerned. With regards to wastewater or flooding, but the effects of climate change are negligible on our town	1/11/2024 10:45 AM
137	Flooding and ice on ruggles street	1/11/2024 10:44 AM
138	Concerned about wells drying out	1/11/2024 10:43 AM
139	Trees damaging our home, basement flooding.	1/11/2024 10:43 AM
140	Basement flooding	1/11/2024 10:43 AM
141	Ability to grow food. Impact on natural resources. Clean air.	1/11/2024 10:41 AM
142	Loss of plants from drought. Damage to home and property from severe storms.	1/10/2024 11:15 AM
143	All of the above	1/6/2024 7:12 PM
144	Contamination of wells, repeated flooding causing degradation to infrastructure. High winds causing downed powerless due to the poor health of trees due to changing climate and invasive species. Water contamination due to repeated flooding.	1/6/2024 3:22 PM
145	Harder to grow vegetables, trees coming down on our property due to high winds / storms	1/6/2024 7:29 AM

146	wells drying out, lawn grass loss, extreme cold, loss of power, basement flooding	1/5/2024 9:41 PM
147	Heat and drought	1/5/2024 4:11 PM
148	Extreme heat, extreme storms (rain, snow, wind, ice). Warm winters killing trees and leaving Lyme disease carrying ticks alive.	1/5/2024 3:34 PM
149	Flooding	1/5/2024 1:18 PM
150	Lack of drinking water, impacts on electrical systems, heating/cooling, financial repercussions of damage or scarcity issues	1/5/2024 1:09 PM
151	Power outages	1/5/2024 11:49 AM
152	Contamination of wells from water runoff flooding of pumping stations during high rain events. This needs to be addressed at several pump stations in town. It was a crying shame that the new proposed pump station at Hopkinton Rd and Upton Rd was voted down **REDACTED**. I was ashamed.	1/5/2024 10:30 AM
153	Basement flooding, general outdoor flooding, power access, drought	1/5/2024 9:50 AM
154	basement and road way flooding	1/5/2024 9:01 AM
155	Basement flooding Strong winds bringing down the many older trees in the area	1/5/2024 1:12 AM
156	Basement Flooding, downed trees damaging structures, downed power lines.	1/4/2024 9:41 PM
157	Locally, I am concerned about an increase in insect-borne diseases. Ticks are not dying in the Winter like they used to, so even playing in the lawn can lead to tick bites. Tick borne diseases are no longer limited to Lyme disease. Mosquitos migrating from the deep South can carry formerly tropical diseases like Dengue, Zika, yellow fever and maybe someday malaria. Anopheles mosquitos have already been observed in Connecticut, which can carry these diseases. Increased weather instability is a concern, as more frequent intense storms are already occurring. The 2016 microburst did a lot of damage in the area and a tornado like the one that ripped through Munson MA in 2011 is far more likely than even a decade ago.	1/4/2024 8:27 PM
158	basement flooding	1/4/2024 7:34 PM
159	Damage to local regions affecting food sources (primarily concerned with heavy rains in our region). Diseases becoming more common. Affects on local wildlife reducing biodiversity which affects farms and stability of the environment around us in numerous ways.	1/4/2024 7:11 PM
160	no	1/4/2024 6:49 PM
161	Basement flooding. Roof damage. Extended power outages.	1/4/2024 6:42 PM
162	Power outages	1/4/2024 6:42 PM
163	I am 91 years old **REDACTED**. So far I have had no problems with environmental change, and I probably will be gone before the problems worsen. I am concerned about future generations, including grandchildren.	1/4/2024 5:38 PM
164	Street flooding, damaged or dying trees, health issues from poor air quality.	1/4/2024 4:36 PM
165	Basement flooding and water supply issues	1/4/2024 4:23 PM
166	increased flooding in winter/spring, drought in summers. Starting a vegetable garden this year, and concerned about ability to grow and harvest plants because of weather extremes	1/4/2024 2:48 PM
167	are we set up to sustain long term or do immediate changes need to be made. unsure of how our town compares to others around and in the state.	1/4/2024 2:28 PM
168	General flooding, wells drying out. Trees falling from wet ground.	1/4/2024 2:27 PM
169	Water supply shortage and contamination by industry and loss of habitats	1/4/2024 1:56 PM
170	flooding, damage to home/property, contamination of water supply, increased risk of infectious disease for people and pets, etc	1/4/2024 1:50 PM
171	Basement flooding	1/4/2024 1:38 PM
172	Drought and increased severity of storms all year.	1/4/2024 1:01 PM

173	Basement flooding (mainly do to poor management of storm drain system by town, which has improved), power outages due to unreliable sources of electricity.	1/4/2024 12:58 PM
174	Negative impact on outdoor recreation (sledding, skating, hiking in excessive heat); loss of biodiversity; significant risk that devastating pests will reach the area before slower-evolving trees are able to adapt; increase of Lyme, EEE, West Nile, etc.	1/4/2024 12:55 PM
175	I have experienced water in my basement as well as my well drying out. If rain or drought were for an extended period of time, it would affect my life.	1/4/2024 12:44 PM
176	I am not concerned - especially not concerned about the water table which renews itself. Wells do dry out but can be re-dug. Climate change is a political ideology and has distorted environmental science so that it is difficult to understand just which environmental issues should be our public concern.	1/4/2024 12:43 PM
177	Some concern of draight changing the appearance of our property. Some concern over a change in wildlife, tics and mosquitos, especially after warm winters when these don't die off. Increase in mosquito and tic-born illnesses.	1/4/2024 12:27 PM
178	Food will become more expensive and local farms (where I get my CSA) may struggle more. Downed trees and powerlines seem to an issue for the town in general more often, although I'm in a neighborhood with underground wires and are more protected from that.	1/4/2024 12:24 PM
179	drought, flooding in my basement, inability to grow food in my garden due to extreme heat and drought	1/4/2024 11:58 AM
180	Overhanging hanging branches are safety issue, mosquitos can carry (spread?) disease, invasive plant species threaten indigenous species, some of the invasive kill trees that then poses safety issue, trees and shrubs that may either limit visibility or cause injury for drivers and pedestrians	1/4/2024 11:20 AM
181	We worry about the quality of our well water.	1/4/2024 10:09 AM
182	none	1/4/2024 9:57 AM
183	Decrease in food supply & increase in pricing; too hot; extreme weather conditions causing more trees to fall; more & more severe rain events;	1/4/2024 9:53 AM
184	Main concerns are flooding of home, drought drying out wells and extreme heat in power outages	1/4/2024 8:55 AM
185	More concerned about the road conditions outside our house after a winter. Potholes that could take out your car suspension.	1/4/2024 8:22 AM
186	Drought will impact my ability to grow food	1/4/2024 12:03 AM
187	All of the above	1/3/2024 11:54 PM
188	Basement flooding. General concerns about water supply.	1/3/2024 11:00 PM
189	Lack of action by DPW to mitigate constant flooding issue.	1/3/2024 10:44 PM
190	Depletion of our water supply, electric grid with insufficient capacity for the demand, habitat loss as climates warm.	1/3/2024 10:29 PM
191	Lack of clean water and access to food	1/3/2024 9:20 PM
192	Basement flooding, loss of plants and trees to drought and extreme weather, mosquito borne illness making it hard to enjoy property outside.	1/3/2024 8:48 PM
193	The changes the climate brings to ticks and mosquitoes in our area. Without a deep winter freeze we see more insects and more seem to have diseases.	1/3/2024 8:39 PM
194	Famine and war	1/3/2024 8:36 PM
195	Basement flooding. Extended power outages due to ice causing heat issues.	1/3/2024 8:35 PM

Q6 How concerned are you about the impacts that natural hazards and climate change will have on the Town of Westborough (the local infrastructure, economy, environment, and/or town residents)?

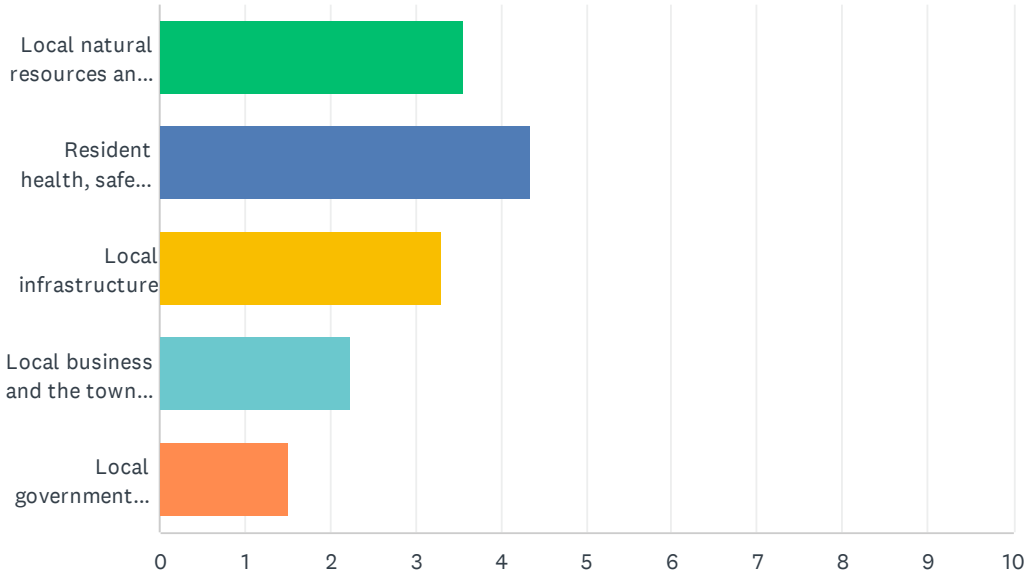
Answered: 267 Skipped: 2



ANSWER CHOICES	RESPONSES	
Very concerned	23.60%	63
Somewhat concerned	50.94%	136
Unsure	12.73%	34
Somewhat unconcerned	6.74%	18
Not concerned at all	5.99%	16
TOTAL		267

Q7 What community assets are you most concerned about when you consider the potential impact of natural hazards and climate change on the Town of Westborough? Rank the responses below in order from most concerned about (1) to least concerned about (5).

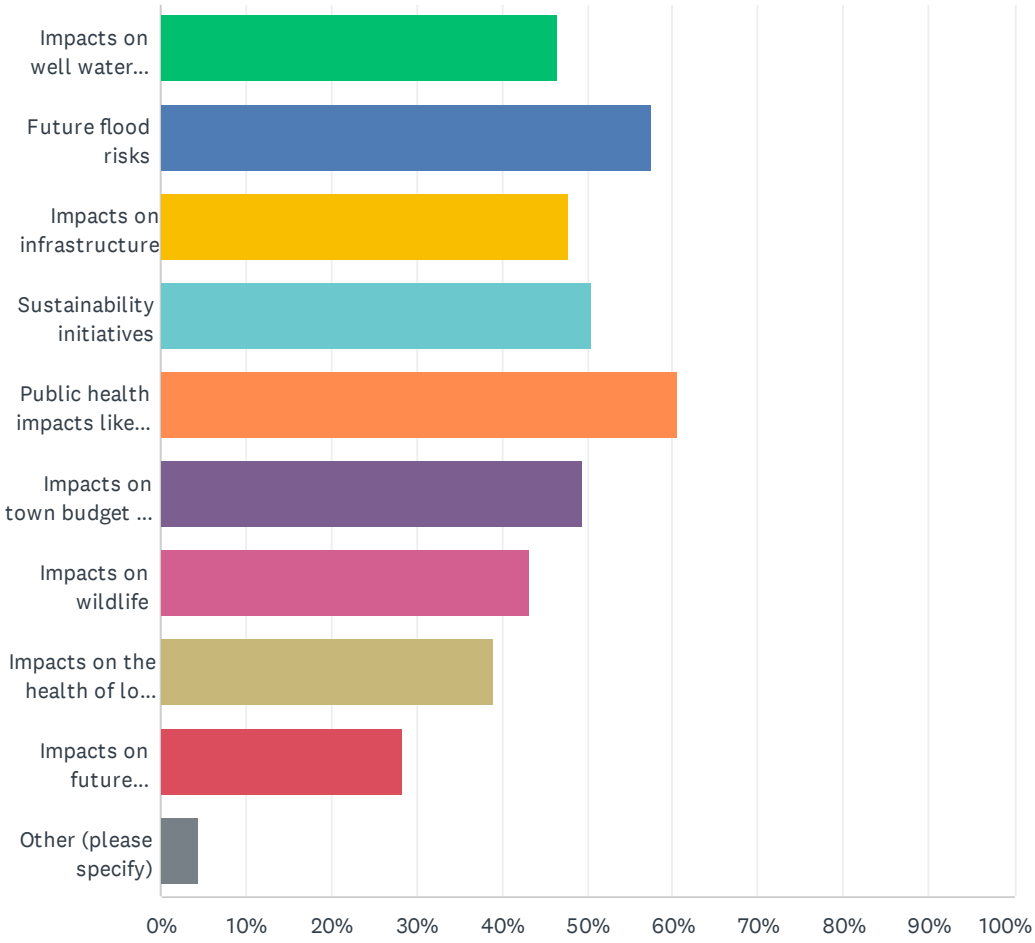
Answered: 253 Skipped: 16



	1	2	3	4	5	TOTAL	SCORE
Local natural resources and environments	25.69% 65	33.99% 86	19.76% 50	13.04% 33	7.51% 19	253	3.57
Resident health, safety, and property	57.31% 145	28.46% 72	8.70% 22	4.35% 11	1.19% 3	253	4.36
Local infrastructure	13.04% 33	28.46% 72	39.13% 99	14.62% 37	4.74% 12	253	3.30
Local business and the town economy	2.77% 7	5.14% 13	22.53% 57	52.17% 132	17.39% 44	253	2.24
Local government resources	1.19% 3	3.95% 10	9.88% 25	15.81% 40	69.17% 175	253	1.52

Q8 Which of the following aspects of natural hazards and climate change would you like to learn more about? Select all that you are interested in.

Answered: 243 Skipped: 26



ANSWER CHOICES	RESPONSES	
Impacts on well water quantity / quality	46.50%	113
Future flood risks	57.61%	140
Impacts on infrastructure	47.74%	116
Sustainability initiatives	50.62%	123
Public health impacts like increased risks of vector-borne disease (ex. Lyme disease, West Nile virus, EEE - Eastern equine encephalitis)	60.49%	147
Impacts on town budget and finances	49.38%	120
Impacts on wildlife	43.21%	105
Impacts on the health of local forests	39.09%	95
Impacts on future development	28.40%	69
Other (please specify)	4.53%	11
Total Respondents: 243		

#	OTHER (PLEASE SPECIFY)	DATE
1	Impacts on our youth and future generations	1/22/2024 7:47 AM
2	I don't believe the climate will have any impact on Westborough	1/12/2024 7:59 AM
3	n/a	1/11/2024 2:57 PM
4	main concern is having poor leaders making decisions	1/11/2024 2:20 PM
5	Shelter Plan for tornados	1/11/2024 12:32 PM
6	Winter storm, Tornadoes	1/11/2024 11:17 AM
7	If Westborough does not stop building huge mansions (McMansions) there is no hope. Homes need to be high capacity (ie: condos and apartments) or tiny homes.	1/11/2024 11:16 AM
8	Drainage	1/11/2024 11:04 AM
9	None	1/11/2024 10:43 AM
10	I would very much like to understand how the town is factoring in climate change risks as it approves so many new developments!	1/4/2024 12:55 PM
11	None - this is again a political agenda being driven by lobbyists who are helping those manufacturing and selling solar, wind etc to gain access to the billions of tax payer dollars available through subsidies	1/4/2024 12:43 PM

Q9 What actions should the Town of Westborough take to cultivate local resilience to natural hazards?Examples: increase local capacity to apply for hazard mitigation grant funding and implement hazard mitigation projects; improve storm water management; provide more education and outreach about how climate change could impact my life; encourage planting climate-resilient tree species; encourage cutting/trimming dead trees beside/hanging over roads; etc.

