2024 Hazard Mitigation Plan Update

Town of Maynard, Massachusetts

PREPARED FOR

Town of Maynard
Town Hall
195 Main Street
Maynard MA, 01754
978-897-1301

PREPARED BY

101 Walnut Street
Watertown, MA 02472
617-924-1770

January 24, 2024

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RESOLUTION NO. XXXX-XX

A RESOLUTION OF THE SELECT BOARD OF THE TOWN OF MAYNARD AUTHORIZING THE ADOPTION OF THE 2024 MAYNARD HAZARD MITIGATION PLAN UPDATE

WHEREAS, the Town of Maynard recognizes exposure to natural hazards that increase the risk to life, property, environment, within our community; and

WHEREAS; pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property; and

WHEREAS, The Disaster Mitigation Act of 2000 (Public Law 106-390) established new requirements for pre- and post-disaster hazard mitigation programs; and

WHEREAS; the 2024 Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Maynard from impacts of future hazards and disasters; and

WHEREAS, adoption by the Select Board demonstrates their commitment to hazard mitigation and achieving goals outlined in the 2024 Maynard Hazard Mitigation Plan Update.

NOW, THEREFORE, BE IT RESOLVED that the Town of Maynard:

1) Adopts in its entirety, the 2024 Maynard Hazard Mitigation Plan Update (the "Plan") as the jurisdiction's Natural Hazard Mitigation Plan and resolves to execute the actions identified in the Plan that pertain to this jurisdiction.
2) Will use the adopted and approved portions of the Plan to guide pre- and post-disaster mitigation of the hazards identified.
3) Will coordinate the strategies identified in the Plan with other planning programs and mechanisms under its jurisdictional authority.
4) Will continue its support of the Hazard Mitigation Action Group as described within the Plan.
5) Will help to promote and support the mitigation successes of all participants in this Plan.
6) Will incorporate mitigation planning as an integral component of government and partner operations.
7) Will provide an update of the Plan every 5 years.

PASSED AND ADOPTED on [insert date]

_____

XXXXX, Select Board, Town of Maynard

ATTEST: _____

XXXX, Town Clerk, Town of Maynard

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Executive Summary

This 2024 Hazard Mitigation Plan (HMP) Update is a product of the Maynard Hazard Mitigation Advisory Group (HMAG). It has been approved by the Maynard Select Board, the Massachusetts Emergency Management Agency, and the Federal Emergency Management Agency in accordance with the Disaster Mitigation Act of 2000.

The HMAG's overview of past natural hazard occurrences verifies that the Town of Maynard (the Town) is vulnerable to diverse events including drought, brushfires, Nor'easters and winter storms, and high winds. The discussion puts the likelihood of these events into historical perspective and recognizes that although the probability of thunderstorms and lightning events may be higher; the intensity and potential impacts from less likely events such as hurricanes can be far greater.

The risk assessment portion of the 2024 HMP Update confirms that the Town has much to lose from these events. The identified vulnerabilities include flood prone drainage systems, streets and infrastructure, bridges, wastewater systems, dams, critical municipal hazard response facilities, communication equipment, dams, populations, businesses, schools, recreation facilities, historic and natural resources.

To address these risks, the 2024 HMP Update puts forth a clear mission, a distinct set of goals, and 23 specific mitigation actions. The Town's hazard mitigation mission is to take action to prevent and reduce the loss of life, injury, public health impacts, and property damage resulting from all major natural hazards.

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Introduction

Plan Purpose

The purpose of this 2024 Hazard Mitigation Plan (HMP) Update (the Plan) for the Town of Maynard (the Town) is to set forth a framework of short- and long-term actions that aim to reduce the actual or potential loss of life or property from natural hazardous events, such as flooding, high winds and severe storms (i.e., Nor'easters), hurricanes, and brush fires.

This plan identifies the natural hazards facing the Town; assesses the vulnerabilities of its critical facilities, infrastructure, residents, and businesses; and presents recommendations on how to mitigate the negative effects of typical natural hazards.

This effort has drawn from the knowledge of local municipal officials and residents, and the recommendations presented are intended to be realistic and effective steps for mitigating natural hazards.

Hazard Mitigation and its Benefits

Hazard mitigation planning consists of a series of actions taken to identify specific areas that are vulnerable to natural and human-caused hazards within a town and seek to permanently reduce or eliminate the long-term risk to human life and property. It coordinates available resources and identifies community policies, actions, and tools for implementation that will reduce risk and the potential for future losses townwide. The process of natural hazard mitigation planning sets clear goals, identifies appropriate actions, and produces an effective mitigation strategy that can be updated and revised to keep the plan current. In short, it is where we were, where we are, and where we are going in terms of hazard mitigation.

States and communities across the country are slowly, but increasingly, realizing that simply responding to natural disasters, without addressing ways to minimize their potential effect, is no longer adequate. Striving to prevent unnecessary damage from natural disasters through proactive planning that characterizes the hazard, assesses the community's vulnerability, and designs appropriate land use policies and building code requirements is a more effective and fiscally sound approach to achieving public safety goals related to natural hazards.

In the past, federal legislation has provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) is the latest federal legislation to improve this planning process. It reinforces the importance of natural hazard mitigation planning and establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP) or other annual funding opportunities. Section 322 of the Act specifically addresses mitigation planning at the state and municipal levels of government. It identifies new requirements that allow HMGP funds to be used for planning activities. As a result of this Act, states and communities must now have an HMP approved by the Federal Emergency Management Agency (FEMA) in place prior to receiving post-disaster HMGP funds. In the event of a natural disaster, municipalities that do not have an approved HMP will not be eligible to receive post-disaster HMGP funding.

A **Natural Hazard** is defined as an extreme natural event. **Natural Disasters** occur when these extreme natural events come into contact with people and property.

Natural hazard mitigation is any sustained action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of natural hazards.

Natural Hazard mitigation planning is a process undertaken by a community to analyze the risk from natural disasters, coordinate available resources, and implement actions to minimize the damage to property, and injury or loss of life of its citizens before disaster occurs.

The purpose of this Plan is to recommend actions and policies for the Town of Maynard to minimize the social and economic loss of hardships resulting from natural hazards. These hardships include the loss of life, destruction of property, damage to critical infrastructure and critical facilities, loss/interruption of jobs, loss/damage to businesses, and loss/damage to significant historical structures. To protect present and future structures, infrastructure, and assets, and to minimize the social and economic hardships, the Town of Maynard implements the following general actions and policies:

- Revisions to the Town's Comprehensive Master Plan
- Revisions to the Town's Capital Improvement Plan
- Incorporation of hazard mitigation into the permit review process
- Local building code review
- Enforcement of the Stormwater Management Bylaw

The Town of Maynard also recognizes the important benefits associated with hazard mitigation, its interaction with municipal land use and infrastructure planning, and the need for a comprehensive planning approach, which accommodates these interdependencies. The Town's Comprehensive Master Plan (2020) addresses land use and development; housing; economic development; natural, cultural, and historic resources; open space and recreation, public facilities and services, and transportation within the town. While the entire HMP will not be formally incorporated into the revised Comprehensive Master Plan, certain, mitigation actions will be incorporated during the update process as applicable. The Town recognizes coordination between the HMP and the Comprehensive Master Plan to be of benefit because it will ensure a unified planning approach into the future and ensure that risk reduction remains a critical element of municipal planning. This is also in alignment with current goals of the Commonwealth.

A second benefit of hazard mitigation allows for a careful selection of risk reduction actions through an enhanced collaborative network of stakeholders whose interests might be affected by hazard losses. Working side-by-side with this broad range of stakeholders can forge partnerships that pool skills, expertise, and experience to achieve a common goal. Proceeding in this manner will help the Town ensure that the most appropriate and equitable mitigation projects are undertaken.

A third benefit of hazard mitigation is endorsing a proactive planning approach focused on sustainability, whereby the Town of Maynard could minimize the social and economic hardships that have resulted from the occurrence of previous natural disasters. These social and economic hardships include: the loss of life/injuries, destruction of property, interruption of jobs, damage to businesses, and the loss of historically significant structures and facilities. This proactive planning approach would look for ways to combine policies, programs, and design solutions to bring about multiple objectives and seek to address and integrate social and environmental concerns. Linking sustainability and loss reduction to other goals can provide a framework within the state and local governments that will bring the comprehensive planning process full circle.

Lastly, participation in a hazard mitigation planning process establishes funding priorities. The formal adoption and implementation of this plan will allow the Town of Maynard and its residents to become more involved in several programs offered by the FEMA including: the Community Rating System Program (CRS); the Building Resilient Infrastructure and Communities (BRIC) Program; the Flood Mitigation Assistance (FMA) Program; and the Hazard Mitigation Grant Program (HMGP). Money spent today on preventative measures can significantly reduce the cost of post-disaster cleanup tomorrow.

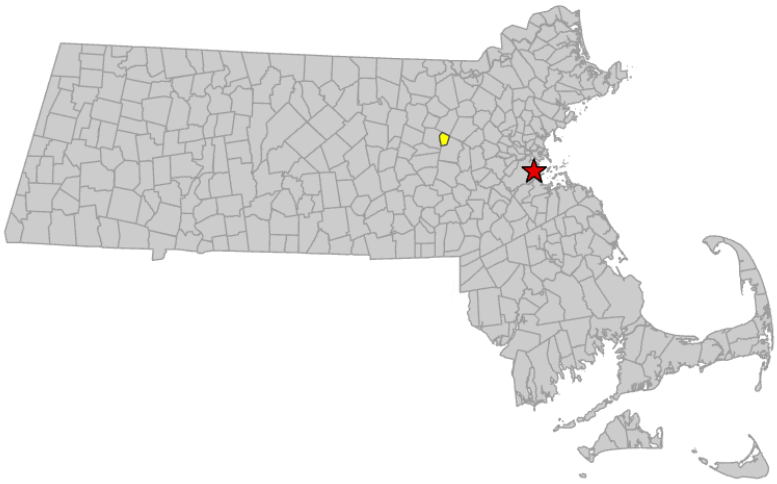
Mission Goals:

The Town of Maynard adopts this mitigation strategy to present actions that help protect its residents, visitors, businesses, and property from the effects of various natural hazards. It is the intent of the Town to:

1. Prevent and reduce the loss of life, injury, public health impacts, and property damage resulting from all major natural hazards.
2. Identify and seek funding for measures to mitigate or eliminate each known significant flood hazard area.
3. Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees, and boards.
4. Prevent and reduce the damage to public infrastructure resulting from all major natural hazards.
5. Encourage the business community, major institutions, and non-profits to work with the Town to develop, review, and implement the HMP.
6. Work with surrounding communities, state, regional, and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.
7. Ensure that future development meets federal, state, and local standards for preventing and reducing the impacts of natural hazards.
8. Take maximum advantage of resources from FEMA and MEMA to educate Town staff and the public about hazard mitigation.

Background

Figure 1 Locus Map



Maynard is located in Middlesex County in east-central Massachusetts (see **Figure 1**) and is bordered by Stow on the west and southwest, Acton on the north, Concord on the northeast, and Sudbury on the east and southeast. Maynard is located 16 miles southwest of the City of Lowell, 20 miles northwest of the City of Boston, and 22 miles northeast of the City of Worcester. Maynard is serviced by State Routes 27, 62, and 117. The town is not serviced by passenger or freight rail, however, MBTA Commuter Rail service to North Station in Boston is available in the neighboring Town of Acton. Maynard is not affiliated with a regional bus service. The closest airport facilities to Maynard are Laurence G. Hanscom Field in the Town of Bedford approximately 9 miles to the northeast and Boston-Logan International Airport in Boston approximately 23 miles away to the east.