Answered: 156 Skipped: 113

#	RESPONSES	DATE
1	Education and outreach, potential hazard mitigation/adaptation.	4/2/2024 2:37 PM
2	All if the above!	3/17/2024 3:55 PM
3	Storm water management. Look for grant opportunities to improve infrastructure and preparedness.	3/16/2024 8:01 PM
4	Prepare for more erratic weather, trim trees near elevated wires. Stop using fertilizers near water bodies specifically fields near chancy pond.	1/28/2024 7:00 PM
5	Stop building on wet land and land that would help drain the water.	1/26/2024 12:59 PM
6	encourage low fertilizer use in residential property	1/23/2024 1:02 PM
7	I bow to the experts	1/22/2024 7:47 AM
8	Provide more education/outreach about climate change impacts, encourage responsible/sustainable living. Zero Waste Westborough is a great initiative. I have not heard much about it lately. Also provide education/outreach on the closure of Harvey's will affect the town residents. It closing in June and I feel left in the dark.	1/20/2024 8:57 AM
9	Unknown	1/16/2024 10:22 PM
10	Cancel school and events more liberally to keep people off dangerous roads.	1/16/2024 5:59 AM
11	Planning for hazards/disasters. Smart choices for construction (no filling in low lands, stop clear cutting for developments)	1/15/2024 5:12 PM
12	Definitely look at trimming/removing trees near power lines. In the long-term, consider burring lines.	1/15/2024 4:32 PM
13	Improve storm water management; encourage planting of climate-resistant plants.	1/15/2024 2:01 PM
14	Implementation of hazard mitigation projects - either via grant or town budget; if needed to be by town budget, educate the population of the importance of supporting such initiatives.	1/13/2024 9:20 PM
15	improve water storage	1/13/2024 5:47 PM
16	Increase applications for hazard mitigation grant funding; increase planting of trees; improve sustainability education and improved regulations for recycling/handling/processing at transfer station.	1/13/2024 7:32 AM
17	improve storm water management; provide more education and outreach about how climate change could impact my life;	1/12/2024 9:37 PM
18	No more new apartment developments in westborough	1/12/2024 8:19 PM
19	Improving runoff water systems	1/12/2024 4:30 PM
20	Maintenance of roads (tree pruning). Planting and cultivating sustainable practices such as	1/12/2024 2:24 PM

	planting natives and natural buffers for flood risk	
21	Provide more education and outreach about how climate change could impact my life; encourage planting climate-resilient tree species	1/12/2024 11:43 AM
22	Increase hazard mitigation funding, provide more education and outreach on climate change	1/12/2024 11:43 AM
23	Provide education about renewable energy, research and make available (if possible) funding to residents for renewable energy for their homes, improve storm water management, plant climate-resilient tree species, cut or trim dead trees near roads, provide more education to residents about how climate change impacts our lives	1/12/2024 10:01 AM
24	Aggressively pursue clean drinking water. Remove dead/dangerous trees especially near roads/wires and replace with lower varieties. Work on electrical issues on WMain, water main issues on E Main.	1/12/2024 8:25 AM
25	Reserve water storage	1/12/2024 7:38 AM
26	Improve storm management. We can't go without elecricity these days.	1/11/2024 9:39 PM
27	Cutting trimming dead trees near roads	1/11/2024 9:26 PM
28	Educate about Home Energy Management solutions and what can be done to impact climate change	1/11/2024 8:48 PM
29	Ensure clean drinking water,	1/11/2024 7:47 PM
30	Implement hazard mitigation project	1/11/2024 5:34 PM
31	Hazard mitigation grants are increasingly available and we should apply. NOAA is forming a new CAP region in Upper New England and Central Mass should be included. More education and outreac so everyone is aware of the local hazards and vulnerabilities!	1/11/2024 5:20 PM
32	improve storm water management	1/11/2024 4:43 PM
33	Encouraging climate and environment friendly practices for residents and businesses.	1/11/2024 4:42 PM
34	All the examples sound great. However, I believe that the town should prioritize local activities that will have a direct impact on our community. For instance, we could focus on increasing the local capacity to apply for hazard mitigation, encouraging the cutting or trimming of dead trees beside or hanging over roads, and improving our preparedness for extreme conditions that are likely to occur more frequently in the future.	1/11/2024 4:39 PM
35	Investing in and helping make accessible to residents green initiatives like sustainable options for energy consumption, food production/waste, transportation	1/11/2024 4:12 PM
36	Need natural gas access. It’s is economically and more environment friendly than burning oil. Natural gas is also economical overall boosting the town economy	1/11/2024 3:11 PM
37	Cutting dead tees, improve storm water management, provide education about climate change and its impact	1/11/2024 3:06 PM
38	Improve road safety, improve school building structures (Armstrong/Hastings).	1/11/2024 2:57 PM
39	encourage and assist with tree trimming when limbs/trees hang over roads/power lines, etc.	1/11/2024 2:50 PM
40	Dredge the brooks to allow water to flow out to cedar swamp and the Sudbury River.	1/11/2024 2:28 PM
41	Efforts to get people to vote for Biden instead of Trump	1/11/2024 2:25 PM
42	Provide more education on what effects we could experience from climate change and what we can do as a community to mitigate them. I would like to have volunteer opportunities made available to help with this.	1/11/2024 2:25 PM
43	Have National Grid cut trees down around power lines. Have them uses their billions in revenue to improve delivery of power to homes	1/11/2024 2:20 PM
44	All of the above.	1/11/2024 2:11 PM
45	Stop increasing taxes, but make actions	1/11/2024 2:05 PM
46	trimming dead trees	1/11/2024 1:51 PM

47	More funding for the department of public works. Increase DPW Workforce	1/11/2024 1:49 PM
48	Create various contingency plans for potential hazards and engage and share with the community	1/11/2024 1:22 PM
49	provide more education and outreach about how climate change could impact residents' lives; provide examples as to how we can live differently to reduce climate change	1/11/2024 1:20 PM
50	The Town of Westborough should have a clear plan for how to keep public buildings as shelters safe at all times. For example, Hastings' roof should be shoveled manually at all times - it may be needed as a shelter during climate emergencies.	1/11/2024 1:11 PM
51	Only make decisions based on credible threats not perceived threats drummed up for financial gain.	1/11/2024 12:54 PM
52	We need to solve storm water management - as seen from the last few storms, increase education on what residents can do to assist in efforts - provide materials to get residents started with rain barrels, gardens and increasing tree populatio	1/11/2024 12:46 PM
53	Improve education/outreach, encourage/enforce better sustainability practices for local residents and businesses	1/11/2024 12:42 PM
54	Grant funding	1/11/2024 12:32 PM
55	No more committees. Employee personnel are very knowledgeable.	1/11/2024 12:30 PM
56	Continued focus on native plants; perhaps free/reduced cost native plant giveaways; reduced cost rain barrels again; ideas for treatment of climate induced diseases like blight (early/late blight affecting tomatoes etc)	1/11/2024 12:30 PM
57	Improve tree cutting/bolster strengths of electric/data wires; more funding for mosquito/tick control	1/11/2024 12:28 PM
58	Ensuring a more equitable distribution of funds for building maintenance and improvements. This latest issue at Hastings Elementary underscores an obvious disparity considering the enormous investments made at Fales Elementary and others. Functional improvements should be given priority over aesthetic ones. Emphasizing a “One Westborough” approach feels necessary as investments don’t seem equitable distributed throughout town.	1/11/2024 12:28 PM
59	I believe all these need to be carefully considered. Thank you for sending this survey.	1/11/2024 12:26 PM
60	Gathering town engineers and specialists for Fixing up the hazard places , in and around the town , doing a very good job to stay for future residents too	1/11/2024 12:22 PM
61	Clean catch basins/drains. Cut/trim trees near roads/wires.	1/11/2024 12:17 PM
62	involve schools in projects that help support the local environment while raising awareness of these issues	1/11/2024 12:16 PM
63	Improve storm water management, protect vulnerable homes, incentives for solar/sustainable/renewable power on homes	1/11/2024 12:13 PM
64	encourage creation of sustainable ecosystem, climate resilient trees and plants	1/11/2024 12:13 PM
65	Provide natural gas access to all residents of Westborough. This is useful for cooking during power outages and gives residents more options for heating during the colder periods. Natural gas is also cleaner than oil heating.	1/11/2024 12:12 PM
66	Pivot toward action on building sustainable models for infrastructure and utility systems. Also investigate and pursue how sustainable models can be implemented in other services like local education, access to government services and support, etc.	1/11/2024 12:08 PM
67	Unsure Provide more education/ outreach on how climate change could impact us	1/11/2024 12:05 PM
68	Encourage cutting/trimming dead trees hanging over roads.	1/11/2024 12:01 PM
69	implement hazard mitigation projects, improve storm water management, encourage planting climate-resilient tree species, encourage cutting/trimming of dead trees	1/11/2024 11:44 AM
70	Storm water management; trimming trees near power lines/roads	1/11/2024 11:44 AM
71	Improving storm water mgmt, Prevention of trees falling and impacting property or traffic	1/11/2024 11:43 AM

	routes, prevention of school damage due to storms	
72	I would like to know if there are any warning systems in place for the larger reservoir dams in town due to major rain events we now witness.	1/11/2024 11:34 AM
73	Make sure the development of our town does not negatively impact our resources and safety	1/11/2024 11:31 AM
74	More outreach and education programs, access to resources about the issues and how they have real impact on people’s lives.	1/11/2024 11:28 AM
75	Road management on steep roads (more salting, plowing, dirt, and priority). Town pro activity and resident education on tree and bush maintenance for safety.	1/11/2024 11:18 AM
76	encourage cutting/trimming dead trees beside/hanging over roads; taking good care of power cable on the road	1/11/2024 11:17 AM
77	cutting/trimming dead trees, stop approving McMansions (change zoning ONLY for high-capacity homes--condos and apartments); increase flood prevention including storm water management but also planting rain gardens throughout the town	1/11/2024 11:16 AM
78	All of the above, plus perhaps incentive programs through mass save or something to help aid individuals upgrade their homes to protect them from the impacts of climate change (similar to solar panel incentives)	1/11/2024 11:16 AM
79	I trust that you know more about this then I do. I would like to see more efforts to go green...solar, food waste composted at schools...	1/11/2024 11:15 AM
80	Grant funding, education about potential threats and ways to improve chance of success, information on planting	1/11/2024 11:09 AM
81	Encourage cutting/trimming trees and limbs over power lines and over roads. Improve storm water management. Stop people from blowing leaves into the street (education needed, not known that its not allowed/good). Education to clear your sidewalk.	1/11/2024 11:09 AM
82	Have a ready plan in case schools are closed due to flooding. Consider kicking out early childhood for the day and prioritizing the elementary school Also plan to keep schools open in case of pandemic. The Covid virtual solution was not acceptable and should never happen again.	1/11/2024 11:08 AM
83	I don't know	1/11/2024 11:07 AM
84	Don’t build on areas that will flood	1/11/2024 11:06 AM
85	Storm water management Tree management over roads Planting trees Awareness of diseases (for people and plants) caused by insects	1/11/2024 11:05 AM
86	planning and funding hazard mitigation projects	1/11/2024 11:00 AM
87	The likely impact will be precipitation frequency. Likely more periods of heavy precipitation, then periods of less. Thus steps to manage excess and, perhaps, better store it for periods of drought.	1/11/2024 10:57 AM
88	improve storm water management; encourage cutting/trimming dead trees beside/hanging over roads	1/11/2024 10:56 AM
89	Managing trees along roads and power lines and managing storm water drainage.	1/11/2024 10:56 AM
90	improve storm water management; push on National grid to move power lines to underground and or increase cutting schedule frequency for branches / trees in / near power lines.	1/11/2024 10:55 AM
91	increase local capacity to apply for hazard mitigation grant funding and implement hazard mitigation projects; improve storm water management; provide more education and outreach about how climate change could impact my life; encourage planting climate-resilient tree species; encourage cutting/trimming dead trees beside/hanging over roads	1/11/2024 10:55 AM
92	More town oversight and law enforcement of winter parking bans & sidewalk & fire hydrant clearing, dog waste rules. More education or resource communication about tree maintenance.	1/11/2024 10:53 AM
93	I believe that the town of Westborough along with the utility companies that service us do a fine job in keeping us informed and responding to and anticipating the occasional interruptions in or services.	1/11/2024 10:51 AM

94	provide more education and outreach about how climate change could impact my life; encourage planting climate-resilient tree species;	1/11/2024 10:49 AM
95	Everything.	1/11/2024 10:49 AM
96	increase local capacity to apply for hazard mitigation grant funding and implement hazard mitigation projects; improve storm water management; encourage cutting/trimming dead trees beside/hanging over roads	1/11/2024 10:48 AM
97	Helping with climate change education and resources for plantings etc	1/11/2024 10:46 AM
98	Trimming dead trees. Plant resilient trees.	1/11/2024 10:46 AM
99	Educate & outreach	1/11/2024 10:46 AM
100	Improve storm water management and encourage Cut/trim dead trees beside/hanging over roads. Proactively address mosquitoes (EEE)	1/11/2024 10:46 AM
101	Fix the power faster and actually care about roads that aren't downtown	1/11/2024 10:45 AM
102	Some of the biggest hazards we have in town aren't environmental. The constant bridge/ truck collisions and car accidents on route 9 are a much bigger concern that need to be addressed first and foremost before we get into other areas of the environment. While the environment is extremely important, imagine the disastrous nature our town would face if the bridge was deemed unpassable and the commuter rail and CSX were not allowed to pass through Westborough	1/11/2024 10:45 AM
103	Improve storm water management, improve sewer system, improve drainage in road areas with steep grades, improve traffic control systems in downtown areas.	1/11/2024 10:44 AM
104	Make sure people are aware	1/11/2024 10:43 AM
105	Hazard mitigation and cutting dead trees	1/11/2024 10:43 AM
106	Items 1,2,4 and 5 under “Examples”	1/10/2024 11:15 AM
107	All of the examples seem appropriate	1/8/2024 6:09 AM
108	Improve infrastructure, notably putting power lines underground. Flood water runoff and chemical storage away from flood prone areas. Better management of natural areas in and around town. Mitigation of invasive species. Mosquito control. Introduction of energy efficient measures in public places, including alternative power sources. Increased community education about the science behind climate change and how it will affect the town, including in the schools.	1/6/2024 3:22 PM
109	More study of local water resources, both how much drinkable water is available for use and how waste water is managed, to determine the limits to this resource in order to effectively plan for the future.	1/6/2024 11:19 AM
110	improve storm water management, better tree health management	1/6/2024 7:29 AM
111	Improve water management, better draining on floods	1/5/2024 9:41 PM
112	Encourage residents to take action that we can do to help with mitigation.	1/5/2024 4:11 PM
113	Hazard mitigation grant funding sounds like a good idea. All of the above listed actions sound important to me. We also need to reduce fossil fuel use.	1/5/2024 3:41 PM
114	Stop allowing natural gas in new developments. Provide more education about native plants and trees.	1/5/2024 3:34 PM
115	More trimming trees and such mitigation projects to reduce power outages	1/5/2024 11:49 AM
116	I will give an example of how a situation could have been handled differently if framed differently, just based on an example I gave before. I'll quote myself: "It was a crying shame that the new proposed pump station at Hopkinton Rd and Upton Rd was voted down..." I believe that there was an opportunity at that special town meeting for this single issue to have been more clearly described as a necessity and therefore adopted by residents. I would have advised the town engineer to describe it as such: This new pumping station is required for several reasons: 1. to adapt to climate change and rising local water levels, 2. by building a new pumping station at a higher elevation than the existing one to rise above water levels, 3.	1/5/2024 10:30 AM

	and thereby mitigating the risk that the water would be contaminated by street runoff or septic overflow runoff, 4. and all in the same stroke, reduce the manpower and physical requirements of a town worker regularly hauling 50gal drums of "water softening salts" into the pumping system (not just "chemicals", come on really, you can't just say "chemicals" to people, it's like a dirty word...you gotta say it in terms they understand).	
117	Cultivating a supportive and inclusive community to join together for creative problem solving and mutual aid	1/5/2024 9:50 AM
118	Provide more education and outreach.	1/5/2024 9:13 AM
119	I think we need to improve flood planning on roadways and around neighbors. If appropriate, consider purchasing property to create purposeful flood plain to prevent road/residential flooding.	1/5/2024 9:01 AM
120	I'm not sure. This is way beyond my knowledge. What would have the biggest impact?	1/5/2024 7:31 AM
121	Encourage cutting/trimming dead trees Improve storm water management Hazard mitigation grant funding applications	1/5/2024 1:12 AM
122	Protecting and reinforcing local infrastructure against major storms and flooding. Replacing outdated stormwater infrastructure that can no longer handle the more frequent storms.	1/4/2024 8:27 PM
123	Implementing climate friendly infrastructure (bicycle parking as common as car parking or more, as one example), continue building out sidewalks, places for those without air conditioners to go in heat waves, prepare our wastewater facilities and roads to handle the new expectation for 100+ year storms, educate folks on ways to manage their property while reducing drought issues and maintaining use of their land, promote farming in the local community even on smaller plots of land. Not sure how to do all those things, but they all have importance.	1/4/2024 7:11 PM
124	-	1/4/2024 6:49 PM
125	Definitely cutting and trimming trees on a regular basis. Buy up open space.	1/4/2024 6:42 PM
126	Educating citizens about how they as individuals can help keep the environment healthy, by eliminating use of plastics where possible, recycling, composting, saving water, using public transportation.	1/4/2024 5:38 PM
127	I agree with all the examples listed above!	1/4/2024 4:36 PM
128	please apply for grants rather than increase taxes yet again	1/4/2024 2:48 PM
129	continue to provide proper funding towards these initiatives and gather input from the town	1/4/2024 2:28 PM
130	I had a very positive experience **REDACTED**. The took advantage of an easement I provided to mitigate large puddles in street and water flowing into my driveway while at the same time removing invasive plants and poison ivy. I think they should be recognized and encouraged to work more with residents to create win-win solutions.	1/4/2024 2:05 PM
131	Limit growth and impingement of natural habitats. Set capacity of building projects and STICK TO THEM.	1/4/2024 1:56 PM
132	Increase local water collection and storage capacity	1/4/2024 1:01 PM
133	Improve storm water management; tree management that would negatively impact roads and electrical distribution.	1/4/2024 12:58 PM
134	A simple one to start with would be reopen the emergency access road to the Senior Center and Roger Road ballfields. This has been unusable since the micro burst a number of years ago, therefore I avoid the senior center!	1/4/2024 12:55 PM
135	Lots of planting; significant reduction in approval of new buildings that use up our increasingly limited resources	1/4/2024 12:55 PM
136	I would like to see the town of Westborough to be proactive with cutting/trimming dead trees as well as healthy limbs that overhang the roadways.	1/4/2024 12:44 PM
137	Fixing the traffic issues going through the center of town where the rotary is located would be a big improvement to the health and safety of the town - it has been a problem for over 30plus years - even before climate change became the smart people's catch phrase.	1/4/2024 12:43 PM

138	none, all set	1/4/2024 12:40 PM
139	Apply for more grants and funding to do further research . All of the above sound like good ideas but am unsure of more information.	1/4/2024 12:27 PM
140	Management of infrastructure, investment in sustainable energy, and maintenance of trees (in particular) seem to be the most urgent.	1/4/2024 12:24 PM
141	encourage cutting/trimming dead trees beside/hanging over roads-some of this has been done but more could be done	1/4/2024 11:58 AM
142	Encourage removal of invasive species, trees and other plant life that may pose hazards. Limit standing water. Keep waterways (of all sizes) clear of debris.	1/4/2024 11:20 AM
143	The Storm Water Utility is a great step forward. More analysis of development projects related to downhill impacts of water flow through existing routes. Expansion of efforts to plant new trees and remove invasive species. More education around wetlands and storm water management for home owners.	1/4/2024 10:09 AM
144	All of the examples above! All new town building to be net zero. Can we buy a wind turbine to power municipal buildings?	1/4/2024 9:53 AM
145	improve storm water management, implement hazard mitigation projects, encourage neighbors to trim their trees	1/4/2024 8:55 AM
146	All of the above	1/3/2024 11:54 PM
147	More public info on how climate change and natural hazards are impacting the town, its' residents, town departments etc.	1/3/2024 11:00 PM
148	Storm water management is unacceptable.	1/3/2024 10:44 PM
149	Education for the public on solar/renewable energy which is confusing.	1/3/2024 10:29 PM
150	Tree removal near power lines	1/3/2024 9:20 PM
151	Tree planting, wastewater management, civil engineering of roads	1/3/2024 8:50 PM
152	Cutting down dead trees, closing risky roads before flooding.	1/3/2024 8:49 PM
153	Education and outreach, planting climate resilient plants and vegetation, investing in regenerative farms and community gardens	1/3/2024 8:48 PM
154	Encourage cutting dead trees beside or hangover over roads - so dangerous to us all.	1/3/2024 8:39 PM
155	Address drainage on Adams Street	1/3/2024 8:37 PM
156	Cutting tree branches around power lines. Clearing dead trees that may fall onto power lines	1/3/2024 8:35 PM

APPENDIX C:

Meetings

Appendix C helps meet the following FEMA local mitigation plan requirements:

- *A1. "Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?" (Requirement 44 CFR § 201.6(c)(1))*
- *A2. "Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process?" (Requirement 44 CFR § 201.6(b)(2)); and*
- *A3. "Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval?" (Requirement 44 CFR § 201.6(b)(1))*

Westborough Hazard Mitigation Plan Update
Local Planning Team Kickoff Meeting

Date/Time: Monday, July 24th, 2023, 10:00am
Location: Westborough Fire, 42 Milk Street, Westborough, MA

AGENDA

I. Introductions

II. Plan Background

- Review Contract
- Roles and Responsibilities
- Estimated Timeline

III. Project Phases & Preliminary Schedule

Phase	Completion (proposed)
Assembly of local planning team, kickoff	July 2023
Information gathering	August-December 2023
○ Natural hazards	
○ Critical infrastructure and facilities	
Mitigation strategy development	January-March 2024
Stakeholder and public involvement	August 2023- May 2024
Plan narrative development	April-May 2024
Plan submission (initial)	June 2024
Plan adoption	August-September 2024

IV. Local Planning Team Meetings/Council Presentations

- Meeting #1 (kickoff)
- Meeting #2 (hazards and critical infrastructure/facilities) (can be two meetings)
- Meeting #3 (mitigation strategies)
- Presentation #1 (summary of draft plan – setting is flexible)
- Presentation #2 (final plan and request for adoption @ BOS) (optional)

V. Review of Mitigation Strategies

- 2017 HMP Mitigation Strategies

VI. Next Meeting – Natural Hazards and/or Infrastructure

- Date/location
- What to prepare

CMRPC
Central Massachusetts Regional Planning Commission

Meeting Name:
Westborough Hazard Mitigation Plan
Kickoff Meeting

Community: Westborough

Location: Westborough Fire Department
42 Milk Street, Westborough, MA

Date: July 24th, 2023

Meeting Time: 10:00 AM

Participant Name	Organization	Title	E-mail
CHRIS PAYANT	DPW	DIRECTOR	CPAYANT@TOWN.WESTBOROUGH.MA.US
Jenny Gingras	Planning	Director	JGINGRAS@TOWN.WESTBOROUGH.MA.US
Jennifer Sullivan	BOH	Director	JSullivan@town.westborough.ma.us
Stephen Doucet	Westborough Fire	Deputy Chief	sdoucet@town.westborough.ma.us
TODD MINARDI	POLICE	CHIEF	TMINARDI@TOWN.WESTBOROUGH.MA.US
Kim Foster	Town Mgr/SB	Asst Town Mgr	Kfoster@town.westborough.ma.us
Joe Boccadoro	DPW - Engineering	Asst Town Eng.	jboccadoro@town.westborough.ma.us
Joshua VanHouten	DPW - Water & Sewer	Operations Manager	jvanhouten@town.westborough.ma.us
DEREK SAARI	DPW	Assistant Director	dsaari@town.westborough.ma.us
Jennifer Miller	Conservation	Conservation Director	jmiller@
Patrick Purcell	Fire/EM	Chief	ppurcell@town.westborough.ma.us

Westborough Hazard Mitigation Plan Update
Local Planning Team Meeting #2

Date/Time: Monday, September 18th, 2023, 10:00am
Location: Westborough Fire, 42 Milk Street, Westborough, MA

AGENDA

I. Introductions

II. Meeting #1 Recap

III. Community Lifelines

- When should we start including them in the planning process?

IV. Reference Documents

V. Natural Hazards Review

a. Flooding
b. Severe Snowstorms, Ice Storms, and Nor'easters
c. Hurricanes
d. Severe Thunderstorms, Wind, and Tornadoes
e. Wildfires and Brushfires
f. Earthquakes
g. Dam Failure
h. Drought
i. Extreme Temperatures
j. Landslides and Other Hazards

VI. Next Meeting – Critical Infrastructure Review, Community Survey Planning

- Date/location
- What to prepare

Meeting Name:
Westborough Hazard Mitigation Plan
Meeting #2

Community: Westborough

Location: Westborough Fire Department
42 Milk Street, Westborough, MA

Date: September 18th, 2023

Meeting Time: 10:00 AM

Participant Name	Organization	Title	E-mail
Benjamin Bowers	Westborough	Sustainability Coordinator	bbowers@westboroughma.gov
CHRIS PAYANT	"	DPW DIRECTOR	CPAYANT @
Jenny Gingras	Westborough	Director of Planning	JGINGRAS@WESTBOROUGHMA.GOV
DERICK IANNI	Westborough	DPW	dsanni @ " "
Cliff Luce	WPD	Patrol Lt	cluce@ " "
Kim Foster	Administration	Asst. Town Mgr	kfoster@westboroughma.gov
Stephen Doucet	WFD	Deputy Chief	sdoucet@westboroughma.gov
Patrick Purcell	WESTBORO FIRE	Chief	ppurcell@westboroughMA.GOV
Jennifer Sullivan	Westborough BOH	Director	JSullivan@westboroughma.gov
Fred Lonardo	Westboro	Community Development Dir.	flonardo@westboroughma.gov

Westborough Hazard Mitigation Plan Update
Local Planning Team Meeting #3

Date/Time: Monday, November 13th, 2023, 10:00am
Location: Westborough Fire, 42 Milk Street, Westborough, MA

AGENDA

I. Introductions

II. Meeting #2 Recap

III. Community Lifelines

- When should we start including them in the planning process?

IV. Reference Documents

V. Critical Infrastructure/Facilities and Vulnerable Populations Review

a. Category 1 – Emergency Response Facilities
b. Category 2 – Non-Emergency Response Facilities
c. Category 3 – Dams
d. Category 4 – Populations and Facilities to Protect

VI. Community Survey Planning

- What form should the community survey take?

VII. Next Meeting – Existing Protection Measures Review, Public Forum Planning, Continue Community Survey Planning

- Date/location
- What to prepare

CMRPC
Central Massachusetts Regional Planning Commission

WESTBOROUGH, MASSACHUSETTS. INCORPORATED NOV. 10, 1717.

Meeting Name:
Westborough Hazard Mitigation Plan
Meeting #3

Community: Westborough

Date: November 13th, 2023

Location: Westborough Fire Department
42 Milk Street, Westborough, MA

Meeting Time: 10:00 AM

Participant Name	Organization	Title	E-mail
Stephen Doucet	Westborough Fire	Deputy Chief	sdoucet@westboroughma.gov
TODD MINARDI	POLICE	CHIEF	TMINARDI@WESTBOROUGHMA.GOV
Cliff Luce	Police	Lieutenant	CLuce@ " "
Jenny Gingras	Planning	Director	jgingras@westboroughma.gov
Jen Miller	Conservation	Director	jmiller " "
D Eversguri	DPW	Asst Dir	deversguri " "
CHRIS PAYANT	DPW	DIR	CPAYANT@
Kim Foster	Administration	Asst Town Manager	K.foster@ " "

Westborough Hazard Mitigation Plan Update
Local Planning Team Meeting #4

Date/Time: Wednesday, February 7th, 2024, 1:00pm
Location: Forbes Municipal Building Great Hall, 45 West Main Street, Westborough, MA

AGENDA

I. Introductions

II. Meeting #3 Recap

III. Community Lifelines

IV. Reference Documents

V. Existing Protection Measures Review

- Review/Update the Existing Protection Matrix

VI. Community Survey Results Review

VII. Public Presentation Planning

- Purpose
- Format
- Date/Time/Location
- Outreach

VIII. Discussion of Mitigation Strategies

- Review of last plan's mitigation strategies
- Development of new mitigation strategies

IX. Next Meeting

- Date/Time/Location
- What to prepare

Meeting Name: Westborough Hazard Mitigation Plan Meeting #4

Community: Westborough

Location: Forbes Municipal Building Great Hall, 45 West Main Street, Westborough, MA

Date: February 7th, 2024

Meeting Time: 1:00 PM

Participant Name	Organization	Title	E-mail
Fred Lonardo		Community Deve. Dir	flonardo@westboroughma.gov
Jenny Gingras		Director of Planning	jgingras@westboroughma.gov
Jennifer Maller		Conservation Dir	jmiller@ "
Cliff Luce		Lieutenant Police	CLUCE
Patrick Purcell		Fire Chief	PPurcell
Ray Gauthier		Sanitarian Health Dept.	Rgauthier@
Joshua VanHouten		DPW Operations Manager	jvanhouten@westboroughma.gov
CHRIS PAYANT		DPW	CPAYANT@
DERICK SAARI		DPW	DSAARI@
Stephen Doucet		Fire Dept	sdoucet@westboroughma.gov
Andrew Loew		CMRPC	aloew@cmrpc.org
MARK Zepf		Economic Development	mzepf@westboroughMA.gov
Mara Will	Granato Talbot	CMRPC CMRPC	mgranato@cmrpc.org ~~Agranato@~~ wtalbot@cmrpc.org

Westborough Hazard Mitigation Plan Update
Local Planning Team Meeting #5

Date/Time: Wednesday, April 3rd, 2024, 1:00pm
Location: Forbes Municipal Building Great Hall, 45 West Main Street, Westborough, MA

AGENDA

I. Introductions

II. Meeting #4 Recap

- Mitigation Strategies Review

III. Community Lifelines

IV. Reference Documents

V. Existing Protection Measures Review

- Review/Update the Existing Protection Matrix

VI. Community Survey Results Review

- Brainstorm new mitigation strategies from community survey results

VII. Public Presentation Planning

- Purpose
- Format
- Date/Time/Location
- Outreach

VIII. Next Meeting

- Date/Time/Location
- What to prepare

CMRPC
Central Massachusetts Regional Planning Commission

WESTBOROUGH MASSACHUSETTS INCORPORATED NOV. 10, 1717.