The Town of Maynard is a small town geographically (5.4 square miles) of about 10,700 people with 4,515 housing units. Just over one-third of the housing units were built before 1940.

History

The Town of Maynard was incorporated in 1871. At the time, the town was primarily a mill town. Aesthetically, Maynard is both rural and suburban, with a well-defined commercial downtown, open space, and a residential landscape that is majority detached single-family homes but also has a significant number of attached units and multi-family homes. Maynard is a full-service community with full-time police and fire service, K-12 schools, curbside trash collection, and water and sewer service provided to over 95 percent of the town.

Town Founder Amory Maynard dammed up the Assabet River and diverted water into a mill pond to provide power for a new mill, which was opened in 1847. After over 100 years of producing woolens, flannels, blankets, and cloth, over one million square feet of mill space in Maynard transformed into new industries. Digital Equipment Corporation started operations in 1957 and in 1974 purchased the entire Mill complex. The company eventually made Maynard it worldwide headquarters making Maynard the "Mini Computer Capital of the World." In 1990, "The Mill" was renovated as Clock Tower Place (now known as Mill and Main) and houses many business, including the worldwide headquarters of Monster.com.

Demographics[1]

The number of residents has grown from a population of 10,106 in the 2010 US Census to 10,746 in the 2020 US Census. Maynard is a largely white community, with 83 percent of residents identifying as that racial group. Four percent of Maynard's community identify as Asian, 4 percent identify as Hispanic or Latino, and 1 percent identify as Black or African American. Children under 18 comprise 23 percent of the total population with persons over 65 accounting for 13 percent, which is similar to the statewide split of 20 percent and 18 percent, respectively. The median age in Maynard is 41.4, slightly above the statewide median of 39.6. At $107,891, median household annual income in the town is above both the state ($84,385) and Middlesex County ($106,202). Approximately 5 percent of households are categorized as in poverty, less than the state and county rates (10 percent and 7 percent, respectively). Housing costs are relatively low, with a median owner-occupied home valued at $367,700, compared to $398,800 for the state and $540,300 for the county. An estimated 57 percent of occupied housing units are detached single-family houses; the remainder are in multi-unit or attached structures. At 6 percent, vacancies are below the state (9 percent) and above the county (5 percent) numbers. Most homes have an as-built year prior to 2000, with 28 percent built before 1940, compared to nearly 32 percent for Massachusetts and 33 percent for Middlesex County.

Government

A five-member Board of Selectmen and a Town Administrator govern the Town. It operates under the open town meeting format. The Town Administrator, appointed by the Selectmen, carries out the day-to-day governing functions of the Town.

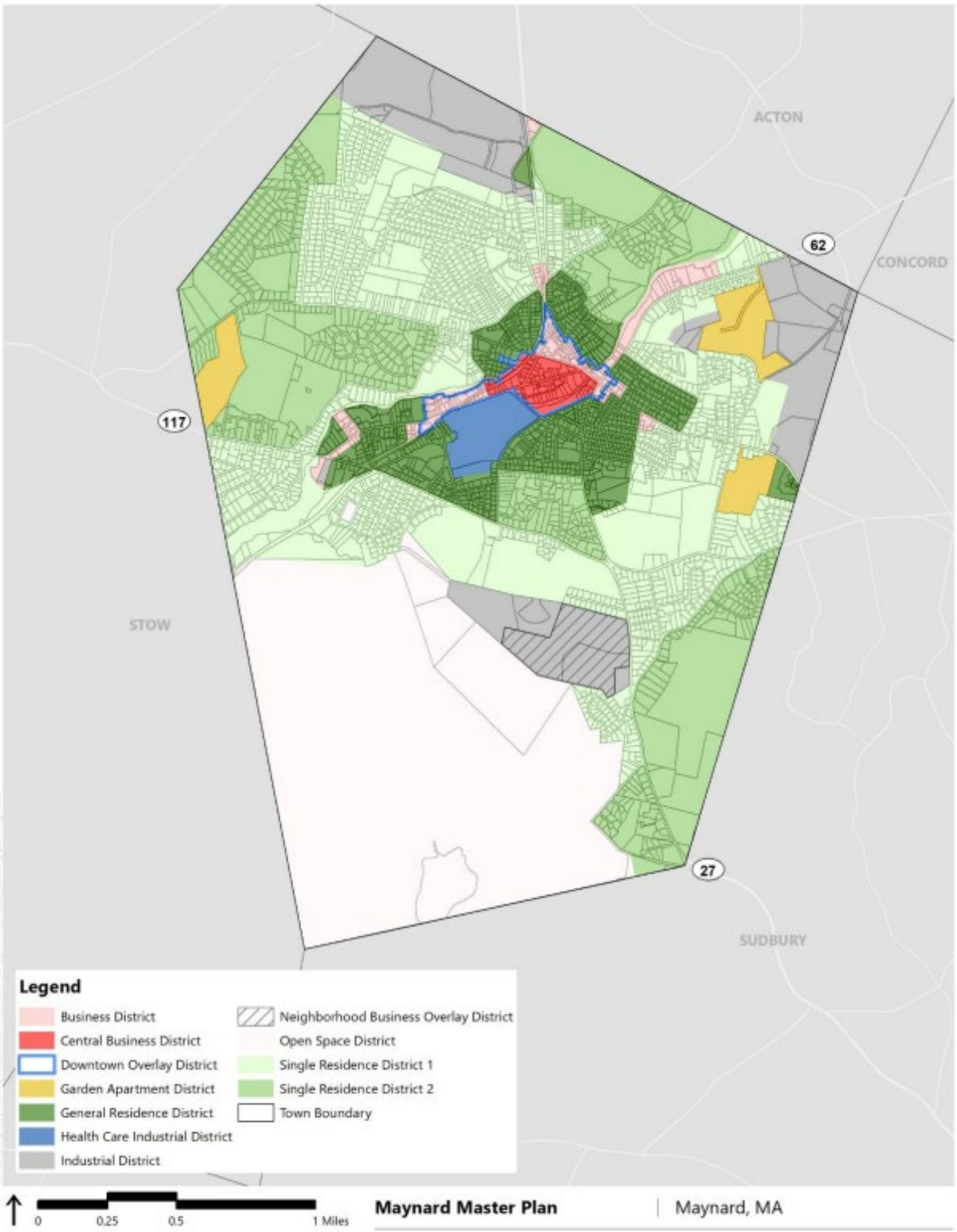
Land Use Patterns

Based on geographic land cover/land use data compiled by the State, as of 2005, approximately one-third of the land area in Maynard was developed for residential land uses, with the highest percentage being medium density residences. Less than 10 percent of the land in Maynard was developed for commercial and industrial uses. Over 53 percent consists of natural land and undisturbed vegetation. Relatedly, the Assabet River National Wildlife Refuge comprises approximately 20 percent of the town's total land area. This area is strictly off-limits to future development.

The latest (2018) depiction of land use throughout the town can be seen in **Figure 2**.

1 United States Census data ACS 5-year Estimates https://censusreporter.org

Figure 2 Zoning Map



Roads and Bridges

The following roadways in the community offer good regional transportation access, including to Route 2 and Interstate 495. Overall, there are approximately 66 miles of roadway within the town, 41 miles of which are maintained by the Town. There are an additional 24 miles of private or unaccepted roadways within the town.

- Route 62, also called Powder Mill Road and Main Street, is an urban principal that provides east-west access through the town and provides the main point of access to downtown. Regionally, Route 62 provides access between Route 2 to the northeast and Interstate 495 to the west.
- Route 117, also called Great Road, is an urban principal arterial that provides regional access between Interstates 95 and 495. Within the town, Great Road is predominantly residential, with pockets of commercial uses around major intersections.
- Route 27, also known as Acton Street, Haynes Street, Brown Street or Parker Street, is an urban principal arterial that serves as the only continuous north-south route through the town. Regionally, Route 27 provides access between Route 2 to the north and Route 20 to the south.

There are nine bridges within Maynard that are listed on National Bridge Inventory, all of which span the Assabet River. Of these bridges, three are maintained by MassDOT. The numerous bridges in the town are critical for Emergency Response Access.

Dams

The Massachusetts Department of Conservation and Recreation and Town staff have identified seven dams in the Town of Maynard, with another dam important to the town located in the Town of Stow. All dams in the Town of Maynard are privately-owned. None of the seven dams are classified as high hazard dams, two are classified as significant hazard dams (Ben Smith Dam and Millpond Dam), one is classified as a low hazard dam (Cuttings Pond Dam), and the remainder are identified as "N/A" (Maynard Rod & Gun Club Dam, Lake Boom Dam, Assabet River Dam, and Taylor Brook Reservoir Dam).

High Hazard Dam – where failure or misoperation will result in probable loss of human life

Significant Hazard Dam – where failure or misoperation will result in no probable loss of human life but can cause major economic loss, disruption of lifeline facilities or impact other concerns detrimental to the public's health, safety or welfare.

Low Hazard Dam – where failure or misoperation will result in no probable loss of human life and low economic losses.

Utilities

The Town of Maynard's drinking water supply derives from seven groundwater sources in three different locations: Rockland Avenue Filtration Plant, Old Marlboro Road Filtration Plant, and Well #4 Filtration Plant. The Town has two water storage tanks as well. Over 95 percent of Maynard residents are connected to the public sewer system maintained by the Town. Maynard Department of Public Works (DPW) operates and maintains three water treatment systems, 10 sewer pump stations, and over 100 miles of water distribution and sewer collection lines servicing the town. The Town of Maynard is responsible for the stormwater system.

Eversource is responsible for delivering electricity throughout the town. Eversource Energy (NSTAR Gas) is the local natural gas provider. While regional gas and electric utilities are regularly maintained by the entities that own them, the town's public utility infrastructure is maintained as needed.

Verizon and Xfinity provide telephone, cable TV, and Internet service to Maynard residents and businesses.

The Town of Maynard's communication equipment is located throughout the town, including at the Verizon Switching Station. All new Town facilities have underground communication and electric utilities.

Private cellular towers are also located throughout the town, providing services from all of the national cellular service providers.