Meeting Name:
Westborough Hazard Mitigation Plan
Meeting #5

Community: Westborough

Location: Forbes Municipal Building Great Hall, 45 West Main Street, Westborough, MA

Date: April 3rd, 2024

Meeting Time: 1:00 PM

Participant Name	Organization	Title	E-mail
Patrick Purcell	WFD	chief	ppurcell@westboroughma.gov
Maria Goncalves	Health Dept	Health Inspector	mgoncalves@westboroughma.gov
Fred Lonardo	Community Dev	Community Dev. Dir	flonardo@westboroughma.gov
Steven Tompkins	WPD	Deputy Police Chief	stompkins@westboroughma.gov
Stephen Doucet	Fire Dept	Deputy Fire Chief	sdoucet@westboroughma.gov
Ben Bowers	Sustainability	Sustainability Coordinator	bbowers@westboroughma.gov
CHRIS PAYANT	DPW		CPAYANT@
Joshua Van Houten	DPW	ops. Manager	jvanhouten@westboroughma.gov
Jennifer Miller	Conservation	Conservation Director	jmiller@ "
Jenny Giragas	Planning	Director of Planning	jgiragas@ "
Jonathan Steinberg	Finance	Interim Finance Director/Chief Assessor	jsteinberg "
Kimi Foster	Admin	Asst Town Mgr	Kfoster@ "

Westborough Hazard Mitigation Plan Update
Local Planning Team Meeting #6

Date/Time: Monday, May 6th, 2024, 9:30am-11:00am
Location: Westborough Fire Department, 42 Milk Street, Westborough, MA

AGENDA

I. Introductions

II. Meeting #5 Recap

III. Community Lifelines

IV. Reference Documents

V. Public Presentation Planning

- Purpose
- Format
- Date/Time/Location
- Outreach

VI. Review of Westborough MVP Recommendations

- Discuss incorporating MVP recommendations into this HMP update as mitigation strategies

VII. Community Survey Results Review

- Brainstorm new mitigation strategies from community survey results

VIII. Existing Protection Measures Updates

IX. Next Meeting

- Date/Time/Location
- What to prepare

Meeting Name:
Westborough Hazard Mitigation Plan
Meeting #6

Community: Westborough

Location: Westborough Fire Department, 42 Milk Street, Westborough, MA

Date: May 6th, 2024

Meeting Time: 9:30 AM

Participant Name	Organization	Title	E-mail
Fred Lonardo	Town	Community Dev. Dir.	flonardo@westboroughma.gov
Patrick Purcell	Westborough	Fire chief	PPurcell@westborough... Gov
Ray Gauthier	Westborough Health	Sanitarian	rgauthier@westborough... gov
Joshua Van Houten	DPW	Ops. Manager	jvanhouten@westboroughma.gov
Cliff Luce	Police	Lt.	cluce@
Chris Fayant	DPW		
Kimberly Foster	Administration	Asst Town Manager	Kfoster@westboroughma.gov
Will Talbot	CMRPC	Asst. Planner	wtalbot@cmrpc.org

Westborough Hazard Mitigation Plan Update
Local Planning Team Meeting #7

Date/Time: Tuesday, September 4th, 2024, 10:00am
Location: Zoom Meeting, https://us02web.zoom.us/j/84649768595

AGENDA

I. Review of Previous Meetings and Public Presentation

II. Review of Questions from Westborough HMP Team

III. Review of Questions from CMRPC Staff

IV. Discuss High Hazard Potential Dams

V. Next Steps

- Public / Community Lifeline Comment Period
    - Once this comment period concludes, the local HMP team and CMRPC review comments and decide if they would like to make changes to the plan reflecting them
- Submission for MEMA and then FEMA review
    - Revisions made as are needed
- FEMA issues conditional approval
- Formal adoption of plan by Select Board
- Final approval by FEMA

Meeting Name:
Westborough Hazard Mitigation Plan
Meeting #7

Community: Westborough

Location: Zoom Meeting, https://us02web.zoom.us/j/84649768595

Date: September 4th, 2024

Meeting Time: 10:00 AM

Participant Name	Organization	Title	E-mail
Chris Payant	DPW	Director	cpayant@westboroughma.gov
Will Talbot	CMRPC	Assistant Planner	wtalbot@cmrpc.org

Westborough Hazard Mitigation Plan Update
Local Planning Team Meeting #8

Date/Time: Thursday, October 3rd, 2024, 10am
Location: Microsoft Teams Meeting

AGENDA

I. Meetings #6 and #7 and Public Presentation Review

II. Community Lifelines

- Does the Town have contacts for Amazon, Carlton Gardens Condos, Charter / Spectrum, and T-Mobile?

III. Public / Community Lifeline Comment Period Update

IV. Review of Questions from Westborough HMP Team

V. Review of Questions from CMRPC Staff

VI. Next Steps

- Public / Community Lifeline Comment Period
    - Once this comment period concludes, the local HMP team and CMRPC review comments and decide if they would like to make changes to the plan reflecting them
- Submission for MEMA and then FEMA review
    - Revisions made as are needed
- FEMA issues conditional approval
- Formal adoption of plan by Select Board
- Final approval by FEMA

Meeting Name:
Westborough Hazard Mitigation Plan
Meeting #8

Community: Westborough

Location: Microsoft Teams Meeting

Date: October 3rd, 2024

Meeting Time: 10 AM

Participant Name	Organization	Title	E-mail
Patrick Purcell	Westborough Fire	Fire Chief	ppurcell@westboroughma.gov
Will Talbot	CMRPC	Assistant Planner	wtalbot@cmrpc.org

APPENDIX D:

Public Presentation at

Select Board Meeting

Materials

Appendix D helps meet the following FEMA local mitigation plan requirements:

- *A1. "Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?" (Requirement 44 CFR § 201.6(c)(1))*
- *A2. "Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process?" (Requirement 44 CFR § 201.6(b)(2)); and*
- *A3. "Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval?" (Requirement 44 CFR § 201.6(b)(1))*

PUBLIC PRESENTATION
Westborough Hazard Mitigation Plan

The Town of Westborough is hosting a public presentation at a Select Board meeting on the Town's draft Hazard Mitigation Plan update.



- ***Attend to hear about draft mitigation strategies that can help the Town assess and reduce community risk from natural hazards. This presentation is anticipated to begin at approximately 7:10pm.***

- ***The draft plan will be posted on the town website for public review for two weeks following this presentation.***

During the 6pm Select Board meeting on Tuesday, August 20th, 2024 at the Westborough Town Hall at 34 West Main Street - in the 3rd floor Veterans Memorial Hall, on Zoom, and on the Westborough TV YouTube channel, Verizon channel 28, and Charter channel 192.

If you have any comments on the draft plan or would like more information, contact Will Talbot at wtalbot@cmrpc.org.

If you need assistance accessing the Veterans Memorial Hall, call the Select Board's office at 508-366-3030.

CENTRAL MASSACHUSETTS
Regional Planning Commission

Project funding is from the Massachusetts Emergency Management Agency (MEMA).

Town of Westborough
29m ·

The Town of Westborough is hosting a public presentation on the Town's draft Hazard Mitigation Plan at the Tuesday, August 20 meeting of the Select Board. Residents are invited to attend to learn more about draft mitigation strategies that can help the Town assess and reduce community risk from natural hazards.

The presentation is scheduled to begin at approximately 7:10 pm and will take place in Memorial Hall on the third floor of Town Hall (34 West Main Street).

The draft plan will be available to the public on the Town's website for two weeks following the presentation.

Remote viewing is available for this meeting via WestboroughTV's YouTube page, Verizon channel 28, and Charter channel 192.

Please direct comments and questions to Will Talbot at wtalbot@cmrpc.org. If you require assistance accessing Memorial Hall, please contact the Select Board office at 508-366-3030.



1 5

Like Comment

Posted on: August 16, 2024

Hazard Mitigation Plan Update Scheduled for 8/20 Select Board Meeting



The Town of Westborough is hosting a public presentation on the Town's draft Hazard Mitigation Plan at the Tuesday, August 20 meeting of the Select Board. Residents are invited to attend to learn more about draft mitigation strategies that can help the Town assess and reduce community risk from natural hazards. The presentation is scheduled to begin at approximately 7:10 pm and will take place in Memorial Hall on the third floor of Town Hall (34 West Main Street).

The draft plan will be available to the public on the Town's website for two weeks following the presentation.

Remote viewing is available for this meeting via WestboroughTV's YouTube page, Verizon channel 28, and Charter channel 192.

Please direct comments and questions to Will Talbot at wtalbot@cmrpc.org. If you require assistance accessing Memorial Hall, please contact the Select Board office at 508-366-3030.

PUBLIC PRESENTATION Westborough Hazard Mitigation Plan

WESTBOROUGH, MASSACHUSETTS. INCORPORATED NOV. 18, 1717.

The Town of Westborough is hosting a public presentation at a Select Board meeting on the Town's draft Hazard Mitigation Plan update.

- ***Attend to hear about draft mitigation strategies that can help the Town assess and reduce community risk from natural hazards. This presentation is anticipated to begin at approximately 7:10pm.***
- ***The draft plan will be posted on the town website for public review for two weeks following this presentation.***

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If you have any comments on the draft plan or would like more information, contact Will Talbot at wtalbot@cmrpc.org.

If you need assistance accessing the Veterans Memorial Hall, call the Select Board's office at 508-366-3030.

CENTRAL MASSACHUSETTS Regional Planning Commission

Project funding is from the Massachusetts Emergency Management Agency (MEMA).

Town of Westborough, Natural Hazard Mitigation Plan
Public Presentation: August 20th, 2024

What is hazard mitigation? What is a mitigation plan?

- Hazard mitigation is the effort to reduce loss of life and property by lessening the impact of natural disasters.
- Mitigation is not disaster response; its goal is to reduce hazard impacts before a disaster occurs.
- A mitigation plan identifies natural hazards and the risks they pose to residents, infrastructure, property, and natural resources. It prioritizes projects, policies, education, and procedures for reducing these risks, now and in the future.
- Mitigation helps break the cycle of disaster damage, reconstruction, and repeated damage.

Why should Westborough complete and adopt this kind of plan?

- Natural hazard mitigation planning establishes a road map for achievable actions that can substantially reduce risks.
- The Federal Emergency Management Agency (FEMA) requires that cities and towns adopt and update a natural Hazard Mitigation Plan to be eligible for various FEMA pre-disaster and post-fire hazard mitigation grants.
- This plan is primarily funded by a grant from FEMA through MEMA (with a local in-kind match).
- FEMA and Westborough's Select Board adopted the Town's last natural hazard mitigation plan in February 2017, and this plan expired in February 2022.

What natural hazards pose the greatest risks to Westborough?

- Largest risks: Flooding, Severe Winter Storms, Severe Thunderstorms and Wind
- Moderate risks: Tornadoes, Wildfires/Brushfires, Drought, Invasive Species
- Lower risks: Hurricanes, Dam Failure, Extreme Temperatures, Earthquakes

Local partners

Local knowledge is essential to the mitigation planning process. Partners in Westborough to date include:

- Chief and Emergency Management Director Patrick Purcell and Deputy Chief Stephen Doucet, Fire Department
- Director Chris Payant, Assistant Director Derek Saari, Assistant Town Engineer Joe Boccadoro, and Water and Sewer Operations Manager Joshua Van Houten, Department of Public Works
- Chief Todd Minardi, Deputy Chief Stephen Tompkins, and Lieutenant Cliff Luce, Police Department
- Assistant Town Manager Kim Foster, Town Manager / Select Board's Office
- Director Fred Lonardo, Community Development Department
- Conservation Director Jennifer Miller, Conservation Department
- Economic Development Coordinator Mark Zepf, Economic Development Department
- Director Jenny Gingras, Planning Department
- Sustainability Coordinator Benjamin Bowers
- Director Jennifer Sullivan, Sanitarian Ray Gauthier, and Health Inspector Maria Goncalves, Public Health Department
- Interim Finance Director / Chief Assessor Jonathan Steinberg, Finance Department

Planning timeline

- Information gathering via mapping, research, and local input — July 2023 to date
- Draft plan development — June – July 2024
    - Public comments/questions requested within two weeks of the draft plan being posted on the town website
- Public presentation #1 — August 2024
- MEMA review — Fall 2024
- FEMA approval and local adoption — Winter 2024
- 5-year update — 2029

Recent/ongoing mitigation activities include:

- Street sweeping and catch basin cleaning
- Maintaining and replacing problem culverts and maintaining and repairing problem roadways when needed and as funding allows
- Installing backup generators at critical public facilities when needed and as funding allows
- Participation in the National Flood Insurance Program (NFIP)
- Dam monitoring
- Tree trimming program
- Snow removal
- Hazard warning systems and notifications
- Education and outreach
- Plans, regulations, and studies

Recommended high priority mitigation strategies in the DRAFT plan

A. Structure and Infrastructure Strategies

- Tree trimming needed to protect utility wires from storm damage. Review tree work in wetland resource area buffer zone.
- Replace emergency generators and switch gear at water and sewer facilities; long- term capital plan needed as existing equipment ages
- Continue maintenance to prevent and identify mitigation options for flooding on Flanders Road near #165; partly within 100-year flood zone and wetlands; Flanders Road is a primary evacuation route.
- Engineering study to identify mitigation options (such as culvert replacement) for flooding on Chauncy Street near Oak Street; partly within 100-year flood zone and is adjacent to Chauncy Lake.
- Engineering study to identify mitigation options for East Main Street at MBTA viaduct; near 100-year flood zone and area is barely above Cedar Swamp/Rutters Brook Wetland – Continue maintenance here as well.
- Drainage improvements in the Nourse Street (Route 30)/Jasper Street/Glen Street area; partly within 500-year flood zone from two unnamed brooks; upstream detention area could alleviate flooding; Route 30 is an evacuation route.

- Drainage improvements in the Upton Road area near Sandra Pond; partly within 100-year flood zone from Sandra Pond/Westborough Reservoir
- Drainage improvements in the Bowman Street/Bowman Lane area; partly within 100-year flood zone from Jackstraw Brook and Sandra Pond/Westborough Reservoir. Need to set easements.
- Drainage improvements in the Warren Street/Morse Street/Upton Road area; partly within 100 year flood zone from Jackstraw Brook; some mitigation activities have been completed but are not considered sufficient to protect from major storms.
- Complete the development of a recently purchased property in town to act as a Community Center and a shelter with generator support / self-sustaining power generation in times of emergency.
- Create additional egresses where necessary to expand emergency response, especially in heavily forested woods where firefighting ability is hindered.

B. Preparedness, Coordination, and Response Strategies

- Continue to participate in National Flood Insurance Program (NFIP) (or other) training offered by the State and/or FEMA that addresses flood hazard planning and management.
- Road information coordination and planning for snow removal
- Evacuation Plan updates; plan should consider needs of seniors and zero-vehicle households as per EJ Section
- Continue to coordinate with other water systems to ensure backup water supply from MWRA through neighboring towns; plan for treatment incompatibilities if backup system is needed.
- Formalize priority list of sites for the town to aim to purchase based on mitigation potential for flood risks and other types of climate related impacts. Reference Sudbury Valley Trustees StoryMap.
- Identify and keep pace with best practices in information technology relating to protecting people and infrastructure from natural hazards.
- Strengthen town communication and educational collaboration with the MBTA to ensure that the culverts along the rail line are properly and consistently maintained.
- Form a coalition with surrounding towns to engage MassDOT in developing strategies to prevent highway runoff pollution from entering town water supplies.
- Complete a town-wide drainage study that examines basins and dams to help with addressing more frequent high intensity events.
- Expand redundancy of public safety and emergency services in different areas of town as flooding, intense storm events, and other crises become more frequent. This can allow different parts of town to respond effectively to a disaster if one part of the town is most severely hit and can address emergency response issues in efficiently reaching the east side of town.
- Complete a feasibility study to consider creating additional substations to house Fire Department, Police Department, and DPW equipment in other areas of town.
- Continue collaboration with Central Massachusetts Mosquito Control.
- Assess and manage the health of wetlands and waterways to prevent water quality issues.
- Complete pilot Lake Chauncey Algae Bloom Study. Develop a management plan to treat and prevent future algae blooms at Lake Chauncey as well as other surface waters in town and provide education to the public on the harms of algae.

C. Education and Awareness Strategies

- Update the Emergency Preparedness Planning Guide periodically; emphasize home-based mitigation activities such as tree trimming, extreme temperature safety, defensible space, etc… in social media outreach; core content should be translated to predominant foreign language(s) as per EJ section.

D. Local Plan and Regulation Strategies

- Complete and implement a town-wide Language Access Plan in order to ensure that there is equitable knowledge and access to services, emergency plans, and general town information. Make the Town's Hazard Mitigation Plan available in languages other than English.

The draft plan with the full list of mitigation strategies will be available shortly on Westborough's town website.

Comments and questions should be directed to Will Talbot (wtalbot@cmrpc.org) at CMRPC within two weeks of the draft plan being posted on the town website.

This natural hazard mitigation planning activity is funded by an FY 2023 Hazard Mitigation grant from the Federal Emergency Management Agency through the Mass. Emergency Management Agency

TOWN OF WESTBOROUGH HAZARD MITIGATION PLAN

Westborough Select Board
August 20th, 2024

Marc Granato, Emergency Preparedness Planner

Will Talbot, Assistant Planner

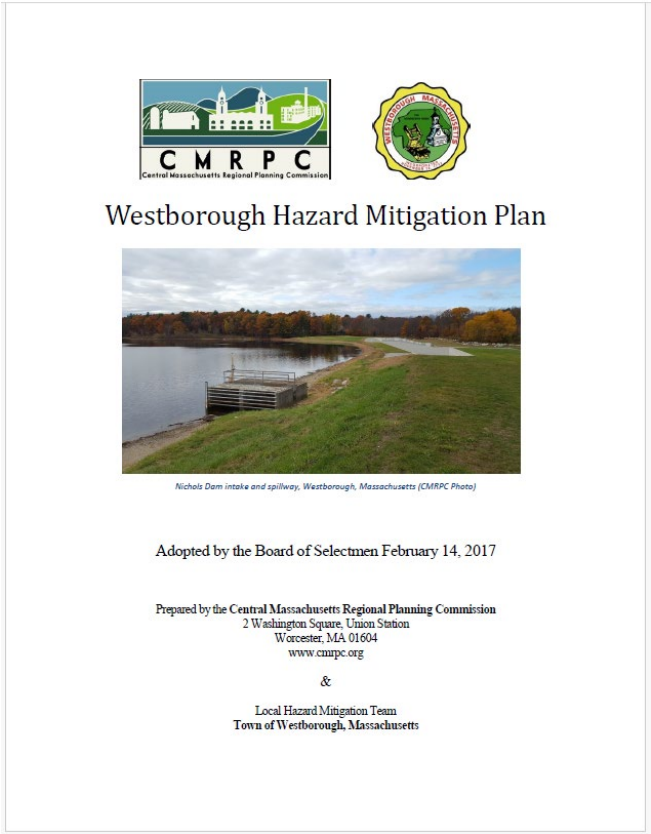
Andrew Loew, Director, Community Development & Resiliency Planning

Central Massachusetts Regional Planning Commission

WHY IS WESTBOROUGH COMPLETING THIS PLAN?

- The Federal Emergency Management Agency (FEMA) requires that cities and towns adopt and update a natural Hazard Mitigation Plan to be eligible for various FEMA pre-disaster and post-fire hazard mitigation grants.

- This plan will meet FEMA's requirements and help the town make good use of its resources.
- Westborough's last HMP update was approved in February 2017 and expired in February 2022.


C M R P C
Central Massachusetts Regional Planning Commission

Westborough Hazard Mitigation Plan

Nichols Dam intake and spillway, Westborough, Massachusetts (CMRPC Photo)

Adopted by the Board of Selectmen February 14, 2017

Prepared by the Central Massachusetts Regional Planning Commission
2 Washington Square, Union Station
Worcester, MA 01604
www.cmrpc.org

&

Local Hazard Mitigation Team
Town of Westborough, Massachusetts

PLAN FOR MITIGATING DAMAGES FROM NATURAL HAZARDS

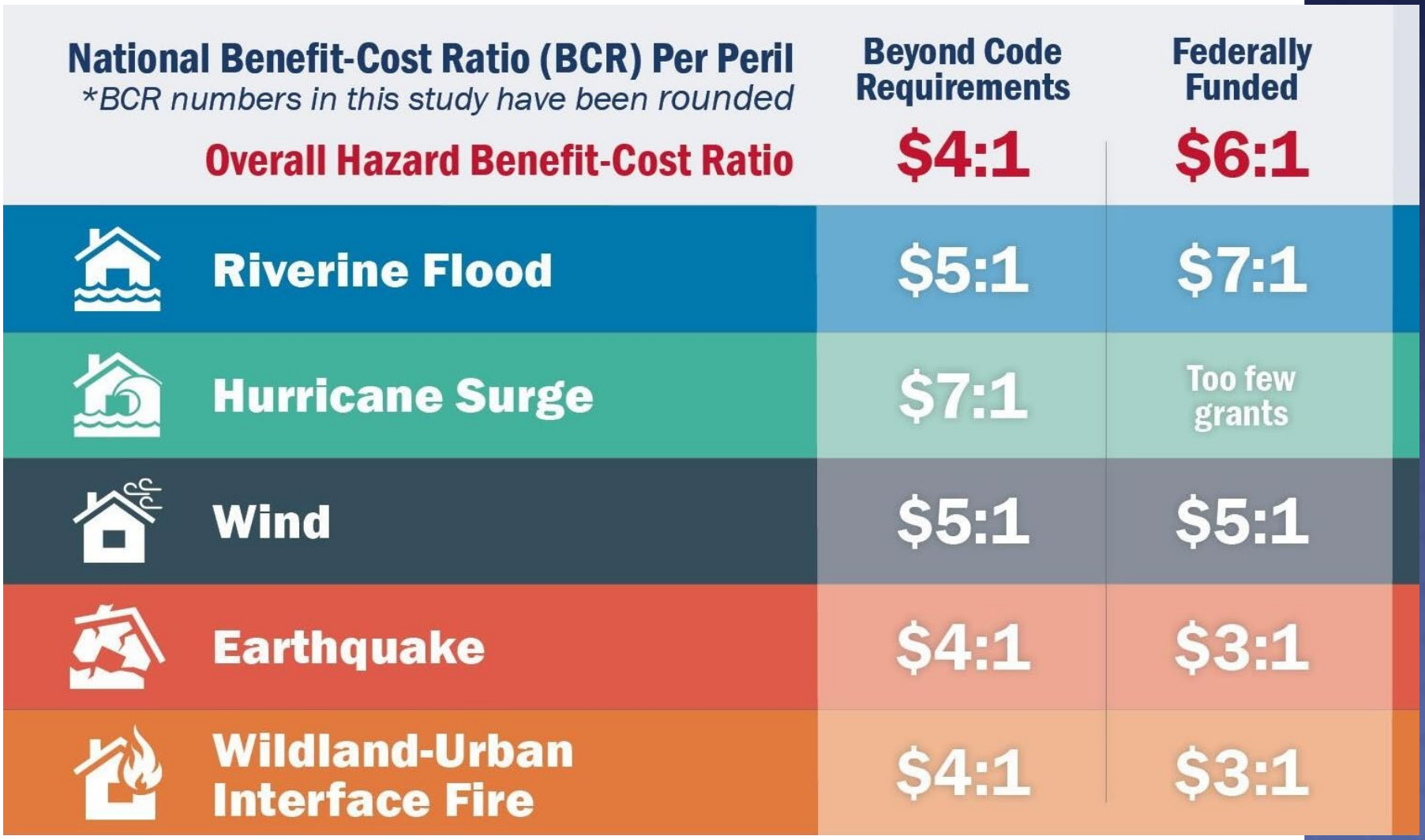
- Flooding
- Severe Snowstorms / Ice Storms / Nor'easters
- Hurricanes
- Severe Thunderstorms / Wind / Tornadoes
- Wildfires / Brush Fires
- Earthquakes
- Dam Failure
- Drought
- Extreme Temperatures
- Invasive Species
- Other Hazards (Landslides, Groundwater Intrusion)

Not an Emergency Response Plan

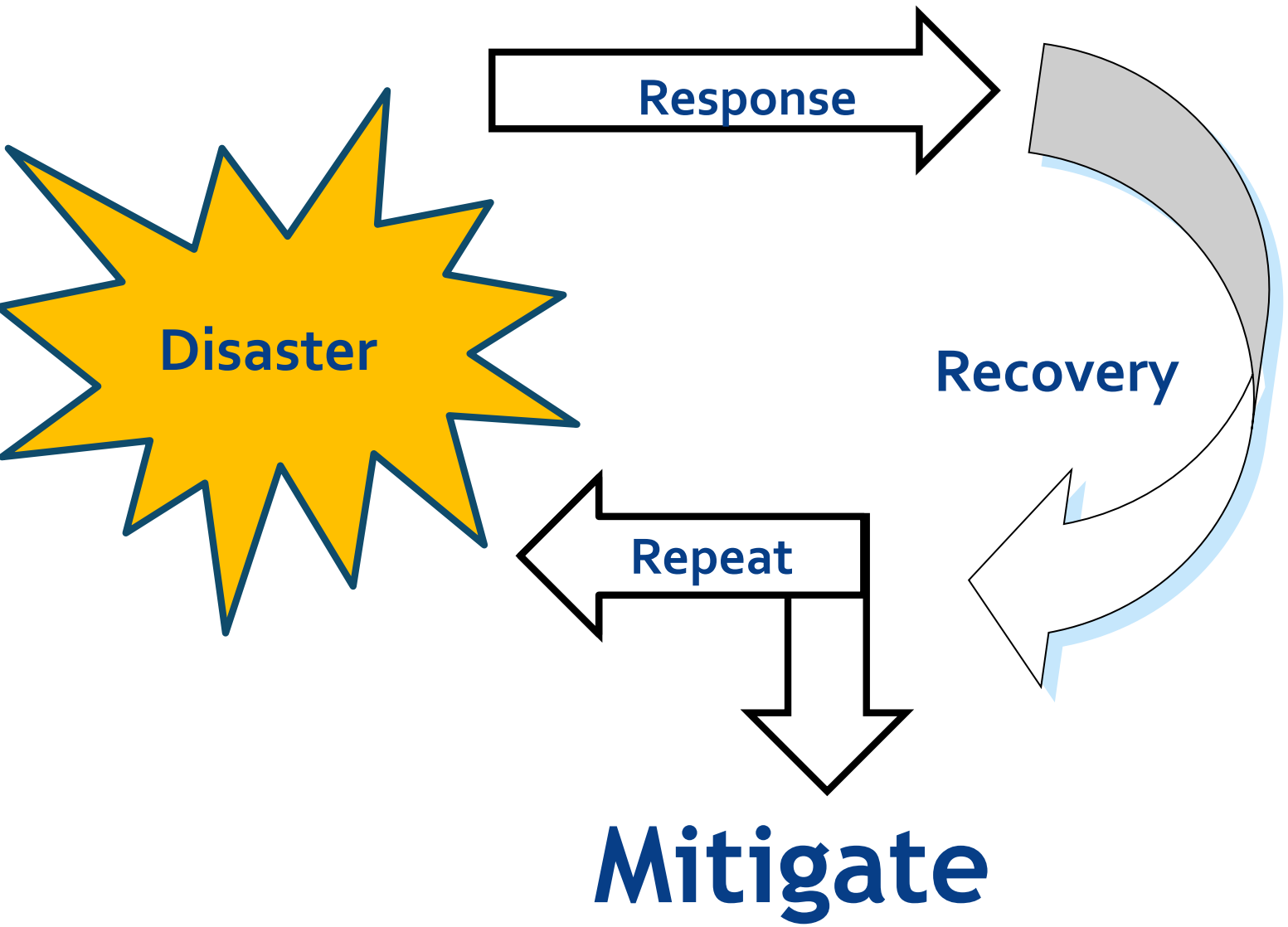
WHAT IS HAZARD MITIGATION?

- *To permanently reduce or prevent losses of life, injuries and property damage by using long-term strategies*
- *What preventive actions are being taken NOW to reduce future risks and damages?*
- *What additional actions can be taken in the FUTURE?*
- *According to the National Institute of Building Sciences Natural Hazard Mitigation Saves: 2019 Report, on average between 4 to 6 dollars is saved for every dollar spent on hazard mitigation*

THE BENEFITS OF MITIGATION



Breaking the Cycle of Risk

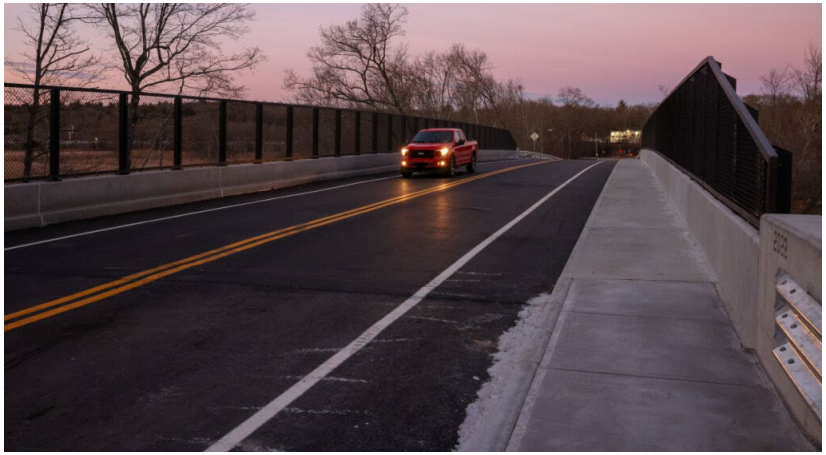


Four Tools & Techniques for Hazard Mitigation

1. Structure & Infrastructure Projects
2. Preparedness, Coordination & Response Actions
3. Education & Awareness Programs
4. Local Plans & Regulations

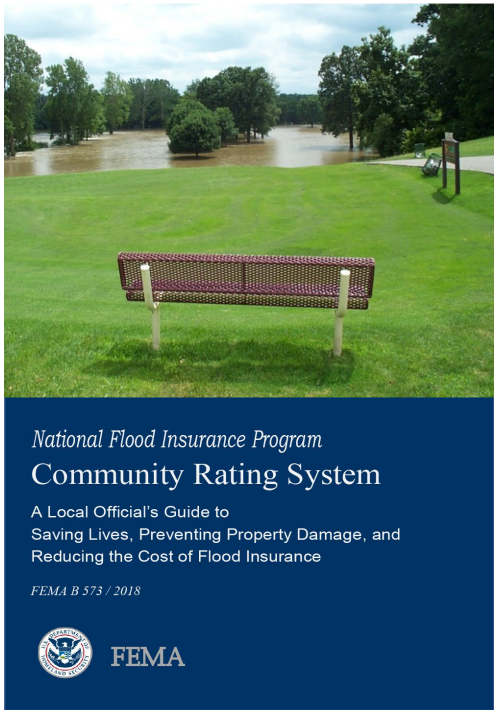
STRUCTURE AND INFRASTRUCTURE PROJECTS

- Prevent floodwaters from reaching properties
- Man-made structures to control water flows
- Culverts, dams, storm drainage facilities, pumping facilities



PREPAREDNESS AND RESPONSE

- National Flood Insurance Program
- Evacuation Planning
- Community Rating System
- Facilitate and coordinate the administration, enforcement and collaboration



EDUCATION AND AWARENESS

- Natural hazard awareness websites
- Hazard information at libraries, schools, and public buildings
- Information brochures mailed to residents (e.g., safe operation of home generators)
- Public outreach at community events



LOCAL PLANS & REGULATIONS

- Planning & Zoning
- Subdivision and Site Plans
- Floodplain regulations
- Wetlands bylaws
- Storm water regulations
- Building Code
- Master Plans
- MVP Plans



PLANNING PROCESS

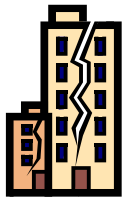
- CMRPC provides technical assistance to the Town for plan development
- The Town coordinates through its Local Hazard Mitigation Team
- Public Survey
- Public presentation (tonight), during plan development and review of the draft plan
- Submittal of Draft Plan to MEMA and FEMA for review, revision, and approval
- Plan adoption by the Select Board

DEVELOPMENT OF THE PLAN

CMRPC assisted the Westborough Local Hazard Mitigation Planning Team to:

- Identify & Map Critical Facilities
- Identify & Map Locally Identified Hazard Areas
- Identify & Review Existing Mitigation Measures
- Identify and Prioritize New Mitigation Strategies
- Gather Feedback & Input from the Public