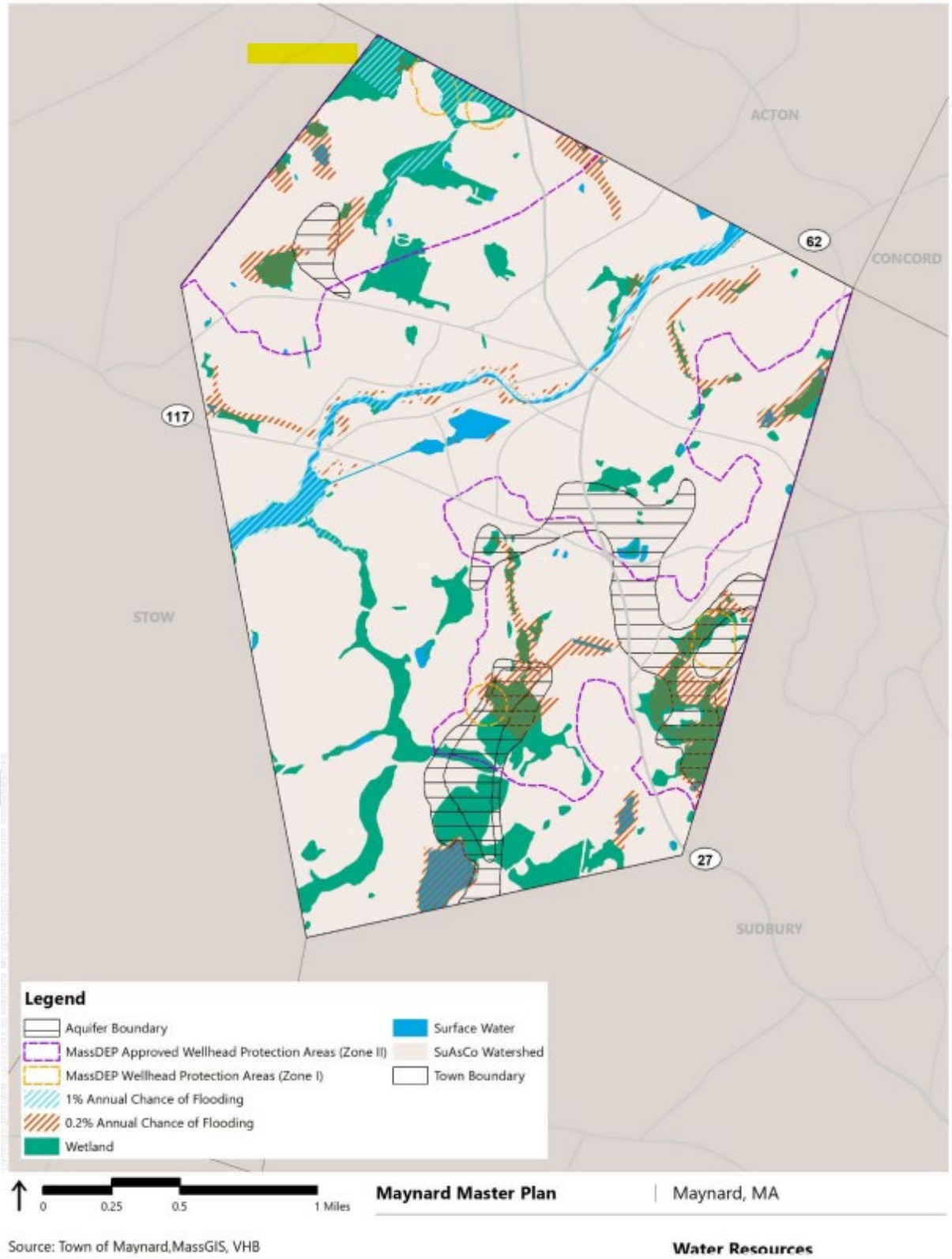
Water Resources

The water resources in Maynard serve important functions, such as supply for public and private water and groundwater, flood control, storm damage prevention, and fish and wildlife habitats, among others. There is approximately 70 acres of surface water and 307 acres of vegetated wetlands in the town.

The major water resource in Maynard is the Assabet River, which is part of the Sudbury, Assabet, and Concord River Watershed. The river flows northeast through the center of town, where it crosses bedrock ledges. Other major bodies of water in Maynard include the Millpond, Vose Pond, Durant Pond, Puffer Pond, Thanksgiving Pond, and the Assabet River Basins.

The Town's Wetlands Administration Bylaw was originally approved in 1996 and most recently amended in 2004. The purpose of this bylaw is to maintain the quality of surface water and groundwater, to protect against flooding hazards, and to provide reasonable protection and conservation of irreplaceable natural resources. Resource areas protected under the bylaw include vegetated wetlands, vernal pools, water bodies, and lands within 100 feet of these resources, among others.

Figure 3 Water Resources



Forest and Open Space

As noted earlier, over 53 percent of the town's total land area is natural land and undisturbed vegetation. Forested open space is well dispersed throughout the town and includes land of both active and passive recreational value as well as lands of ecological significance. Substantial open spaces are distributed throughout the town, including local parks (such as Crowe Park along Great Road), the Maynard Golf Course, and Glenwood Cemetery. Additionally, the Assabet River National Wildlife Refuge comprises 20.4 percent of the town's total land area.

The town's forested areas have a variety of vegetation and wildlife habitats. The forested landscape is known as the Northern Hardwood Association and ranges from mixed upland forest of secondary growth to red maple swamp. Wooded areas are largely comprised of oak and maple trees with smaller amounts of pine, beech, birch, and aspen. In Maynard, oak, beech, and maple forests are found at the Assabet River National Wildlife Refuge, the School Woods, Summer Hill, Rockland Woods, the Old Marlboro Road municipal well site, and Sudbury Nursery extension.

Cultural and Historic Resources

According to the Massachusetts Cultural Resources Information System (MACRIS) online database accessed in September 2023, there are 19 Massachusetts Historical Commission (MHC) Inventory Areas and 715 MHC Inventory Points listed for Maynard. HMAG did not specifically identify any of these sites as Critical Facilities or Infrastructure. However, the town's historic records were characterized by HMAG as critical historic resources.

Development Trends Since the 2011 Plan

Maynard has a stable community growth trend, averaging 21 new housing units annually between 2011 and 2021 according to the US Census Bureau ACS 5-Year Estimates for Housing Units. The Town's zoning code was updated in 2019. An Inclusionary Zoning Bylaw was adopted in May 2018 to leverage the creation of market-rate housing to advance affordable housing objectives for new development. The town currently has approximately 500 proposed units in various stages of conceptual plans, permitting, design and development that could potentially be added over the next few years. To date, 65 units have either been permitted and unbuilt or are under review.

Commercial and industrial development has primarily been through redevelopment of existing facilities, particularly close to the Downtown. Downtown Maynard is a compact, walkable business district featuring a mix of commercial, professional, and cultural establishments. The Maynard Outdoor Store is a well-known retail anchor.

New development and redevelopment have not significantly impacted Maynard's vulnerability to natural hazards. Recent changes to zoning ensure that buildings are built in areas that can support development. Structures and infrastructure are built to better able to withstand natural hazards. Maynard's stormwater management practices have been improved through compliance with MS4 requirements and additional steps are scheduled as part of that compliance.

2

Planning Process

Overview

The Town of Maynard initiated the hazard mitigation planning effort in 2022 at the recommendation of the DPW Director. This 2024 HMP Update is the result of a dedicated group of individuals working for 9 months identifying natural hazards and proposing ways to improve Maynard' associated resilience.

Maynard Hazard Mitigation Action Group

This 2024 HMP Update is a product of the appointed Maynard Hazard Mitigation Action Group (HMAG). Members were invited by the Town Administrator through the Emergency Management Committee. The HMAG was comprised primarily of Maynard employees and a local resident/volunteer. For the purpose of this HMP Update, the DPW Director was the main point of contact, but this is not a guaranteed role every year. The assignment of the HMAG and roles defaults to the Town Administrator. See **Section 7,** *Implementation and Adoption* for recommendations on enhancing the breadth of HMAG. The 2022-2024 HMAG members included:

- Bill Nemser (Director of Planning)
- Chief Anthony Stowers (Chief of Fire Department, left February 2023)
- Chief Angela Lawless (Chief of Fire Department, April 2023 – Present)
- Chief Michael Noble (Chief of Police Department)*
- Julia Flanary (Conservation Agent and Assistant Town Planner)*
- Justin DeMarco (Director of Department of Public Works)
- Michael Hatch (Superintendent of Water / Sewer Division)
- Priscilla Ryder (Maynard Sustainability Committee Member)*
- Richard Asmann (Building Commissioner)
- Wayne Amico (Town Engineer)

› Wayne White (Business Manager of Maynard Public Schools)

* denotes Maynard resident.

The Planning Process

This 2024 HMP Update builds off the efforts of the 2020 Community Resiliency Building workshops and resulting Maynard Municipal Vulnerability Program Summary of Findings. The HMP's seven step planning process was initiated in January 2022 with the establishment of the HMAG. Membership of the HMAG consisted of municipal staff and volunteers that represented key sectors and those which participated in the development of the previous HMP completed in 2011. Members were invited to participate via email invitation from the DPW Director and appointed by the Town Administrator. Collaboration across various departments is important for the Town to successfully implement the goals of this Plan. The DPW Director also personally invited one Maynard resident who is also a member of the Town's Sustainability Committee. To help coordinate this plan update, the Town hired a consultant, VHB out of Watertown, Massachusetts.

Step 2 started the plan development process and included the first meeting of the HMAG on February 1, 2023. The HMAG met virtually every month on Teams, with a pause in May and June.

The first HMAG meeting focused on re-ranking hazards of concern and discussing the process for updating the plan. The HMAG reviewed the various hazards in the 2018 Massachusetts Integrated Hazard Mitigation and Climate Adaptation Plan, the 2011 Maynard Hazard Mitigation Plan, and the 2020 Maynard Municipal Vulnerability Planning Report (MVP). The HMAG found that the hazards of concern in 2011 were still relevant in 2022-2024 with the addition of extreme temperatures.

Public participation at this preliminary stage was important to help inform the plan. At this initial meeting, the HMAG reviewed a set of questions to be included in an online public survey.

Step 3 began with the HMAG meeting on March 1, 2023. After reviewing the hazards of concerns and public survey results, the HMAG identified critical infrastructure and community assets within the town. Fourteen areas of vulnerability were identified: flood prone drainage systems/streets, or infrastructure; bridges; wastewater; water supply; other utilities; dams; critical municipal hazard response facilities; public communication equipment; populations; businesses; schools; recreational facilities; natural resources; and historic resources.

Before the HMAG began meeting regularly, the Town had recently (2020) completed a series of Community Resilience Building (CRB) Workshops as part of the State's Municipal Vulnerability Preparedness (MVP) Program. The 2011 HMP and associated mitigation actions were used as a starting point for CRB workshop discussions. Outcomes of the workshop, such as lessons learned and recommended actions, were considered for this 2024 HMP Update. VHB also reviewed the 2020 Maynard Master Plan Update, the Massachusetts

Integrated State Hazard Mitigation and Climate Adaptation Plan, local by-laws, and gathered information on current infrastructure projects going on throughout the town.

Current town capabilities were discussed at the meeting on April 26, 2023. See **Section 5, *Programmatic Capabilities*** for a summary. Many different departments, committees, and programs already engage in activities that help Maynard become more resilient to a variety of hazards. It is important to highlight these capabilities and show how they support the Town's hazard mitigation efforts and how they can be improved upon.

Step 4 created an updated list of mitigation actions to reduce the impact of natural hazards to the identified vulnerable areas. At the July 18, 2023 meeting, the HMAG reviewed goals and mitigation items that were proposed in the 2011 plan. Status updates were given for all the previous actions. The incomplete actions that were still important were rolled into the list of actions for this 2024 HMP Update. Some actions were no longer relevant to the Town. See **Table 25** in **Section 6, *Mitigation Actions***. During this July meeting, the HMAG also began to brainstorm new mitigation actions.

Step 5 was proposing new mitigation actions. At the August 24, 2023 meeting, the group continued the discussion about what new mitigation actions, establishing action timelines, costs, and identifying responsible parties.

Step 6 focused on the prioritization of the mitigation actions. See **Section 6, *Mitigation Actions***. This discussion occurred towards the end of the August 24th meeting. After this meeting, VHB began drafting the updated plan for Committee review.

Step 7 furthered the public input and review process with the Maynard Select Board, and the general public for review and comment. The 2024 HMP Update was posted on the Town's website and made available at Town Hall for public review. The invitation to review the draft HMP was promoted on the Town's social media accounts. To provide an opportunity for feedback and input from neighboring communities, the draft HMP was also emailed to Town Planners in the neighboring towns of Stow, Acton, Concord, and Sudbury. A few comments and editorial suggested were received and incorporated where appropriate.