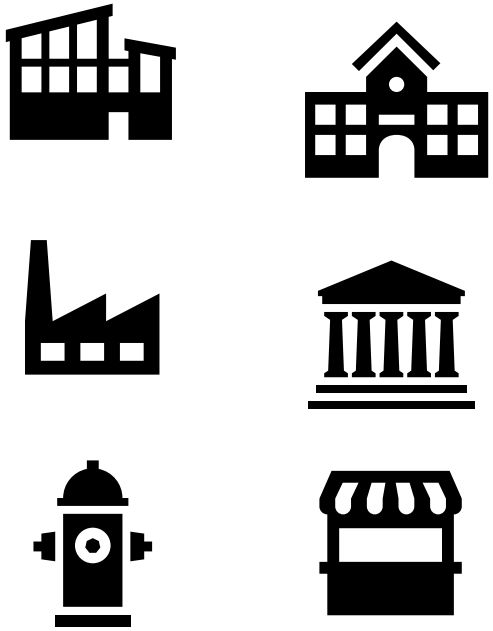



IDENTIFY CRITICAL FACILITIES

Database & GIS maps of critical facilities, infrastructure

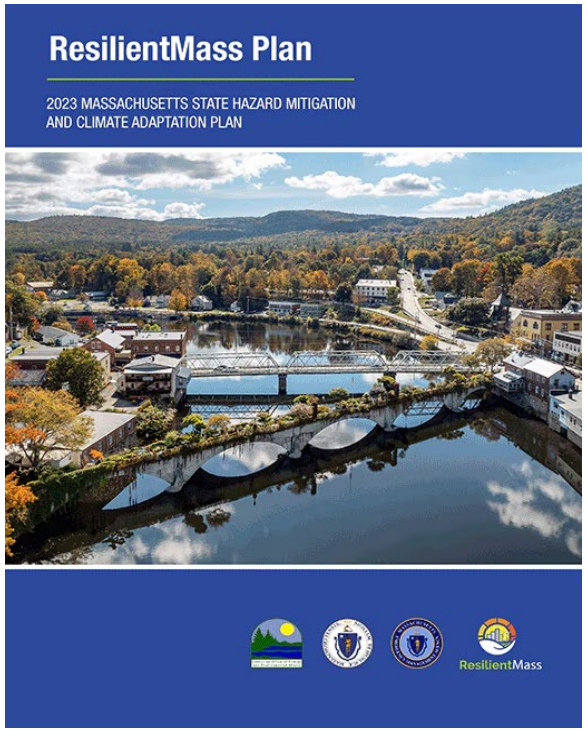
Sites identified include:

- Emergency Response Facilities
- Water Supply and Sewer Facilities, Town Facilities, and Utilities
- Dams
- Facilities and populations to protect



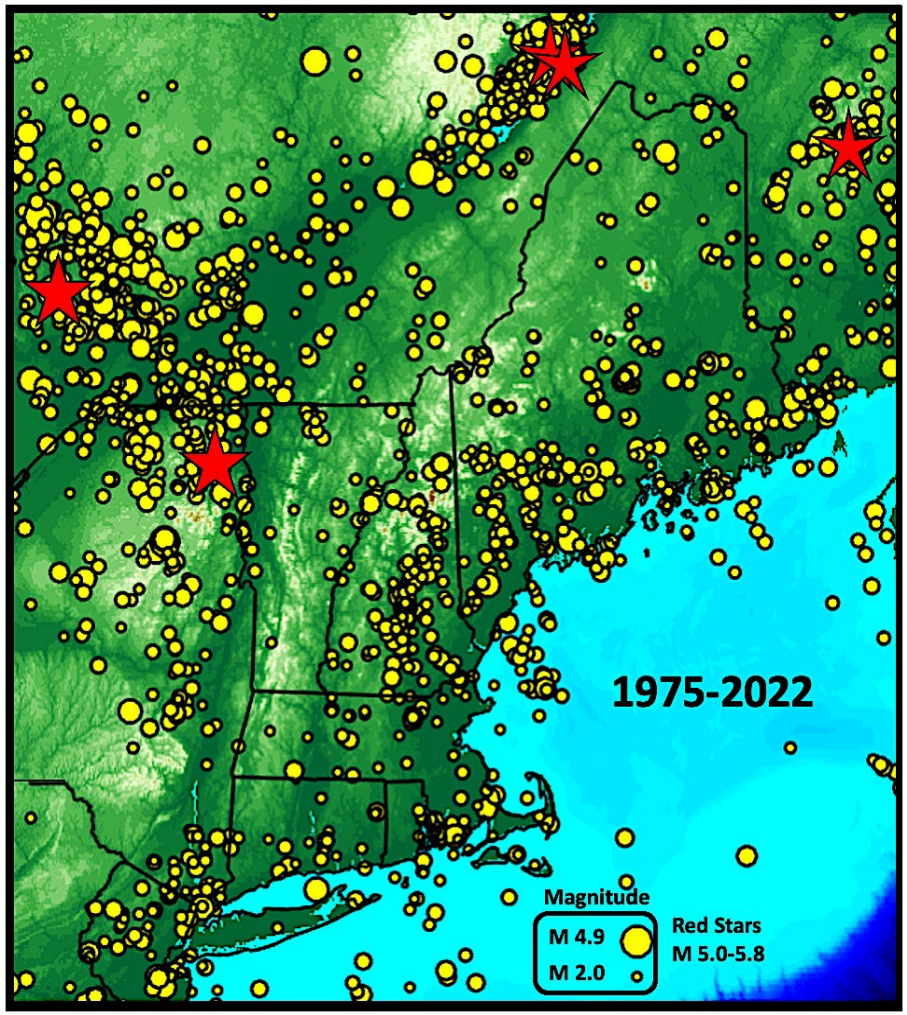
HAZARD IDENTIFICATION & MAPPING

- State & Federal data on floodplains, snowfall, wind speeds, hurricanes, earthquake risk, etc.
- Review Mass. State Hazard Mitigation Plan
- Coordinate with Local Team to get local information on hazard areas and potential future developments



OTHER HAZARDS – GEOLOGIC, WIND, & SNOW

Earthquakes from 1975 to 2022 2+ Magnitude



Recent Declared Hurricanes & Snow Disasters

Disaster	Declaration Date	Incident Period	FEMA ID
Hurricane Lee	09/15/23	09/15/23 - 09/17/23	EM-3599-MA
Mashpee Wampanoag Tribe Tropical Storm Henri	08/22/21	8/20/21 -	3566-EM-Mashpee Wampanoag Tribe

Disaster	Declaration Date	Incident Period	FEMA ID
Massachusetts Severe Winter Storm and Snowstorm	04/18/22	01/28/22 - 01/29/22	DR-4651-MA
Massachusetts Severe Winter Storm and Snowstorm	07/19/18	03/13/18 - 03/14/18	DR-4379-MA

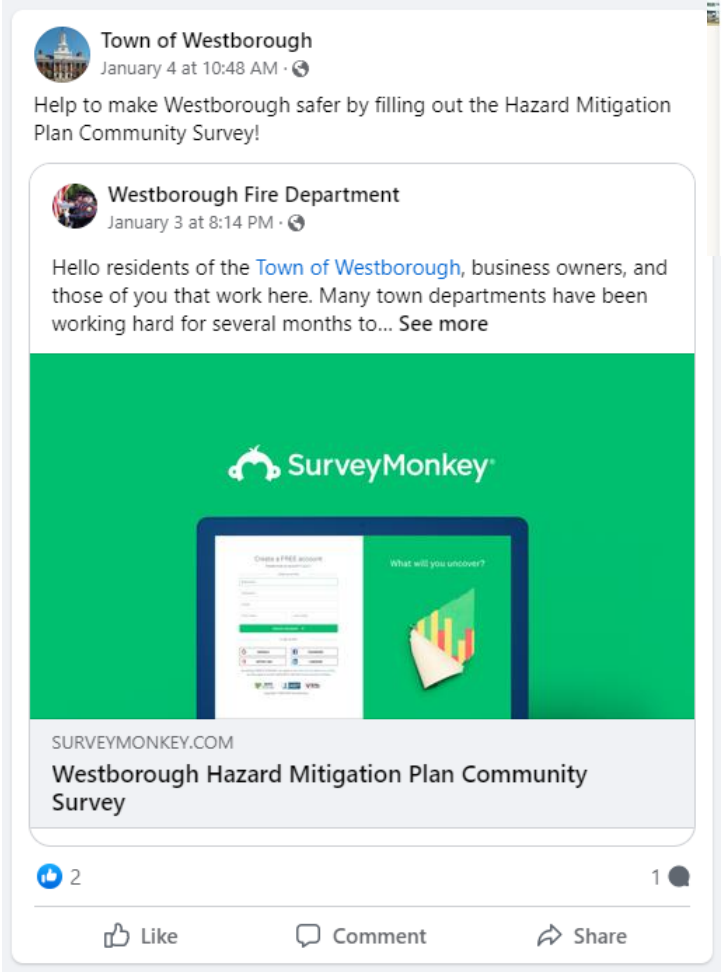
SELECT LOCALLY-IDENTIFIED HAZARD AREAS

- Flooding
  - West Main Street / Kay Street
  - Chauncy Street
  - Nourse Street / Jasper Street / Glen Street
  - Bowman Lane
  - Warren Street / Morse Street / Upton Road
- Severe Snow / Ice
  - Upton Road, near Westborough Reservoir
  - MassPike
- Wildfire
  - MBTA line (1/2 mile east of Milk Street Bridge to Grafton Line)
- Invasive Species
  - Lake Chauncey eutrophication / algal bloom





PUBLIC SURVEY – Winter 2024





- 269 total responses
- Hazards of greatest concern: Winter storms / ice, thunderstorms / microbursts / extreme wind, flooding
- The survey was promoted through the town website, the town and fire department Facebook pages, and the Community Advocate newspaper
  - Survey flyers and paper copies were also posted at several high traffic locations in town.

EXISTING MITIGATION MEASURES

MULITIHAZARD

- Comprehensive Emergency Management Plan (CEMP)
- Education and outreach
- Hazard warning systems and notifications
- Plans, regulations, and studies

FLOOD RELATED HAZARDS

- National Flood Insurance Program
- Street sweeping
- Catch basin cleaning
- Roadway treatments
- Drainage preventive practices to reduce clogging
- Subdivision Rules and Regulations
- Zoning Regulations

DAM FAILURES

- State permits for dam construction
- DCR dam safety regulations

WIND-RELATED HAZARDS

- Tree trimming program

WINTER-RELATED HAZARDS

- Salting and sanding of roads and plowing

BRUSH FIRE RELATED HAZARDS

- Permits for outdoor burning

WESTBOROUGH MITIGATION STRATEGIES



- Where are the GAPS?
- What actions will further reduce vulnerability?
- Where are the PRIORITIES?

DRAFT PLAN SELECT HIGH PRIORITY MITIGATION MEASURES

- Drainage improvements in the area near Sandra Pond.

- Complete the development of a recently purchased property in town to act as a Community Center and a shelter with generator support.

- Continue to coordinate with other water systems to ensure backup water supply from MWRA through neighboring towns.

- Expand redundancy of public safety and emergency services in different areas of town.

- Complete and implement a town-wide Language Access Plan. Make the Town's Hazard Mitigation Plan available in languages other than English.

PLAN APPROVAL AND ADOPTION

- The Draft plan will be reviewed by MEMA.
- FEMA will review the plan and is the agency that issues conditional approval.
- A Select Board resolution to adopt the plan can occur after FEMA conditional approval.
- FEMA issues final plan approval.
- The plan will be in effect for 5 years.



IMPLEMENTING THE PLAN
WHAT HAPPENS AFTER THE PLAN IS APPROVED?

- Establish a local implementation group.
- Prepare a timeline for implementation.
- Integrate the plan's recommendations with other local plans and policies.
- Seek FEMA and other funding sources and other resolutions for plan mitigation measures.
- Meet at least yearly to review progress of plan implementation.
- Update the plan every 5 years.

DRAFT PLAN

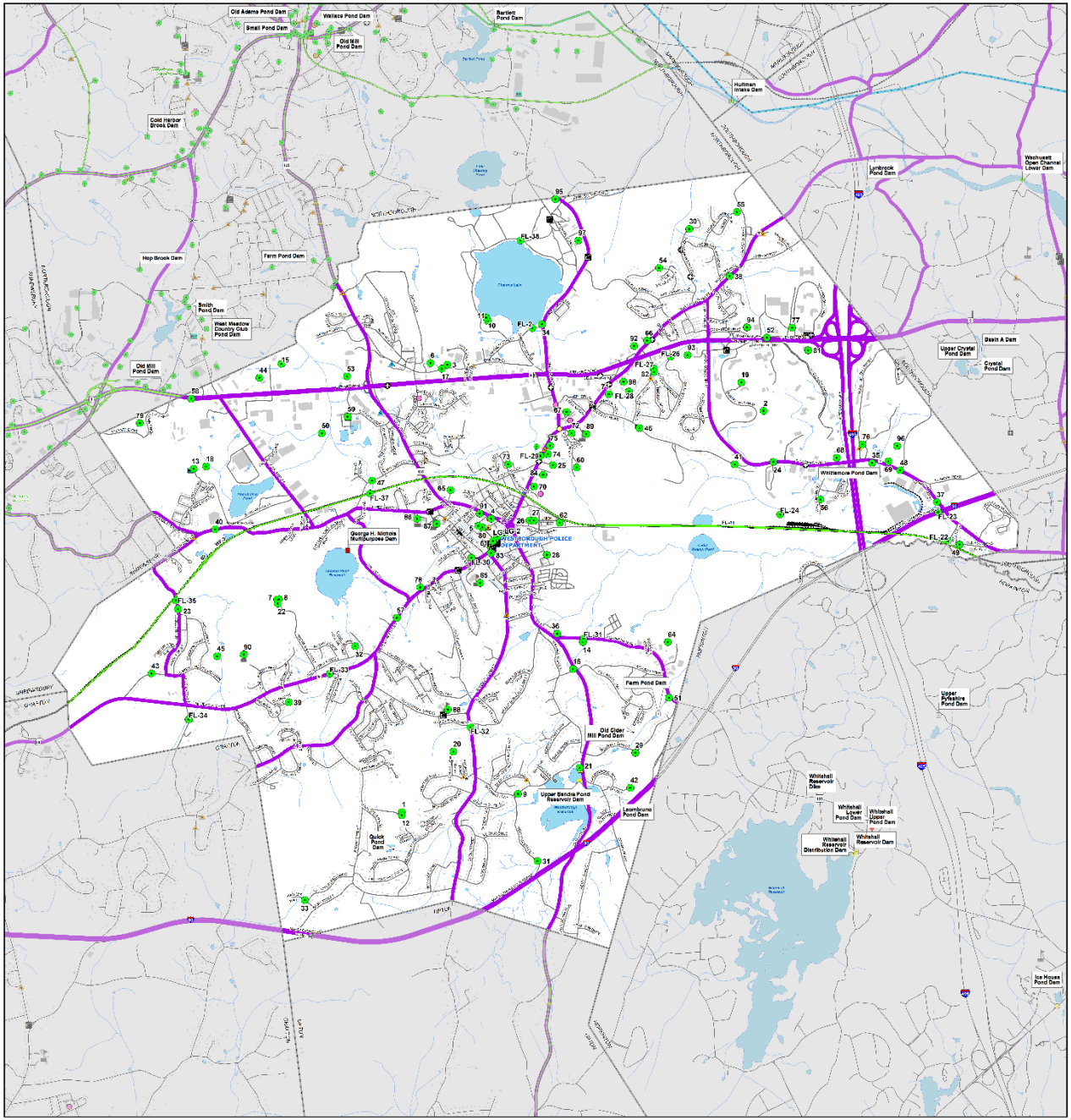
The full draft plan will be available on the Westborough town website.

Please send any comments on or questions about the plan to wtalbot@cmprc.org within two weeks of the draft plan being posted on the town website.