Table 1 provides a summary of the HMAG's meeting dates and the activities that they conducted:

Table 1 Committee Meetings and Milestones

Date	Meeting Summary
02/01/2023	› Discussed the Plan's purpose as well as hazards of concern › Reviewed the questions for the Hazard Perceptions Survey
02/15/2023	› Posted the Hazard Perceptions Survey online
03/01/2023	› Reviewed hazards of concern › Listed critical infrastructure and community assets
04/26/2023	› Reviewed community assets and discussed current capabilities
07/18/2023	› Reviewed status of 2011 actions

Table 1 Committee Meetings and Milestones

Date	Meeting Summary
08/24/2023	› Finalized mitigation actions and discussed prioritization
09/29/2023	› Draft Plan circulated to HMAG for review
01/30/2024	› Draft Plan posted for public comment
02/20/2024	› Draft Plan presented to Select Board
	› Draft Plan submitted to MEMA for review
	› Draft Plan submitted to FEMA for review
	› Final Plan adopted by the Town of Maynard

Public Input

This 2024 HMP Update benefits from two distinct types of public input strategies that were utilized by the HMAG during the drafting process and prior to its adoption by the Select Board. Public input for the HMP was primarily collected through an online public survey and an invitation to comment at a public meeting.

Early in the planning process, the HMAG promoted and distributed a "Hazard Perceptions" survey online. A link to this survey was posted on the Town's website with a banner to encourage engagement, and physical copies were also located at the DPW and the Maynard Public Library. The link to the survey was widely distributed on the Town's social media platforms and on the Town's website. The purpose of the anonymous survey was to hear from residents on their concerns related to the hazards and their neighborhoods. By August 2023, 209 individuals responded to the public survey. Not surprisingly, most respondents were concerned about high winds, winter storms, Nor'easters, and extreme cold. The survey responses also provided the HMAG with a list of problematic areas that are susceptible to flooding and buildings vulnerable to the identified hazards.

Over 200 people responded to the survey. See **Appendix A** for survey results. The HMAG used the input from the survey to focus their mitigation planning efforts.

Later in the planning process, the public had an opportunity to review the draft HMP and provide additional comments. Once the HMAG had completed their initial review of the draft HMP, an electronic copy was posted to the Town's website. The public was informed of both the webpage posting and the public hearing (see **Appendix B**). They were encouraged to review and comment on the document, as well as attend the virtual meeting. Notice of the public hearing was also posted as an agenda item on the Town's website in accordance with state law. During the public review period, X comments were received.

On February 20, 2024, the Select Board held a discussion on the 2024 HMP Update as part of their regular public meeting. At the Select Board meeting members did/did not request any edits to the plan and approved it to be circulated for public comment.

Review and comments from the Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) were also incorporated prior to formal plan adoption by the Select Board.

3

Natural Hazards

Hazards of Concern

The 2018 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan, the Maynard Community Resilience Building Workshop Summary of Findings, and the Maynard 2011 Hazard Mitigation Plan were used as a starting point for identifying hazards that pose the largest threat to Maynard. **Table 2** summarizes the hazards identified by the HMAG.

Table 2 Hazards Identified by the Maynard Hazard Mitigation Plan Action Group

Natural Hazards Identified by the State	Identified by the HMAG	Notes
Changes in Precipitation		
Inland Flooding	Yes	
Drought	Yes	
Landslide	-	Topography does not lend itself to landslides in Maynard
Sea Level Rise		
Coastal Flooding	–	Maynard is not on the coast
Tsunami	–	Maynard is not on the coast
Rising Temperatures		
Average/Extreme Temperatures	Yes	
Wildfires	Yes	
Invasive Species	-	Not traditionally discussed in this natural hazard mitigation plan
Extreme Weather		
Hurricanes/Tropical Storms	Yes	
Severe Winter Storm/Nor'easter	Yes	
Tornadoes	Yes	

Table 2 Hazards Identified by the Maynard Hazard Mitigation Plan Action Group

Natural Hazards Identified by the State	Identified by the HMAG	Notes
Other severe weather (including strong wind and extreme precipitation)	Yes	
Non -Climate Influenced Hazards		
Earthquake	Yes	

The Town of Maynard is more than 18 miles from the nearest coastal flood zone. Therefore, the HMAG did not consider sea level rise, coastal flooding, and tsunamis as being relative threats to the town.

Infectious diseases, while still a threat to the residents of Maynard, disease is generally considered a biological event, not meteorological, environmental, or geological.

During the beginning phases of the planning process, the HMAG participated in an exercise that captured the frequency of various hazards, their potential damage extent, and their impacts (i.e., to populations, infrastructure, natural environment, etc.). The following scales were used during the analysis:

Table 3 Hazard Scales

Probability of Future Occurrence	
Highly likely:	Near 100 percent probability within the next year
Likely:	Between 10 percent and 100 percent probability within the next year or at least one chance in next 10 year
Possible:	Between 1 percent and 10 percent probability within the next year or at least one chance in next 100 years;
Unlikely:	Less than 1 percent probability in next 100 years
Damage Extent	
Low:	Some local property damage not town wide, minor injuries/ loss of life
Medium:	50 percent of property could be damaged and possible injuries/ loss of life
High:	Major town wide property damage, injuries, and loss of life
Level of Concern/Risk Rank. Developed by the HMAG to rank the various hazards based on frequency and damage potential.	
Low:	Not expected to occur with any frequency, damages will be limited
Medium:	Will occur within the next 10 years but the Town has resources to reduce risks
High:	Expected to occur within the next 5 years and is a major concern with townwide impacts

Based on a combination of probability of future occurrence, damage extent and impacts, the HMAG assigned each hazard a Level of Concern. **Table 4** summarizes the hazards of concern for the Town of Maynard, ranked from a high concern to low concern.

Table 4 Hazards Ranked

Hazard	Level of Concern/Risk Rank
Winter Storms	High
High Wind	High
Drought	High
Nor'easters	Medium
Hurricanes	Medium
Flooding (Heavy Rain, Runoff, Flash Flooding, Riverine Flooding	Medium
Heat Wave	Medium
Extreme Cold	Medium
Dam Failure	Medium
Lightning	Low
Tornadoes	Low
Brushfires/Wildfires	Low
Earthquakes	Low
Landslides	Not Applicable
Coastal Flooding/Erosion	Not Applicable

It is worth noting that the 2011 HMP listed flooding, dam failure, severe snowstorms/ice storms/Nor'easters, hurricanes, and severe thunderstorms as the hazards of greatest concern.

The top hazards listed in the 2020 Community Resiliency Building Workshop were flooding (all applicable types: riverine, stormwater runoff, and dam failures), severe storm events, heat waves, and wildfires.

In this 2024 HMP Update, climate change is treated as an ongoing amplifier to the identified natural hazards, not profiled as an independent hazard. Climate change impacts will be mentioned for each hazard. "Extreme weather events have become more frequent during the past half-century, and this trend is projected to continue.[2] For instance, more frequent intense precipitation events may translate into more frequent flooding episodes. The National Climate Assessment and Development Committee has documented that the average temperature across the United States has increased 1.5°F since 1895, with the majority of the increase since 1980. Weather events have and will continue to become more intense and frequent and will result in health and livelihood related impacts such as water supply, agriculture, transportation, and energy. The impact of dynamic storm events includes, but is not limited to, more frequent and intense heat waves, increases in ocean and

2 IPCC, 2012 - Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (Eds.) Available from Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU ENGLAND, 582 pp.

freshwater temperatures, frost-free-days, heavy downpours, floods, sea level rising, droughts, and wildfires."[3]

The following subsections are organized by the level of risk as identified in **Table 5**.

Winter storms

Description

For the context of this 2024 HMP Update, a winter storm includes ice storms, heavy snow, blowing snow, and other extreme forms of winter precipitation.

Winter storms vary in size and strength and can be accompanied by strong winds that create blizzard conditions and dangerous windchill. There are three categories of winter storms. A blizzard is the most dangerous of winter storms. It consists of low temperatures, heavy snowfall, and winds of at least 35 miles per hour. A heavy snowstorm is one which drops four or more inches of snow in a twelve-hour period. An ice storm occurs when moisture falls and freezes immediately upon impact.

The two major threats from these hazards are loss of power due to ice on electrical lines and snow loading on rooftops. Additionally, loss of power could mean loss of heat for many residents.

Blizzard

"A blizzard is a winter snowstorm with sustained or frequent wind gusts to 35 mph or more, accompanied by falling or blowing snow that reduces visibility to or below a quarter of a mile. These conditions must be the predominant condition over a 3-hour period. Extremely cold temperatures are often associated with blizzard conditions but are not a formal part of the definition. However, the hazard created by the combination of snow, wind, and low visibility increases significantly with temperatures below 20ºF. A severe blizzard is categorized as having temperatures near or below 10°F, winds exceeding 45 mph, and visibility reduced by snow to near zero.

"Storm systems powerful enough to cause blizzards usually form when the jet stream dips far to the south, allowing cold air from the north to clash with warm air from the south. Blizzard conditions often develop on the northwest side of an intense storm system. The difference between the lower pressure in the storm and the higher pressure to the west creates a tight pressure gradient, resulting in strong winds and extreme conditions due to the blowing snow. Blowing snow is wind-driven snow that reduces visibility to 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."[4]

Ice Storms

An ice storm occurs when moisture falls and freezes immediately upon impact. The term ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Freezing rain most commonly occurs in a narrow band within

3 National Climate Assessment and Development Advisory Committee (NCADAC) January 2013 Draft Climate Assessment Report. http://ncadac.globalchange.gov/

4 National Weather Service, *Winter Storms* www.weather.gov

a winter storm that is also producing heavy amounts of snow and sleet in other locations. If extreme cold conditions are combined with low or no snow cover, the cold can better penetrate downward through the ground and potentially create problems for underground infrastructure, as well. When utilities are impacted and heating systems are compromised or do not work, water and sewer pipes can freeze and even rupture.

Location

A severe winter storm could have a serious impact on private and public structures, as well as the general population throughout Maynard. Heavy snow on the roofs of buildings is a greater concern than clearing ice and storm debris from roadways.

Probability of Future Occurrence

Highly Likely

Extent (Event Magnitude)

On average, Maynard receives 49 inches of snow during the winter months. The average winter temperature (December-February) in Maynard is 38 degrees Fahrenheit.[5]

The Northeast Snowfall Impact Scale (NESIS) developed by Paul Kocin of The Weather Channel and Louis Uccellini of the National Weather Service (Kocin and Uccellini, 2004) characterizes and ranks high-impact Northeast snowstorms. These storms have large areas of 10-inch snowfall accumulations and greater. 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, the NESIS gives an indication of a storm's societal impacts.

NESIS scores are a function of the area affected by the snowstorm, the amount of snow, and the number of people living in the path of the storm. 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 converted into one of the five NESIS categories. The largest NESIS values result from storms producing heavy snowfall over large areas that include major metropolitan centers.[6]

5 U.S. Climate Data https://www.usclimatedata.com/

6 See the NOAA site on Snow and Ice: https://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis

Table 5 Northeast Snowfall Impact Scale Categories

Category	NEIS 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+	Extreme

Source: NOAA National Centers for Environmental Information

The Sperry–Piltz Ice Accumulation (SPIA) Index is a scale for rating ice storm intensity, based on the expected storm size, ice accumulation, and damage to structures, especially exposed overhead utility systems (see **Figure 4**). The SPIA Index uses forecast information to rate an upcoming ice storm's impact from 0 (little impact) to 5 (catastrophic damage to exposed utility systems).

Maynard expects at least a level 1 (isolated or localized) utility interruptions every year due to ice.

Figure 4 SPIA Index

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

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

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

Source: National Outages & Mutual Aid

Impact and Damage Extent

The combination of wind, ice, and snow can have a crippling effect on the town. Heavy and/or excessive snowfall amounts can stress roofs and slow plowing efforts, as well as cause power outages. Multiple freeze-thaw cycles can also create large amounts of ice and make for even heavier roof loads. The local economy slows when businesses are closed due to winter weather.

Other impacts from winter weather include:

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

Climate Change Impacts

Maynard may likely see less snowfall over the winter season but may see more intense blizzards when they do occur.

History

Based on data available from the National Oceanic and Atmospheric Administration (NOAA), Northeast Snowfall Impact Scale there are 30 high-impact snowstorms since 2000 that have affected western Middlesex County. These storms are listed in **Table 6**.

Table 6 Heavy Snow in Western Middlesex County, 2000-2023[7]

Date	Inches of Snow	Notes
1/25/2000	8 to 15	-
2/18/2000	2 to 8	Dozens of accidents were reported, many of which were due to excessive speed.
12/30/2000	1 to 8	From the immediate Boston area to the south shore, snow changed to rain after 1 to 4 inches of accumulation.
1/20/2001	6 to 11	-
2/5/2001	12 to 24	Winds gusted between 35 and 50 mph.
3/5/2001	12 to 22	A major winter storm impacted Massachusetts with near blizzard conditions, high winds, and coastal flooding. It knocked out power to about 80,000 customers and shut down businesses and schools for several days. There were also many reports of downed trees and wires during the height of the storm, along with reports of lightning and thunder. Wind speeds of 50 to 60 mph were widely observed.
3/9/2001	4 to 8	-
3/30/2001	3 to 12	-
12/8/2001	6 to 9	-
3/20/2002	4 to 8	Dozens of accidents were reported due to slick roads and poor visibility. Two injuries were indirectly attributed to the storm.
3/16/2004	5 to 10	-
12/13/2007	16 to 20	Many motorists were affected as early dismissals from work and school just before snow began created rush hour like conditions which limited the snowplows' ability to plow.
12/16/2007	-	-
12/19/2007	-	-
1/14/2008	6 to 12	Heavy snow downed trees and power lines, some of which fell on cars, homes, and across commuter train/subway tracks.
2/22/2008	-	This heavy snow event was a Nor'easter.
12/19/2008	7 to 11	The heavy snow combined with 30 to 40 mph winds, resulting in one fatality and some tree and structural damage.
12/21/2008	4 to 13	-
12/31/2008	4 to 8	-
1/18/2009	7.5	-

[7] NOAA Storm Event Database. https://www.ncdc.noaa.gov/stormevents

Table 6 Heavy Snow in Western Middlesex County, 2000-2023[7]

Date	Inches of Snow	Notes
3/1/2009	8 to 11	-
12/9/2009	-	Several trees and branches were downed by a combination of heavy snow and wind.
12/19/2009	4 to 14	-
2/16/2010	5 to 7	-
1/12/2011	13 to 24	-
1/26/2011	6 to 12	-
10/29/2011	2 to 10	Heavy wet snow fell on foliated trees, breaking branches and downing trees and wires, resulting in widespread power outages.
12/29/2012	5 to 10	-
2/8/2013	19 to 29	Gusts exceeded hurricane force (74 mph) in Bedford, MA.
3/7/2013	9 to 22	-
3/18/2013	4 to 13	-
12/14/2013	5 to 10	-
12/17/2013	2 to 8	-
1/2/2014	6 to 14	-
2/5/2014	7 to 13	-
2/13/2014	4 to 12	-
2/18/2014	4 to 10	-
1/24/2015	4 to 8	-
1/26/2015	20 to 36	Blizzard conditions were reported.
2/2/2015	6 to 16	-
2/8/2015	7 to 20	The weight of this snowfall, on top of the two feet of snow many locations received two weeks prior resulted in several roofs collapsing.
2/14/2015	12 to 18	Blizzard conditions were reported.
2/5/2016	5 to 11	This snow was extraordinarily wet and heavy, bringing down trees and wires across portions of southern New England. Power outages reached a peak of approximately 107,000 customers without power in Massachusetts during the peak of the storm,
3/14/2017	9 to 12	Winds gusted between 30 and 50 mph.
11/15/2018	6 to 9	-
12/1/2019	12 to 22	-
1/18/2020	4 to 6	-
10/30/2020	4 to 6	-
12/5/2020	3 to 7	-
12/16/2020	9 to 15	Winds gusted between 25 and 35 mph.
1/7/2022	7 to 12	-
1/28/2022	11 to 17	Blizzard conditions were reported.
2/25/2022	6 to 10	-
3/14/2023	2 to 12	-

High Winds

Description

Wind is the movement of air caused by a difference in pressure from one place to another. Local wind systems are created by the immediate geographic features in a given area such as mountains, valleys, or large bodies of water. National climatic events such as high gale winds, tropical storms, thunderstorms, nor'easters, hurricanes, and low-pressure systems produce wind events in Massachusetts. The effects of high winds can include blowing debris, interruptions in power and communications utilities due to downed power lines, and intensification of the effects of other hazards related to winter weather and severe storms.

Powerline failure on Walnut Street during severe weather in September 2023. *Photo credit: Maynard Police Department.*

The Beaufort Wind Scale is a 12-level scale used to describe wind speed and observed wind conditions at sea and on land. A wind classification of 0 (i.e., wind speeds of less than 1 mile per hour) is considered calm. On the other end of the scale, a classification of 10 (i.e., wind speeds reaching 63 miles an hour/101 km/h) will blow down trees and cause considerable damage to trees and structures.

Figure 5 Beaufort Scale

Beaufort Number	Description	Wind Speed (km/h)	Observations
0	Calm	<1	Smoke rises vertically
1	Light Air	1-5	Smoke drifts slowly
2	Light Breeze	6-11	Leaves rustle, wind vanes move
3	Gentle Breeze	12-19	Leaves and twigs on trees move
4	Moderate Breeze	20-29	Dust picked up from ground
5	Fresh Breeze	30-38	Small trees sway in wind
6	Strong Breeze	39-51	Large branches move
7	Near Gale	51-61	Trees move, hard to walk
8	Gale	62-74	Twigs break off trees
9	Strong Gale	75-86	Branches break off trees
10	Whole Gale	87-101	Trees uprooted
11	Storm	102-120	Buildings damaged
12	Hurricane	>120	Severe building and tree damage

Source: NOAA Storm Prediction Center. Developed in 1805 by Sir Francis Beaufort.

Location

Wind events are expected throughout the year in Maynard. Low-lying areas with lack of tree cover across the Town of Maynard are at particular risk.

Probability of Future Occurrence

Likely

Extent (Event Magnitude)

Sometimes, wind gusts of only 40 to 45 mph can cause scattered power outages from downed trees and wires. This is especially true after periods of prolonged drought or excessive rainfall, since both are situations that can weaken tree root systems, making them more susceptible to the wind's effects. Winds measuring less than 30 mph are not considered to be hazardous under most circumstances.

Impact and Damage Extent

Strong wind gusts of 40 miles an hour (Beaufort Scale of 8) can blow twigs and small branches from trees. Occasional gusts and sustained winds at this speed (and above) are of concern to the Town. Damages from wind events range from power outages, property damage to vehicles and buildings and fallen trees/limbs. Previous wind events in Maynard have resulted primarily in power outages and downed tree limbs with minimal property damage. It is important that the Town of Maynard maintain their public tree trimming program that will reduce the likelihood of fallen trees/limbs from disrupting transportation routes, taking down power lines, and/or creating damage to the tree canopy.

Climate Change Impacts

Changes in atmospheric circulation are predicted to occur. See *Nor'easters* and *Hurricanes*.

History

As described in **Table 7**, high wind events in Maynard have mainly caused tree damage and temporary impacts to utilities, with no significant damage to structures.

Table 7 Recent History of High Winds in the Maynard Area (Middlesex County)[8]

Date	Magnitude (kts)	Notes
03/22/2017	50	An estimated 46-mph wind at Maynard.
10/24/2017	50	Single trees were brought down on River Street in Maynard with winds from 45 to 55 mph.
10/27/2018	50	This was classified as high wind based on impacts, with wind gusts around 50-55 mph. In Maynard, a large tree was down on Route 27 North.
2/25/2019	55	A tree was down in a back yard on Hird Street in Maynard.

8 NOAA Storm Event Database (2023) https://www.ncdc.noaa.gov/stormevents

Drought

Description

Drought is characterized as a continuous period of time in which rainfall is significantly below the norm for a particular area over a multi-year period. The American Meteorology Society defines drought as a period of abnormally dry weather sufficiently long enough to cause a serious hydrological imbalance. Drought differs from other natural hazards in that they occur suddenly. Rather, a drought evolves over months or even years and, while causing very little structural damage, can have profound economic, environmental, and social impacts.

There are four different ways that a drought can be defined:

1. **Meteorological** – A measure of departure of precipitation from normal. Due to climatic differences, what is considered a drought in one location may not be a drought in another location.
2. **Agricultural** – refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
3. **Hydrological** – occurs when surface and subsurface water supplies are below normal.
4. **Socioeconomic** – refers to the situation that occurs when physical water shortage begins to affect people.

Characteristics and impacts of drought differ in many ways, so it is difficult to quantify drought. An existing index called the Palmer Drought Severity Index (PDSI) uses temperature and precipitation levels to determine dryness, measuring a departure from the normal rainfall in a given area. The advantage of the PDSI is that it is standardized to local climate, so it can be applied to any part of the country to demonstrate relative drought or rainfall conditions. A monthly PDSI value below -2.0 indicates moderate drought, and a value below -3.0 indicates severe drought.

The U.S. Drought Monitor tracks drought conditions in Massachusetts and in the rest of the nation. It creates maps based on climate data, hydrologic and soil conditions, as well as reported impacts and observations from over 350 contributors nationwide.

Table 8 Drought Severity [9]

Severity	Category	PDSI Index Value	Drought Level	Possible Impacts
Exceptional Drought	D4	-5 or less	Emergency	Widespread crop/pasture losses, shortages of water creating water emergencies
Extreme Drought	D3	-4 to -4.9	Warning	Major crop/pasture losses, widespread water shortages or restrictions
Severe Drought	D2	-3 to -3.9	Watch	Crop or pasture losses likely, water shortages common, water restrictions imposed

9 United States Drought Monitor http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx

Table 8 Drought Severity [9]

Severity	Category	PDSI Index Value	Drought Level	Possible Impacts
Moderate Drought	D1	-2 to -2.9	Advisory	Some damage to crops/pastures, developing water shortages, voluntary water-use restrictions requested
Mild Drought/Abnormally Dry	D0	-1 to -1.9	Normal	Short term dryness slowing planting or crop growth
Incipient Dry Spell		-0.9 or less	–	–

Add Massachusetts, as with most states within the United States, uses both the PDSI and the Crop Moisture Index (CMI) as indices for a drought occurrence. The CMI (a derivative of the PDSI) provides information on the short-term or current status of purely agricultural drought or moisture surplus. The PDSI is most effective for determining long-term drought conditions, while the CMI is effective at helping determine short-term drought.

The Massachusetts Drought Management Task Force recommends drought levels for seven region of the State (Western, Connecticut River Valley, Central, Northeast, Southeast, Cape Cod, Islands), based on hydrological indices such as precipitation, groundwater, stream flow, and the PDSI, as well as on local supply indices such as static groundwater levels and reservoir levels. The Normal, Advisory, and Watch levels are issued statewide. The Warning and Emergency levels are issued on a regional basis and consider local conditions, source of water supply, and water storage capacity issues.

Location

Because of this hazard's regional nature, a drought would likely impact the entire community.