Hazard Mitigation Plan

Map 1
Critical Infrastructure and Facilities
Town of Westborough, Massachusetts

July 2024



Legend

- Assisted Living
- Clinics
- Elderly Housing
- Emergency Shelters
- End Of Life Facilities
- Nursing/Rest Homes
- Daycare
- Electric Distribution
- EOC
- Courts
- Water Treatment Plant
- Waste Water Treatment Plant
- Airports
- Town Halls
- Local Police
- Fire Station
- Schools (Pre-K through High School)
- Aqueducts
- Active Rail Line

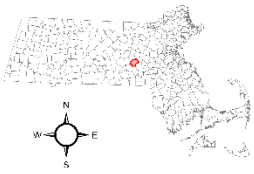
- Town Boundaries
- Structures
- Water Bodies
- Streams
- Roads
- Regionwide Evacuation Routes

Dams (2/2012)

- High Hazard
- Significant Hazard
- Low Hazard
- N/A

Locally Defined

- Critical Infrastructure
- Critical Infrastructure
- Critical Infrastructure



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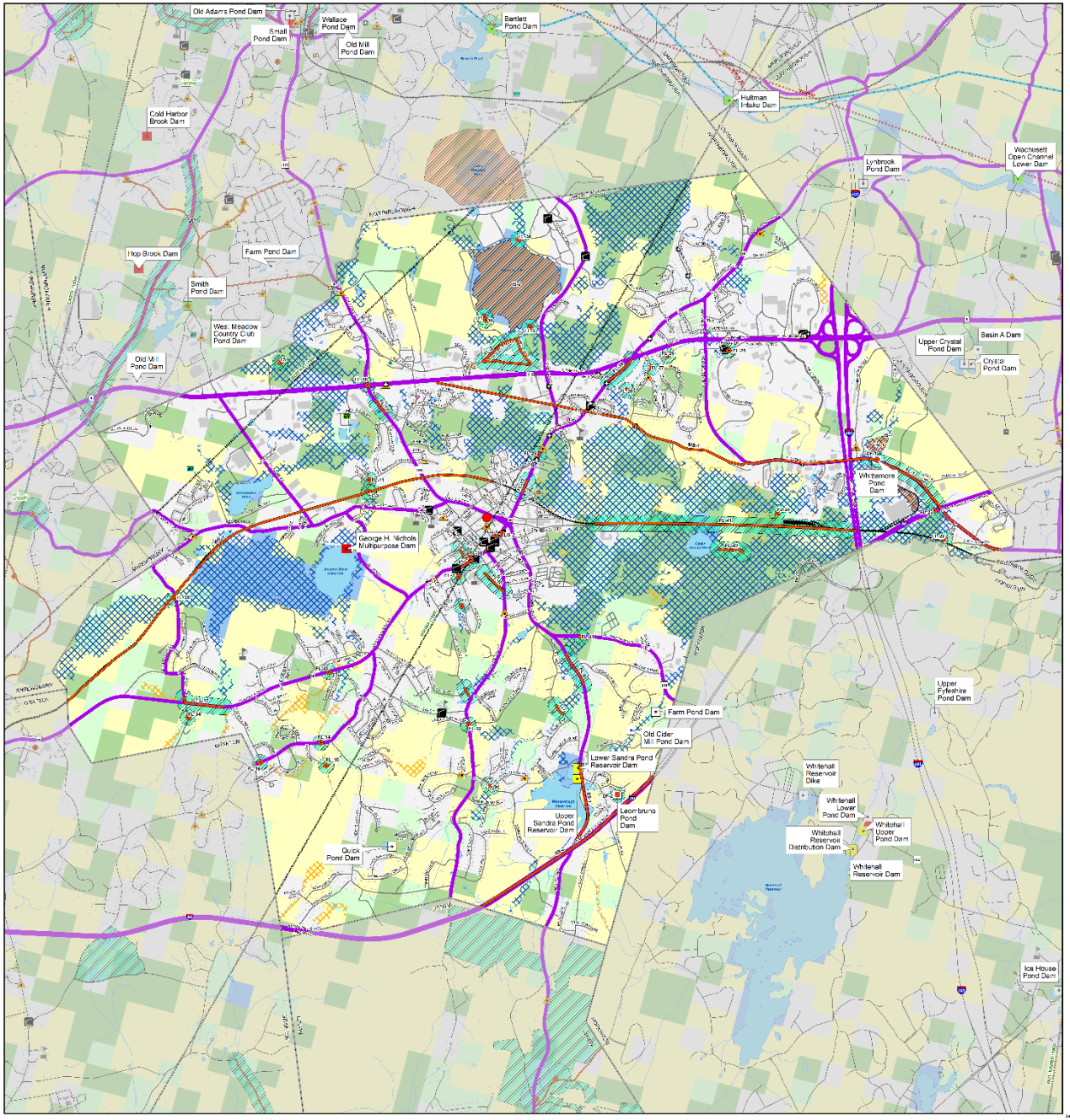
CMRPC



Hazard Mitigation Plan

Map 2
Hazards
Town of Westborough, Massachusetts

July 2024

Legend

- Assisted Living
- Clinics
- Elderly Housing
- Emergency Shelters
- End Of Life Facilities
- Nursing/Rest Homes
- Daycare
- Electric Distribution
- EOC
- Courts
- Water Treatment Plant
- Waste Water Treatment Plant
- Airports
- Town Halls
- Local Police
- Fire Station
- Schools (Pre-K through High School)
- Aqueducts
- Active Rail Line
- Town Boundaries
- Structures
- Water Bodies
- Streams
- Roads
- Regionwide Evacuation Routes

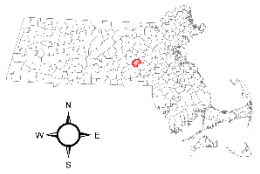
Hazards

Dams (2/2012)
- High Hazard
- N/A

FEMA DFIRM Flood Zones
- 100-year Flood Area*
- 500-year Flood Area
- Repetitive Loss Property Areas
- NOAA Historic Hurricane Tracks (1842-2022)

USDA Wildfire Hazard Potential, Version 2023
- 1: Very Low
- 2: Low
- 3: Moderate
- 4: High
- 5: Very High
- 6: Non-burnable
- 7: Water

Locally Defined Hazards
- Hazard
- Hazard
- Possible Flood Area
- Hazard



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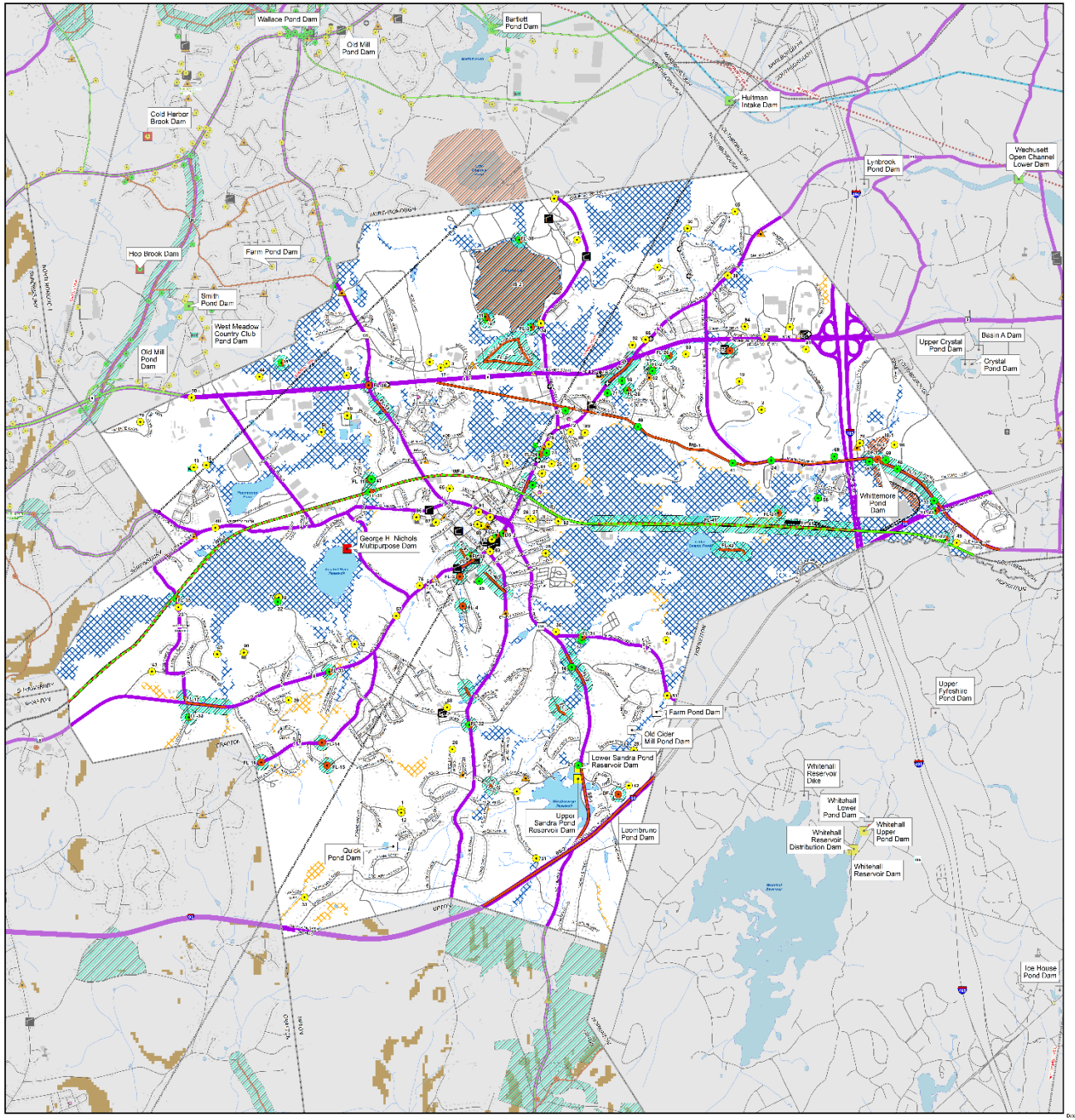
CMRPC



Hazard Mitigation Plan

Map 3
Vulnerable Critical Infrastructure and Facilities
Town of Westborough, Massachusetts
July 2024

Legend

- Assisted Living
- Clinics
- Elderly Housing
- Emergency Shelters
- End Of Life Facilities
- Nursing/Rest Homes
- Daycare
- Electric Distribution
- EOC
- Courts
- Water Treatment Plant
- Waste Water Treatment Plant
- Airports
- Town Halls
- Local Police
- Fire Station
- Schools (Pre-K through High School)
- Aqueducts
- Active Rail Line
- Town Boundaries
- Structures
- Water Bodies
- Streams
- Roads
- Regionwide Evacuation Routes

Hazards

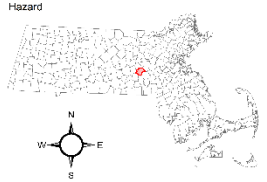
Dams (2/2012)
- High Hazard
- Significant Hazard
- Low Hazard
- N/A

FEMA DFIRM Flood Zones
- 1% Annual Chance Flood Hazard or Regulatory Floodway
- 0.2% Annual Chance Flood Hazard

- High Slope (15% and above)
- Repetitive Loss Property Areas
- NOAA Tornado Tracks (as of 9/2021)
- IBTrACS Historical Hurricane Tracks (1842-2020)

Locally Defined

- Hazard
- Vulnerable Critical Infrastructure
- Vulnerable Critical Infrastructure/ Hazard
- Non-vulnerable Critical Infrastructure
- Non-vulnerable Critical Infrastructure/ Hazard
- Hazard
- Vulnerable Critical Infrastructure
- Vulnerable Critical Infrastructure/ Hazard
- Non-vulnerable Critical Infrastructure
- Possible Flood Area
- Hazard
- Vulnerable Critical Infrastructure
- Non-vulnerable Critical Infrastructure



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CMRPC

Meeting Name:
Westborough Hazard Mitigation Plan
Select Board Meeting Public Presentation

Community: Westborough

Location: Veterans Memorial Hall, Westborough Town Hall, 34 West Main Street, Westborough, MA

Date: August 20th, 2024

Meeting Time: 6:00 PM

Participant Name	Organization	Title	E-mail
Chair Patricia Welch	Select Board	Chair	pwelch@westboroughma.gov
Vice Chair Ian Johnson	Select Board	Vice Chair	ijohnson@westboroughma.gov
Member Allen Edinberg	Select Board	Member	aedinberg@westboroughma.gov
Member Shelby Marshall	Select Board	member	smarshall@westboroughma.gov
Member Sean Keogh	Select Board	member	skeogh@westboroughma.gov
Kristi Williams	Town Manager	Town Man	kwilliams@westboroughma.gov
Kimberly Foster	Town Manager	Assistant Town Manager.	kfoster@westboroughma.gov
Cela Dorr	Town Manager	Admin Assistant	cdorr@westboroughma.gov.

Meeting Name:
Westborough Hazard Mitigation Plan
Select Board Meeting Public Presentation

Community: Westborough

Location: Veterans Memorial Hall, Westborough Town Hall, 34 West Main Street, Westborough, MA

Date: August 20th, 2024

Meeting Time: 6:00 PM

Participant Name	Organization	Title	E-mail
Maureen Johnson	Cultural Council		maureenj7@verizon.net
Esser Petrie	Pulte Homes		
Chris Boland	DPW		
Deborah Ledoux	Town Clerk		dledoux@westboroughma.gov
Andrew Loew	CMRPC		aloew@cmrpc.org
Will Talbot	CMRPC	Assistant Planner	wtalbot@cmrpc.org
Todd Minard	Police	Chief	
John Arnold	Moderator	Moderator	john.arnold@alumni.brown.edu
Patrick Purcell	Westboro Fire	Chief	ppurcell@westboroughma.gov

APPENDIX E:
Public Comment Period and Community Lifeline Comment Period Materials

Appendix E helps meet the following FEMA local mitigation plan requirements:

- *A1. "Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?" (Requirement 44 CFR § 201.6(c)(1))*
- *A2. "Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process?" (Requirement 44 CFR § 201.6(b)(2)); and*
- *A3. "Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval?" (Requirement 44 CFR § 201.6(b)(1))*

CENTRAL MASSACHUSETTS
Regional Planning Commission

Draft Westborough Hazard Mitigation Plan

Posted on August 27, 2024

The Town of Westborough has prepared a draft Hazard Mitigation Plan update with the assistance of the Central Massachusetts Regional Planning Commissi...

Read on...

Public Comments on Draft Westborough Hazard Mitigation Plan

Commentor #1

"I skimmed the first 33 pages

Consider listing all the Churches as possible emergency shelters.

Consider adding the Cinema building and golf course buildings to list of town facilities.

Perhaps some of the Group homes should be added to the special needs population.

Under Utilities – beside the railroad that runs though town the is (or was) a large railroad yard off of Flanders; maybe Walkup DR"

Commentor #2

"Section 4.8 Earthquakes

1. Although New England is not on a tectonic plate boundary, it is impacted by plate tectonic processes. Major faults in the region (one of which goes right through Westborough but is inactive) may have no discernable pattern of seismicity, but New England is being compressed from the east by the spreading of the Mid-Atlantic Ridge and from the west by the eastern migration of the North American Plate. The net effect is that faults which formed during the rifting process that created the Atlantic Ocean 220 million years ago are reactivating.

Most of these faults are in rift basins on the continental shelf, with the exception of the Connecticut River Valley rift, which extends through Connecticut into Central Massachusetts. Current thinking is that most New England earthquakes are occurring along these faults. If one looks at Image 3, a line of earthquakes extends from Maine near the New Hampshire Border south-southeast ending about 60 km east of Cape Ann. Most likely this lineation indicates these reactivated rift valley faults.

2. The report does not mention that one of the most seismically active areas of New England is Central New Hampshire. Because most of the bedrock in New England is composed of very hard igneous and metamorphic rock, earthquake shockwaves can travel much farther than in other areas of the US, such as the West Coast. Therefore, even if a substantial quake occurs one hundred miles from Westborough, there is a non-trivial risk of damage here in Westborough.

3. Some of the major regional historical earthquakes in New England are:

1638 - Concord, N. H. magnitude 6.5 – 7;

1663 - Quebec, Canada magnitude 7-plus;

1727 - Newburyport, MA magnitude 5.6;

1755 - Cape Ann, MA magnitude 6.2;

1904 - Maine magnitude 5.9;

1940 - New Hampshire magnitude 5.5;

2002 - nearby Plattsburgh, N.Y. magnitude 5.2.

4. The 1727 and 1755 earthquakes were documented in detail by local Reverend Parkman in his diaries. He described the 1727 earthquake as extreme shaking which lasted about 1.5 minutes, followed by 8 aftershocks. He described the 1755 quakes as lasting about the same duration with one aftershock.

Earthquake shaking of this duration would lead to substantial damage to structures in the town which are not up to code, including most of the unreinforced masonry buildings downtown. Even reinforced buildings could suffer external damage from bricks falling off the exteriors.

There are no reliable estimates on recurrence intervals for large New England quakes. Even though it's been 269 years since the Cape Ann quake, that time frame is nothing in geological terms. Major earthquakes are less frequent in New England when compared to the West Coast, but they are not rare in larger time frames, such as centuries. It's been 2.5 centuries since the 1755 quake.