Probability of Future Occurrence

Highly likely

Extent (Event Magnitude)

The severity and duration of a drought would determine the scale of the event. Nearly all Maynard residents and businesses are served by the Maynard DPW. There is limited redundancy for drinking water systems.

Impact and Damage Extent

The U.S. Drought Monitor categorizes the following impacts of droughts:

- Slowing or loss of crops and pastures
- Water shortages or restrictions
- Minor to significant damage to crops and pastures;
- Low water levels in streams, reservoirs, or wells

While the impact of a drought can be assessed as "minor" overall, with very little damage to people or property likely to occur, impacts may be higher to vulnerable populations and the natural environment.

Drought conditions have been known to trigger the rapid increase of the gypsy moth populations in the region. The extended period of dry weather (specifically in May and June) slows the fungus that usually keeps the gypsy moth caterpillars at bay. Denuded trees can have cascading effects on the local ecosystem.

MVP Workshop participants expressed concern that more frequent and severe droughts may challenge water supplies and increase risks from wildfires as forests are damaged.[10]

Climate Change Impacts

Even though rain events may intensify due to climate change, the periods between them may be longer. According to the 2018 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan, longer periods of drought during the summer and fall are expected in the Northeast. This change is due to predicted higher temperatures which lead to great evaporation and earlier snowmelt. Seasonal drought may become more frequent as precipitation is concentrated into short time periods.

History

The Town of Maynard does not collect data relative to drought events. Since droughts tend to be regional if not statewide events, this plan references the best available Massachusetts data. The Commonwealth of Massachusetts has never received a Presidential Disaster Declaration for a drought-related disaster; however, the Commonwealth has experienced several substantial droughts over the past 100 years. The nine-year drought from 1961 -1969 is considered the drought of record. These historic major droughts range in severity and in length, lasting from three to 8 years. In many of these droughts, water-supply systems around the state were found to be inadequate. Water was piped in to farming areas, and water-supply systems were modified to permit withdrawals at lower water levels.

The 2016-2017 drought was the most significant drought in Massachusetts since the 1960s. The National Weather Service reported rainfall was well below average, down to the mid-30s inches each year. In many parts of the state, U.S. Geological Survey data for streamflow and groundwater reached new record low levels for several consecutive months.[11]

Table 9 displays peak drought severity in Massachusetts since 2000, from the US Drought Monitor.

[10] *Maynard Community Resilience Building Workshop Summary of Findings*. 2020.

[11] Massachusetts Drought Management Plan 2019

Table 9 Recent History of Droughts in Western Middlesex County[12]

Begin Date	End Date	Category	Notes
4/12/2012	5/15/2012	D2	Precipitation levels approximately one half of normal.
7/5/2016	8/31/2016	D2, D3	Soil moisture and groundwater conditions were found to be abnormally dry or much below normal for this time of year. Persistent dry conditions encouraged a boom in gypsy moth caterpillar populations.
8/1/2016	8/1 to 8/9 8/9 to 8/31	D2, D3	On August 9, the D2 designation was upgraded to D3- Extreme Drought.
9/1/2016	9/30/2016	D3	Reservoirs typically at 80 percent capacity were at 55 percent capacity.
10/1/2016	10/31/2016	D3	The Massachusetts Department of Environmental Protection (DEP) indicated mandatory non-essential outdoor water use restrictions were in place for numerous communities within central and eastern MA. Other communities in the Commonwealth had voluntary water restrictions in place.
11/1/2016	11/30/2016	D3	November average streamflows were mostly below or significantly below normal in every drought region.
12/1/2016	12/31/2016	D3	Below normal precipitation
1/1/2017	1/24/2016	D3, D2, D1	Rivers and streams received a boost in January, in large part due to mild conditions that enabled rainfall and periods of snowmelt. By the end of the month, many gaged rivers and streams were running at normal levels.

[12] U.S. Drought Monitor https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx

Hurricanes/Nor'easters

Description

Hurricanes are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. The primary damaging forces associated with these storms are high-level sustained winds and heavy precipitation. Hurricanes are violent rainstorms with strong winds that can reach speeds of up to 200 miles per hour and which generate large amounts of precipitation. Hurricanes generally occur between June and November and can result in flooding and wind damage to structures and above-ground utilities.

There are three categories of tropical cyclones:

- Tropical Depression: maximum sustained surface wind speed is less than 39 mph
- Tropical Storm: maximum sustained surface wind speed from 39-73 mph
- Hurricane: maximum sustained surface wind speed exceeds 73 mph

Hurricanes are categorized according to the Saffir/Simpson scale (see **Table 10**) with ratings determined by wind speed and central barometric pressure. Hurricane categories range from one (1) through five (5), with Category 5 being the strongest (winds greater than 155 mph). A hurricane watch is issued when hurricane conditions could occur within the next 36 hours. A hurricane warning indicates that sustained winds of at least 74 mph are expected within 24 hours or sooner.

The Saffir-Simpson scale below is based primarily on wind speeds and includes estimates of barometric pressure and storm surge associated with each of the five categories. It is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall.

Table 10 Saffir/Simpson Hurricane Wind Scale[13]

Wind Speed	Typical Effects
Category 1 – Weak 74-95 MPH (64-82kt)	*Minimal Damage:* Damage is primarily to shrubbery, trees, foliage, and unanchored mobile homes. No real damage occurs in building structures. Some damage is done to poorly constructed signs.
Category 2 – Moderate 96-110 MPH (83-95kt)	*Moderate Damage:* Considerable damage is done to shrubbery and tree foliage; some trees are blown down. Major structural damage occurs to exposed mobile homes. Extensive damage occurs to poorly constructed signs. Some damage is done to roofing materials, windows, and doors; no major damage occurs to the building integrity of structures.
Category 3– Strong 111-130 MPH (96-113kt)	*Extensive Damage:* Foliage torn from trees and shrubbery; large trees blown down. Practically all poorly constructed signs are blown down. Some damage to roofing materials of buildings occurs, with some window and door damage. Some structural damage occurs to small buildings, residences, and utility buildings. Mobile homes are destroyed. There is a minor amount of failure of curtain walls (in framed buildings).
Category 4 – Very Strong 131-155 MPH (114-135kt)	*Extreme Damage:* Shrubs and trees are blown down; all signs are down. Extensive roofing material and window and door damage occurs. Complete failure of roofs on many small residences occurs, and there is complete destruction of mobile homes. Some curtain walls experience failure.
Category 5 – Devastating Greater than 155 MPH (135kt)	*Catastrophic Damage:* Shrubs and trees are blown down; all signs are down. Considerable damage to roofs of buildings. Very severe and extensive window and door damage occurs. Complete failure of roof structures occurs on many residences and industrial buildings, and extensive shattering of glass in windows and doors occurs. Some complete buildings fail. Small buildings are overturned or blown away. Complete destruction of mobile homes occurs.

A strong low-pressure system along the Mid-Atlantic and New England can form over land or over coastal waters. The storm radius is often as large as 1,000 miles, and the horizontal storm speed is about 25 miles per hour, traveling up the eastern United States coast. Sustained wind speeds of 10-40 MPH are common during a nor'easter, with short term wind speeds gusting up to 70 MPH. Typically a winter weather event, Nor'easters are known to produce heavy snow, rain, and heavy waves along the coast. Unlike hurricanes and tropical storms, Nor'easters can sit offshore, wreaking damage for days.

Also called East Coast Winter Storms, Nor'easters are characterized by:

- A closed circulation.
- Located within the quadrilateral bounded at 45N by 65W and 70W, and at 30N by 85W and 75W.
- Show a general movement from the south-southwest to the north-northeast.
- Contain winds greater than 23 mph.
- The above conditions must persist for at least a 12-hour period[14].

13 National Weather Service, National Hurricane Center

14 Hersher, et al. An East Coast Winter Storm Climatology. Northeast Regional Climate Center, Cornell University, Ithaca, NY, 2001.

The magnitude or severity of a severe winter storm or Nor'easter depends on several factors including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, and time of occurrence during the day (e.g., weekday versus weekend), and season.

The extent of a severe winter storm (including Nor'easters that produce snow) can be classified by meteorological measurements and by evaluating its combined impacts. For measuring wind effects, the Beaufort Wind Scale is a system that relates wind speed to observed conditions at sea or on land (See **Figure 5**). The snow impact of a Nor'easter can be measured using NOAA's Regional Snowfall Index (See the section *Winter Storms*).

Hurricanes are generally coastally driven and are not anticipated to occur as frequently in Maynard as Nor'easters. The damage extent and impacts are similar.

Location

Maynard's close proximity to the Atlantic Ocean renders it particularly susceptible to Nor'easters and the resulting damage and loss of human life and property.

Probability of Future Occurrence

Likely and Highly Likely respectively (Hurricanes are less frequent, and Nor'easters occur about once a year)

Extent (Event Magnitude)

Hurricanes that likely make it up to Maynard are usually weak (Category 1) or downgraded tropical systems. The wind speeds may be less, but the storms can still bring a lot of rain which can cause widespread flooding.

On average, Maynard experiences or is threatened by a Nor'easter every year or two.

Impact and Damage Extent

Hurricane strength storms can cause river and street flooding. Extensive rain could damage homes, roads, and cripple the town. The high winds could down power lines and trees, and damage older structures. During extremely dangerous conditions, the Town may elect to open shelters. Damage extent is dependent upon the size and timing of the storm. A slow-moving storm may bring more rain to the area than a fast-moving storm.

Most damage in Maynard would be to utilities, roads, stormwater infrastructure, personal property, trees, and snow loads on roofs. Expected damages are similar to those from a hurricane. The Blizzard of 1978 was the largest Nor'easter on record. The storm brought heavy rains, high winds, and warm temperatures which melted ice.

Climate Change Impacts

Warming global air and water temperatures may increase the intensity of hurricanes that travel along the Atlantic Coast.

Similarly, changes in air and water temperatures may lead to stronger Nor'easters along the Atlantic Ocean. Maynard should expect stronger and more frequent severe storms.

History[15]

Table 11 displays high wind and hurricane history in Western Middlesex County since 2011 (date of previous Hazard Mitigation Plan), while **Table 12** presents the regional history of Nor'easters since 2011.

Table 11 Regional High Wind and Hurricane History

Year	Storm Notes
08/28/2011	Remnants of **Hurricane Irene**. A tree was downed at the FEMA Regional Operations Center in Maynard.
02/25/2012	High wind gusts up to 47 mph
09/18/2012	High wind gusts up to 47 mph
10/29/2012	Remnants of **Hurricane Sandy**. High wind gusts up to 67 mph
01/13/2013	High wind gusts up to 52 mph
11/24/2013	High wind gusts up to 54 mph
04/24/2014	High wind gusts up to 52 mph
10/22/2014	Tree damage caused by winds reaching 57 mph
03/17/2015	Downed power lines and tree damage caused by winds reaching 57 mph
04/04/2015	High wind gusts up to 52 mph
02/25/2016	High wind gusts up to 52 mph
03/31/2016	Downed power lines and tree damage caused by wind gusts up to 52 mph
03/02/2017	High wind gusts up to 52 mph
03/14/2017	High wind gusts up to 62 mph
03/22/2017	High wind gusts up to 46 mph
09/20/2017	Remnants of **Tropical Storm Jose** was mainly a rainfall event in Western Middlesex County. Local tree damage.
10/24/2017	High wind gusts up to 55 mph
10/29/2017	Remnants of **Tropical Storm Phillipe**. Local tree damage. Gusts to 50 mph.
03/02/2018	High wind gusts up to 59 mph
10/27/2018	High wind gusts up to 55 mph
11/3/2018	High wind gusts up to 50 mph
02/25/2019	High wind gusts up to 63 mph
02/27/2020	High wind gusts up to 55 mph
03/13/2020	High wind gusts up to 50 mph
04/13/2020	High wind gusts up to 70 mph
08/04/2020	Remnants of **Tropical Storm Isaias**. Local tree damage.
11/30/2020	High wind gusts up to 55 mph
03/01/2021	High wind gusts up to 60 mph
03/29/2021	High wind gusts up to 56 mph

[15] NOAA Storm Event Database, Middlesex County www.ncdc.noaa.gov. Wind gusts as reported at Hanscom Field in Bedford, MA which is 10 miles due east of Maynard.

10/27/2021	High wind gusts up to 43 mph
12/23/2022	High wind gusts up to 56 mph

Table 12 Nor'easter History in Middlesex County since 2011[16]

Date	Comments
01/12/2011	A developing Nor'easter coastal storm dumped 13 to 24 inches of snow across western Middlesex County. Strong winds combined with the heavy snow along the coast producing numerous downed trees and wires, resulting in 100,000 homes without power statewide, though most were in southeastern Massachusetts.
01/26/2011	A strong low-pressure system moved up the coast and southeast of Nantucket producing 6 to 12 inches of snow fell across western Middlesex County.
10/29/2011	A rare and historic October Nor'easter brought very heavy snow to portions of southern New England. Two to 10 inches of snow fell across western Middlesex County. At the peak, 665,000 customers in Massachusetts were without power. Seventy-seven shelters were opened and sheltered over 2000 residents across the state. Six fatalities occurred during and in the aftermath of the storm.
12/29/2012	A rapidly intensifying low moved out of the mid-Atlantic, passing southeast of Southern New England. This spread heavy snow across much of Southern New England, resulting in 5 to 10 inches of snow across western Middlesex County.
02/08/2013	Blizzard conditions were observed at Hanscom Field in Bedford, MA for more than 4.5 hours. The highest wind gust observed was 75 mph. Most locations in Massachusetts reported between 2.5 and 3 feet of snow.
03/07/2013	This storm brought heavy snow and significant coastal flooding to the forecast area. Nine to 22 inches of snow fell across western Middlesex County.
03/18/2013	A coastal storm moved across the southern New England coastline, spreading a wintry mix of precipitation across much of the area. Areas of northern Massachusetts and southwestern New Hampshire remained all snow and received around a foot.
12/14/2013	Low pressure moved out of the Midwest, off the mid-Atlantic coast and northeastward across Nantucket and the outer arm of Cape Cod bringing accumulating snow to much of southern New England. Five to ten inches of snow fell across western Middlesex County.
12/17/2013	Low pressure moved across Cape Cod bringing accumulating snow to much of southern New England. Two to 8 inches of snow fell across western Middlesex County.
01/02/2014	A significant, rapidly developing coastal storm moved southeast of Southern New England bringing heavy snow, bitter cold temperatures, coastal flooding, and strong winds to Massachusetts. Six to 14 inches of snow fell across western Middlesex County.
02/05/2014	Low pressure moving off the mid-Atlantic coast intensified as it moved northeastward over Nantucket. This spread heavy snow across all of southern New England. Seven to 13 inches of snow fell across western Middlesex County.
02/13/2014	A significant winter storm brought 4 to 12 inches of snow fell across western Middlesex County.
02/18/2014	Low pressure developing south of Long Island and moving northeastward across southern New England brought 4 to 10 inches of snow across western Middlesex County.
01/24/2015	A low-pressure system developed off the North Carolina coast and moved up the east coast of the United States, bringing snow to much of southern New England. Four to 8 inches of snow fell across western Middlesex County.

16 NOAA Storm Event Database, Middlesex County. https://www.ncdc.noaa.gov/stormevents/

01/26/2015	A historic winter storm brought heavy snow to southern New England with blizzard conditions to much of Rhode Island and eastern Massachusetts. Twenty to 36 inches of snow fell across western Middlesex County. Over 40 shelters opened across Massachusetts, serving a total of 450 individuals. Two fatalities were reported as a result of this storm. President Obama issued a federal disaster declaration for the eastern parts of Massachusetts for this storm, allowing federal assistance for emergency work and repairs to facilities damaged by the storm.
02/02/2015	Low pressure passed south of New England bringing snow and gusty winds to much of Southern New England. Six to 16 inches of snow fell across western Middlesex County.
02/08/2015	A clipper low moved across southern Quebec, off the mid-Atlantic coast and becoming a Nor'easter as it approached southern New England. This all resulted in a long duration snowstorm that dumped 7 to 20 inches of snow across western Middlesex County.
02/14/2015	Low pressure off the Delmarva peninsula intensified rapidly as it moved northeastward. Its path just southeast of Nantucket brought heavy snow to all of southern New England, blizzard conditions, and coastal flooding. Twelve to 18 inches of snow fell across western Middlesex County. The large amount of snow, combined with wintry, frigid temperatures resulted in snow piling up on roofs and numerous (250) roof collapses were reported to emergency management and to the National Weather Service in the days after this snowstorm across Massachusetts. There were several indirect fatalities related to the snow.
02/05/2016	Low pressure traveling along a cold front stalled south of southern New England brought heavy rain, which changed over to heavy snow as temperatures dropped. Five to 11 inches of snow fell across western Middlesex County. This snow was extraordinarily wet and heavy, bringing down trees and wires across portions of southern New England. Power outages reached a peak of approximately 107,000 customers without power in Massachusetts during the peak of the storm.
03/14/2017	A major winter storm moved up the east coast, hugging the southern New Jersey coast then moving rapidly northeast across southern Rhode Island and interior southeast Massachusetts. Snowfall totals were mainly in the 9- to 12-inch range across much of western Middlesex County. Gusty winds to 30 to 50 mph were common in the interior.
11/15/2018	An early-season Nor'easter moved from the Mid-Atlantic coast to southeastern Massachusetts. Snowfall amounts ranged from 6.0 to 9 inches in western Middlesex County.
12/01/2019	A storm system slowly moved across southeast Massachusetts and into the Gulf of Maine during this period. Final snow totals ranged from 12 to 22 inches of snow in western Middlesex county
01/18/2020	A robust Pacific shortwave moved east from the Great Lakes. A secondary low developed in the Gulf of Maine. Final snow totals ranged from 4 to 6 inches in western Middlesex County.
10/30/2020	A rapidly moving upper level low and its associated upper jet max passed to the south of New England. Cold air was streaming into the region from the north. The result was some heavy, wet snow across the region, with 5 to 6 inches in western Middlesex County. The weight of the snow caused scattered tree and power line damage.

12/05/2020	A rapidly intensifying storm system produced strong to damaging winds and heavy rain (2 to 4 inches) which changed to a period of heavy snow in the higher elevations. Heavy snow fell in northern Middlesex County with amounts ranging from 3 to 7 inches.
12/16/2020	A storm system produced heavy snow, strong to damaging winds, and minor coastal flooding in southern New England. Heavy snow ranged from 9 to 15 inches across western Middlesex County. Winds generally were gusting to 25 to 35 mph.
01/07/2022	A low pressure passing southeast of New England brought widespread snow. Snowfall amounts ranged from 7 to 12 inches.
01/28/2022	Explosive cyclogenesis of a low pressure center off the Mid-Atlantic coast brought a strong winter storm with blizzard conditions to all of southern New England. Snowfall ranged from 11 to 17 inches and wind gusts were 50 to 60 mph inland.
02/25/2022	A mid-level trough lifted from the Mississippi River Valley into the central and eastern Great Lakes, continuing into New England. Snowfall generally ranged from 6 to 10 inches.
03/14/2023	Strong low pressure meandered just off the southeast coast of New England. Snowfall amounts were highly variable across western Middlesex County, ranging from just over a foot in northern sections to only an inch or two in southeastern sections, where it was mainly rain (5.2 inches in Maynard).

Flooding (Street/Urban and Riverine)

Description

Flooding is generally caused by hurricanes, nor'easters, severe rainstorms, and thunderstorms. For the purpose of this plan, the Maynard HMAG considers the impacts and frequency of urban flooding caused by rapid accumulation of runoff to be similar to flooding caused only by overtopped riverbanks.

A flood, which can be slow or fast rising but generally develops over a period of days, is defined by the National Flood Insurance Program (NFIP) as:

- A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from: overflow of inland or tidal waters; unusual and rapid accumulation or runoff of surface waters from any source; or a mudflow; or
- The collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

More specifically, urban flooding occurs where there has been development within stream floodplains and water runs over the land's surface impervious surfaces (paved areas, building subdivisions, and highways). Two major environmental modifications are primarily responsible for drastically altering the rain fall-runoff relationship.

- Making the land surface impervious by covering it with pavement and construction work.
- Installing storm sewer systems that collect urban runoff rapidly discharging large volumes of water into stream networks and/or freshwater wetland system.

FEMA maintains regulatory flood maps called Flood Insurance Rate Maps (FIRM). Insurance companies refer to these when providing coverage to homeowners. These maps are available for viewing at Town Hall and online at The FEMA Map Service Center https://msc.fema.gov. Please note that there is a process for the public to request a change in the flood zone designation for their property. **Table 13** presents descriptions for high-risk flood zones (i.e., FEMA Flood Zones Designations A and AE).

Table 13 Flood Zone Descriptions

Flood Zone	Description
A	1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. No recorded Base Flood Elevation
AE	1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Base Flood Elevation is provided.

Location

The aging stormwater infrastructure is the most vulnerable to flooding in Maynard, as well as localized flooding on roadways. Maynard also contains substantial wetlands covering about 70 percent of the town's area. According to a GIS analysis performed using the most recent parcel data and FEMA maps, there are 25 properties in Maynard that are susceptible to 1 percent annual chance floods. Downtown Maynard is in or adjacent to the Assabet River's floodplain, and the Assabet River Wildlife Refuge is in an "Area of Undetermined Flood Hazard" but is adjacent to areas of 0.2 percent annual chance floods. Appendix C illustrates the FEMA 1 percent Annual Chance flood zones in town, as well as locally-identified flooding areas. These areas include but are not limited to:

- Acton Street at Summer Street
- Allan Drive
- Apple Ridge Road
- Assabet Street at Elaine Avenue
- Brown Street
- Butler Avenue at Walcott Avenue
- Chandler Street
- Dix Road
- Field Street
- Florida Road and Florida Court
- Front Street
- Garfield Avenue at Crane Avenue
- Great Road at Maybury Road and Mill Street
- Hillside Street
- Lewis Street
- Linden Street
- Loring Avenue
- Lower Mill Street
- Mayfield Street at Charles Street
- McKinley Street at Hayes Street
- Mill and Main
- North Street
- Old Marlboro Road
- Park Street
- Parker Street at Vose Hill Road
- Powder Mill Road
- Sheridan Avenue
- Taylor Road
- Tremont Street
- Warren Avenue

› Winter Street

Probability of Future Occurrence

Street/urban and riverine flooding is highly likely.

Extent (Event Magnitude)

Localized flooding can be expected to occur on an annual basis.

Generally, there are two types of nuisance flooding in Maynard. Roads are overtopped in low-lying areas where rainwater collects. Second, stormwater runoff from nearby paved areas floods roads, making them impassable.

Impact and Damage Extent

Heavy rains, quick thaws with precipitation, and hurricanes accompanied by heavy winds and rain make the Town vulnerable to personal, property and environmental damage occasioned by flooding.

Vulnerable structures include stormwater infrastructure, dams, residential homes, drinking water supply, wastewater infrastructure, and roads.

Climate Change Impacts

Changing weather patterns may lead to more severe rain events.