5. The report does not take into account local geological conditions. A large portion of the town is composed of glacial outwash sand and gravel or glacio-lacustrine fine sand, silt and clay. Where the water table is shallow, prolonged shaking in these soils could cause soil liquefaction. Large sections of downtown Westborough are built on these types of soils. Subsurface infrastructure would be especially at risk.

6. The earthquake mitigation strategies listed in the report are very inadequate. For example, since the Community Center is built on outwash soils where the water table is relatively shallow, it may not be safe to use after a large earthquake. Buildings built on uplands, which are mostly glacial till soils, especially those buildings built to current standards are more likely to be available, including privately owned office buildings and some of the school buildings, such as Fales and Mill Pond Schools. I recommend that the town work with office building owners to get permission to use them for emergency shelters, NOT the Community Center.

7. The home-based mitigation strategies are not appropriate or adequate for an earthquake disaster. Extreme temperatures, defensible space and tree trimming have nothing to do with earthquake preparedness. They are appropriate for weather-related events. Earthquake preparation instructions should include how to live when utilities go down, how to respond to gas leaks in the low pressure lines feeding a home, and evaluating whether it's safe to stay in a house. This list is not exhaustive. Most earthquake deaths are not caused by the shockwaves themselves. They are caused by structural collapse.

8. As a footnote, I felt the 11/8/20 New Bedford event. It shook dishes in my kitchen."

<u>Commentor #3</u>

"HazMit is about getting stupid humans under control And Westborough is FULL of them. The blatant over-development of 2016-2021 strains natural resources, weakens root systems, destroys symbiotic relationships beneath the surface, lead to natural erosion, etc.

Westborough has a total joke Sustainable Westborough committee which does nothing to help prevent hazards. Stop buying huge gas guzzlers almost none of the stereotype of the town need. Those cars with those kind of home owners are notorious for over-driving and that leads to heavy road damage and that leads to strain beneath the surface which leads to soil erosion. And with

such homeowners come the ARMIES of environmental-raping contractors with massive vehicles and they often come in caravans and are threat April-November RE: road ruin, soil erosion, etc.

The stereotype problem in Westborough is evident on a town Board that is more interested in keeping up a way of life long since gone that some of them grew up with. They also happen to be in the top 10% economic demo.

A massive elementary school rebuild happened over the past few years, it was way too much RE: contractors, road ruin, etc and Planning, the Board and the TM ignored all reports about problems. That school single-handedly led to massive tree rape to make sure power got to the school due to the dated above ground lines that could go underground if utilities weren't corrupt and the execs weren't about their bonuses. Repeatedly it was pointed out that invading hordes mindlessly hacked away at trees to make sure the school was taken care of and the town DPW is notorious for regular plant/tree rape with what they consider pruning. Due to that school and the soil damage (flooded yards in new homes built between 2016-2021 are the norm, one even has a geyser that spouts up on Eli Whitney St when the rain gets really heavy). And this summer monitoring wells were put in woods that we spent million buying to prevent further land rape, the wells being there due to over-development. They weren't need and the contractors who put them in raped and maimed the land, even driving into the area.

Westborough is the epitome of stereotypical entitled lilywhites being THE cause for all HazMit problems. They also tend to be bigots though hide behind being bleeding hearts and want inclusivity on their own terms.

Lastly, the most sr. Board member Ian Johnson forced an illegal second vote to try and turn the beloved town library into another "community center"-esque dump off place for parents to keep avoiding raising their kids. Local librarians have quit or retired at other libraries due to making small spaces into large natural resource-needing ones.

He's also, with some other old time townie trash, trying to force millions more be spent (w/o letting all 20K in town vote on it) on a proven money pit and EPITOME of environmental rape, that being the town golf course restaurant. Surrounding towns have better courses and that course should be a multi-purpose park for the 20K to use."

Commentor #4

"**REDACTED** Acknowledging that we have not had time to completely read this document, I would like to raise a significant concern regarding storm water mitigation. Our house and yard **REDACTED** in the Hundreds neighborhood. In fact, we have a storm drain which sits at the end of our driveway. During any significant rain event, the stormwater system is overwhelmed and unfortunately we pay the price for it.

Currently, The Town of Westborough has an easement on the side yard of the property. This easement is for a pipe which runs from the stormwater drain to a manhole in the side yard. From this manhole, a pipe runs out back into the wetlands. The current infrastructure is not adequate to handle such a significant flow of water. During rain events, it is not uncommon to have stormwater

crest the end of our driveway and wash out the mulch and soil in our flower bed. The town attempted to address this issue during recent paving work, however it still presents a problem.

The much larger issue, is the fact that the system is not large enough to handle the volume of stormwater. Years ago, we had the town come out because the pressure was so intense, the manhole cover would dislodge. The towns answer to the problem was installing a bolt down cover on the manhole. While the cover no longer becomes dislodged, the excessive amount of water is now forced to the outside edge of the enclosure and causes considerable flooding and erosion of the soil in our back yard. This erosion is of great concern. The driveway is cracking in areas and we have lost the use of our back yard for a majority of the year.

We have had two conservation commission employees out to look at the issue and have got nowhere in terms of resolving this issue. We not only have to deal with the stormwater from the neighborhood, we are now also assessed a yearly fee for stormwater. We are hopeful that this issue will be addressed in your plan and that it will not require legal action on our end.

Please feel free to reach out if you have any questions, and I look forward to having this issue resolved once and for all. We are eager to discuss you with this further."

Community Lifeline Comments on Draft Westborough Hazard Mitigation Plan

Fiona Coughlan, the Town Planner in Grafton

"This looks great from my quick review. Just a note that all coordination involving Rte. 30 should involve MassDOT. I also wanted to share Tufts's Draft Hazard Mitigation Plan: https://tufts.app.box.com/s/1rp8b53w6mgarjv0fd09b0kdrqjyr371

It incorporates comments from Grafton staff made during their drafting workshop. It could be useful to you and the Town as Tufts is on the border of Grafton and Westborough, and Rte. 30 goes through the campus.

I was surprised by the number of earthquakes in New England since 1975!"

Christopher McGoldrick, the Director of Planning and Economic Development in Shrewsbury, noted that he had received the draft plan for review, but he did not provide any comments on it.

Sarah Walker, the Chief Operating Officer at the Worcester County Food Bank, replied and stated that the draft plan looks fine from the Worcester County Food Bank's perspective.

APPENDIX F:
Glossary

APPENDIX E

GLOSSARY OF TERMS

As used in this plan, these terms are defined as follows:

Blizzard – Issued for sustained or frequent gusts to 35 mph or more for an hour or greater and considerable falling and/or blowing snow. These conditions frequently occur alongside reduced to or below one-quarter mile. These conditions must be the predominant condition over a 3-hour period.

Blizzard warning - Sustained winds or frequent gusts of 35 mph or higher, occurring in combination with considerable falling and/or blowing snow. When proclaimed, these conditions are expected to prevail for a period of at least three (3) hours. Visibilities will frequently be reduced to less than one-quarter mile.

Blowing snow - Wind driven snow that reduces visibility to six (6) miles or less causing significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.

Community Lifelines - The most fundamental services in the community that, when stabilized, enable all other aspects of society to function (definition from FEMA)

Conflagration - A large destructive fire; which attains such intensity that it creates and sustains its own wind system. It is most commonly a natural phenomenon, created during some of the largest bushfires, forest fires, and wildfires.

Drifting snow - Uneven distribution of snowfall caused by strong surface winds. Drifting snow is usually associated with blowing snow.

Flurries – Intermittent light snow with no measurable accumulation; a light dusting is all that is expected.

Exposure - The people, property, systems, or functions that could be lost to a hazard. Generally, exposure includes what lies in the area that the hazard could affect.

Freeze - Occurs when the surface air temperature is 32 degrees Fahrenheit or below over a widespread area for a climatologically significant period of time. The term “freeze” is usually restrictive to advective situations or occasions when wind or other conditions prevent frost.

Freezing rain or drizzle – Rain that falls as a liquid but freezes into an icy glaze when it hits the ground or other surfaces such as trees, cars, and roads=.

Frost - The formation of thin ice crystals on the ground or other surfaces in the form of scales, needles, feathers, or fans. Frost develops when the temperature of the earth's surface falls below 32 degrees Fahrenheit, but because frost is primarily an event that occurs as the result of radiation cooling, it frequently occurs with air temperatures in the middle 30s.

Graupel - Small pellets of ice created when super-cooled water droplets coat or rime, a snowflake. The pellets are cloudy or white, not clear like sleet, and are often mistaken for hail. Same as snow pellets or small hail.

Gustnado - A whirlwind of dust or debris at or near the ground with no condensation funnel. Typically forms as an eddy in thunderstorm outflows.

Hail - A form of showery precipitation in the form of irregular pellets or balls of thin ice that occur when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice.

Heavy snow - This definition depends on the region of the USA. In Massachusetts, heavy snow means that six (6) or more inches of snow have fallen in 12 hours, or eight (8) inches in 24 hours. Heavy snow is also observed when snow is falling at a rate of one (1) inch per hour.

Heavy Snow Warning - Snow accumulations are expected to approach or exceed six (6) inches in 12 hours or eight (8) inches or more in 24 hours but will not be accompanied by significant wind. During a heavy snow warning, freezing rain and sleet are not expected.

Hurricane - An intense tropical cyclone in the Atlantic, Caribbean Sea, Gulf of Mexico, or eastern Pacific, which the maximum 1-minute sustained surface wind is 74 mph or greater.

Ice Storm - An ice storm is used to describe occasions when damaging accumulation of ice are expected during freezing rain situations. Significant accumulations of ice are recognized to pull down trees and utility lines, resulting in power loss; they are defined as one-quarter inch or greater.

Ice Storm Warning – Predicted significant coating of freezing rain; one-quarter inch or more is expected to accumulate in an area.

Invasive Species - A species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (definition from the Invasive Species Advisory Committee of the U.S. Department of the Interior).

Mitigation - The process of reducing the severity of the impact of natural hazards through planning. Each hazard requires a specific type of mitigation. In some cases, we can use engineering solutions (such as an earthquake-resistant building) to at least temporarily reduce the impact of a natural hazard. In other cases, the only form of mitigation that is guaranteed to be successful is to limit or not allow human activities where the hazard occurs (such as in floodplains).

Natural Disaster - A hazard event caused by nature or the natural process of the earth, such as a flood or tornado. Natural disasters result in widespread destruction or death to the lives of individuals, damaging their property, causing economic loss and/or the inability for a population to rebuild.

Natural Hazard - An act or phenomenon that has the potential to produce harm or other undesirable consequences to a person or thing.

Risk - Depends on all three factors: hazard, vulnerability, and exposure. Risk is the estimated impact that a hazard would have on people, services, facilities, and structures in a community. It refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.

Sleet – Pellets of ice composed of frozen or mostly frozen rain drops or refrozen partially melted snowflakes. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorists. Heavy sleet occurs when a half of an inch of sleet accumulates

Snow Showers - Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

Snow Squalls - Intense, but of limited duration, periods of moderate to heavy snowfall, accompanied by strong, gusty surface winds and possible lightning.

Storm Surge – An abnormal rise in sea level, accompanying a hurricane or other intense storm, whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the cyclone. Storm surge is usually estimated by subtracting the normal or astronomic tide from the observed storm tide. Storm surges can reach 25' high and 50-100 miles wide. This can cause severe erosion, major flooding and extensive damage to coastal areas.

Sustained Wind - Two-minute average wind measured at about 33' above the surface. BB.

Technological Disaster - A disaster that results from a technological or man-made hazard event.

Technological Hazard - A hazard that originates in accidental or intentional human activity (oil spill, chemical spill, building fires, terrorism, etc.)

Tropical Depression - A tropical cyclone in which the maximum 1-minute sustained surface wind is 38 mph or less.

Tropical Storm - A tropical cyclone in which the maximum 1-minute sustained surface wind ranges from 39-73 mph.

Vulnerability - Susceptibility to physical injury, harm, damage, or economic loss. It depends on an asset's construction, contents, and economic value of its functions. Vulnerability assessment provides the extent of injury and damages that may result from a hazard event of a given intensity in a given area.

Wind Chill Warning - Life-threatening wind chills reaching minus 50 degrees Fahrenheit or lower. Criteria varies by state.

Watch (Storm) - A watch is used when the risk of a hazardous weather event has increased significantly, but the occurrence, location and timing are still uncertain.

Warning/Advisory (Storm) - These products are issued when a hazardous weather event is occurring, is imminent, or has a very high probability of occurrence. A warning is used for conditions posing a threat to life or property. Advisories are for less serious conditions that cause significant inconvenience and, if caution is not exercised, could lead to situations that may threaten life and property.

Whiteout - A condition caused by falling and/or blowing snow that reduces visibility to nothing or zero miles; typically, only a few feet. Whiteouts can rapidly occur, blinding motorists and creating chain-reaction crashes involving multiple vehicles. Whiteouts are most frequent during blizzards.

Wind Chill - The wind chill is based on the rate of heat loss from exposed skin caused by the combined effects of wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. This temperature is the reading the body "feels" given the combination of wind and air temperature. At wind speeds of four (4) mph or less, the wind chill temperature is the same as the actual air temperature. The threshold for potentially dangerous wind chill conditions is about negative 20 degrees Fahrenheit.

APPENDIX G:

Certificate of

Adoption

TOWN OF WESTBOROUGH

TOWN HALL - 34 WEST MAIN STREET, WESTBOROUGH, MA 01581
TEL: (508) 366-3030 FAX: (508) 366-3099

CERTIFICATE OF ADOPTION
SELECT BOARD
TOWN OF WESTBOROGH, MASSACHUSETTS

A RESOLUTION ADOPTING THE *WESTBOROUGH HAZARD MITIGATION PLAN*

WHEREAS, the Town of Westborough established a Committee to prepare the 2026 update of the *Westborough Hazard Mitigation Plan*; and

WHEREAS, the updated *Westborough Hazard Mitigation Plan* contains several potential future projects to mitigate potential impacts from natural hazards in the Town of Westborough; and

WHEREAS, duly-noticed public meetings were held by the LOCAL HAZARD MITIGATION PLANNING TEAM on August 20th, 2024 and February 24, 2026; and

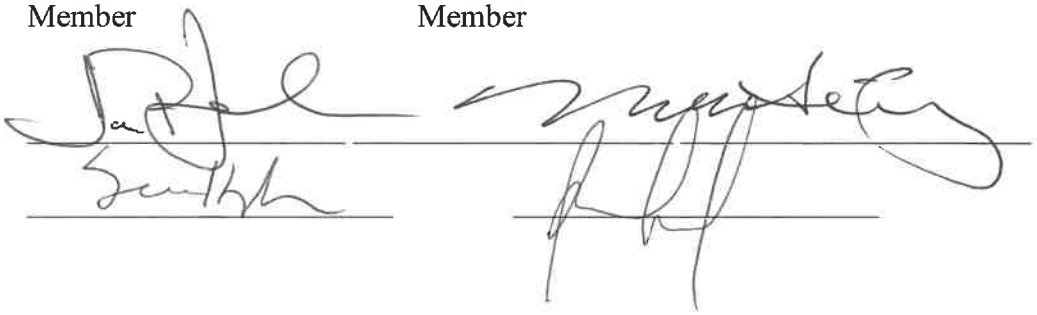
WHEREAS, the Town of Westborough authorizes responsible departments and/or agencies to execute their responsibilities demonstrated in the plan.

NOW, THEREFORE BE IT RESOLVED that the Town of Westborough SELECT BOARD adopts the 2026 update of the *Westborough Hazard Mitigation Plan*, in accordance with M.G.L. 40 or the charter and bylaws of the Town of Westborough.

ADOPTED AND SIGNED this February 24, 2026.

Name	Ian Johnson	Shelby Marshall	Sean Keogh
Title	Chair	Vice Chair	Member
Name	Mark Silverberg	Patrick Welch	
Title	Member	Member	

Signatures



This Certificate of Adoption helps meet the following FEMA local mitigation plan requirements:

- *F1. "For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance?" (Requirement 44 CFR § 201.6(c)(5)).*