History

The Town of Maynard regularly experiences flooding at isolated locations due to stormwater runoff, drainage problems, or undersized culverts. Generally, there have not been any buildings that have been damaged by floodwaters. The following are some of the more memorable flood events in Maynard.

August 2018: Heavy rain and downpours; basement flooding on Acton Street in Maynard.

August to September 2023: Heavy rain and high winds caused flash flooding on nearly 17 streets in Maynard.

Extreme Temperatures

Description

Extreme cold may accompany winter storms, may occur in the aftermath of a storm, or may occur without storm activity. For humans, extreme cold can lead to hypothermia and frostbite, both of which are serious medical conditions. The definition of an excessively cold temperature varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered “extreme cold.” Wind Chill

advisories are issued in Massachusetts if the wind chill is forecast to fall below -15 degrees Fahrenheit for at least 3 hours.[17]

The National Weather Service issues **extreme (or excessive) heat** warnings when the maximum expected heat index is expected to be 105° F or higher for at least 2 consecutive days and nighttime air temperatures are not expected to fall below 75°. In the northeast, these criteria are generally modified to a heat index of 92° for higher for 2 consecutive days.

Location

An extreme heat or cold event would be a regional issue affecting Maynard and significant portions of Southern New England.

Probability of Future Occurrence

Highly Likely

Extent (Event Magnitude)

A heat wave or extreme cold in Maynard is likely to have varying magnitudes depending on temperature and duration.

Impact and Damage Extent

Extreme temperatures could have a serious impact on private and public structures, as well as the general population throughout Maynard. During a heat wave, water supplies for drinking and firefighting may be stressed.

Personal exposure to dangerous heat conditions may lead to heat cramps, heat exhaustion, and heat stroke. These are especially important to monitor in children, elderly, and vulnerable populations that are not able to move to cooler conditions.

Extreme cold conditions may occur during, after, or without any connection to a winter storm. Exposure to extreme cold can lead to hypothermia and frostbite.

Climate Change Impacts

Over the coming century, extremely hot days (over 90 degrees F) is projected to increase in New England.[18]

The average summer temperatures in Massachusetts between 1971 and 2000 included 4 days over 90ºF. Climate scientists project hat by mid-centure, the state could have a more temporate climate with an additional 10-28 days over 90ºF in the summer. The annual average temperatures are expected to increase by 3.8 to 10.8 degrees by the end of the 21st century.[19]

17 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan, September 2018.

18 Confronting Climate Change in the Northeast, by the Northeast Climate Impacts Assessment Group, July 2007

19 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan, September 2018.

Although the threat of invasive species has not traditionally been a hazard of concern for Maynard, a warming climate may promote the spread of non-native species. Chapters 128, 130, and 132 pertain to invasive species sch as water chestnuts, green crabs, and the Asian longhorn beetle. As climate conditions change, future updates of this 2024 HMP Update may include invasives as a larger threat, warranting a more detailed analysis.

History[20]

The following are some of the lowest temperatures (including windchill) recorded recently in Middlesex County.

- 02/15/2015: extreme cold with wind chill temperatures as low as -30°F
- 02/14/2016: extreme cold with wind chill temperatures as low as -34°F

The following are some of the highest temperatures recorded in Middlesex County.

- 07/06/2010: extreme heat with temperatures ranging between 100°F and 106°F

Dam Failure

Description

Dams and their associated impoundments provide many benefits to a community, such as water supply, recreation, hydroelectric power generation, and flood control. However, they also pose a potential risk to lives and property. 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. Most dam failures occur when floodwaters above overtop and erode the material components of the dam. Often dam breeches lead to catastrophic consequences as the water 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 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 can fail because of structural problems due to age and/or lack of proper maintenance, as well as from structural damage caused by an earthquake or flooding.

The Massachusetts Department of Conservation and Recreation 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). To be regulated, these dams are in excess of 6 feet in height (regardless of storage capacity) and have more than 15 acre-feet of storage capacity (regardless of height). 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.[21]

20 NOAA Storm Event Database (2023) https://www.ncdc.noaa.gov/stormevents

21 Maynard Hazard Mitigation Plan, November 2011

Dams are classified as high hazard, significant hazard or low hazard. This classification is not based on whether a dam is deemed safe or unsafe. It is a function of the downstream vulnerabilities. As of 2021, there are 290 high hazard dams, 624 significant hazard dams and 503 low hazard dams in the state.[22] Each dam's hazard classification determines the frequency of inspection. The higher the classification, the more frequently the inspection is conducted.

- A *High Hazard* dam is one whose failure or misoperation will result in a probable loss of human life.
- A *Significant Hazard* dam is one whose failure or misoperation results in no probable loss of human life but may cause major economic loss, disruption of lifeline facilities or impact other concerns detrimental to the public's health, safety, or welfare.
- A *Low Hazard* dam is one whose failure or misoperation results in no probable loss of human life and low economic losses.

As part of each state inspection, the major components of the dam are subjectively rated as good, fair, or poor. The major components are the embankment, the spillway, and the low-level outlet. Good means the dam meets the minimum Army Corps of Engineers (ACOE) guidelines. Fair means the dam has one or more components that require maintenance. Poor means a component of a dam has deteriorated beyond maintenance and is in need of repair.

Location

According to the Massachusetts Office of Dam Safety, there are 12 dams in Maynard, of which 2 are High Hazard and 7 are Significant Hazard (see **Table 14**). Maynard's 2011 HMP noted that the inundation areas for these dams covers less than 10 percent of the town.

Table 14 High, Significant, and Low Hazard Dams in Maynard

Dam #	Name	Hazard Class	Ownership
752	Ben Smith Dam	Significant	Private
1131	Millpond Dam	Significant	Private
1146	Cuttings Pond Dam	Low	US Fish and Wildlife
1588	Maynard Rod & Gun Club Dam	N/A	Private
USGS 01097025	Assabet River Dam	N/A	USGS
USGS 01096950	Taylor Brook Reservoir Dam	N/A	USGS

Probability of Future Occurrence

Highly likely

Extent (Event Magnitude)

Often dam or levee breaches lead to catastrophic consequences as the water ultimately rushes in a torrent downstream flooding an area engineers refer to as an "inundation area."

21 Association of State Dam Officials. *Massachusetts*. 2021. https://damsafety.org/massachusetts

The number of casualties and the amount of property damage 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.

Impact and Damage Extent

Severe winter storms, flooding, and a hurricane could all bring enough rain and or snowfall to cause a dam failure. The age of these dams also poses a risk to the structural integrity of these dams. A failure of the earth or masonry construction materials could cause loss of lives, property, the natural environment, and economy. Fortunately, the inundation area for the Maynard dams is relatively small.

Climate Change Impacts

Related to flooding, more intense rain events may stress the structural integrity of dams which would lead to failure.

History

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

Lightning/Thunderstorms

Description

Thunderstorms are formed when the right atmospheric conditions combine to provide moisture, lift, and warm unstable air that can rise rapidly. Thunderstorms occur any time of the day and in all months of the year but are most common during summer afternoons and evenings and in conjunction with frontal boundaries. The National Weather Service (NWS) classifies a thunderstorm as severe if it produces hail at least one inch in diameter, winds of 58 MPH or greater, or a tornado. About 10 percent of the estimated 100,000 annual thunderstorms that occur nationwide are considered severe. Thunderstorms affect a smaller area compared with winter storms or hurricanes, but they can be dangerous and destructive for a number of reasons. Storms can form in less than 30 minutes, giving very little warning; they have the potential to produce lightning, hail, tornadoes, powerful straight-line winds, and heavy rains that produce localized flooding.

All thunderstorms contain lightning. Thunderstorms can occur singly, in clusters, or in lines. Therefore, it is possible for several thunderstorms to affect one location over the course of a few hours. Thunderstorms usually bring heavy rain (which can cause localized floods), strong winds, hail, lightning, and tornadoes. Lightning is caused by the attraction between positive and negative charges in the atmosphere, resulting in the buildup and discharge of electrical energy. Lightning is one of the most underrated severe weather hazards yet ranks as the second-leading weather killer in the United States. Lightning often strikes as far as 10 miles away from any rainfall.

Location

All of Maynard is susceptible to lightning/thunderstorms. Of particular concern are homes, forested areas (i.e., brushfires/wildfires), communication equipment, water tanks, and traffic signal controllers.

Probability of Future Occurrence

Highly Likely

Extent (Event Magnitude)

There is no universally accepted standard for measuring the strength or magnitude of a lightning storm. Similar to modern tornado characterizations, lightning events are often measured by the damage they produce. Building construction, location, and nearby trees or other tall structures will have a large impact on how vulnerable an individual facility is to a lightning strike. A rough estimate of a structure's likelihood of being struck by lightning can be calculated using the structure's ground surface area, height, and striking distance between the downward-moving tip of the stepped leader (negatively charged channel jumping from cloud to earth) and the object. In general, buildings are more likely to be struck by lightning if they are located on high ground or if they have tall protrusions such as steeples or poles which the stepped leader can jump to.

Impact and Damage Extent

Lightning can strike buildings and accessory structures, often causing structure fires. Electrical and communications utilities are also vulnerable to direct lightning strikes. Damage to these lines has the potential to cause power and communication outages for businesses, residencies, and critical facilities.

Electrical and communications utilities are also vulnerable to direct lightning strikes. Damage to these lines has the potential to cause power and communication outages for businesses, residencies, and critical facilities. Traffic signals have been prone to lightning strikes, repairs are made and signals are reset.

Human vulnerability is largely determined by the availability and reception of early warnings for the approach of severe storms, and by the availability of nearby shelter. Swimming, boating, and fishing are particularly dangerous during periods of frequent lightning strikes, which can also cause power outages, topple trees, and spark fires. Individuals who immediately seek shelter in a sturdy building or metal-roofed vehicle are much safer than those who remain outdoors. Early warnings of severe storms are also vital for aircraft flying through the area.

Climate Change Impacts

Changing weather patterns may lead to more severe thunder and lightning storms.

History

There has been no reported loss of human life in Maynard in the past 50 years due to lightning. Lightning is a regular and expected event during thunderstorms in Maynard. Since 2017[23] there have been 6 reported reports of lightning striking buildings in Maynard. Two of those resulted in fires.

Tornadoes

Description

A tornado is a violent windstorm with a twisting, funnel-shaped cloud often spawned by thunderstorms or hurricanes. Tornadoes are produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornado season is generally March through August, although tornadoes can occur at any time of year. Over 80 percent of all tornadoes strike between noon and midnight. During an average year, about 1,000 tornadoes are reported across the United States, resulting in 80 deaths and over 1,500 injuries. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one-mile-wide and 50 miles long.

Tornadoes are categorized according to the damage they produce using the Fujita Scale (F-scale). **Table 15** presents the Enhanced Fujita (EF) Scale and the Old Fujita (F) Scale. An F0 tornado causes the least amount of damage, while an F5 tornado causes the most amount of damage. Relatively speaking, the size of a tornado is not necessarily an indication of its intensity. **Table 16** highlights more tornado events that have affected the region.

Table 15 Fujita Scale[24]

Old Fujita Scale (F)			Enhanced Fujita Scale (EF)		
F Number	Fastest ¼ mile (MPH)	3 Second Gust (MPH)	EF Number	3 Second Gust (MPH)	Damage Scale
0	40-72	45-78	0	65-85	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
1	73-112	79-117	1	86-110	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
2	113-157	118-161	2	111-135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

[23] The Town has a relatively new incident recording system. The data only goes back as far as 2017.

[24] National Weather Service.

Table 15 Fujita Scale[24]

Old Fujita Scale (F)			Enhanced Fujita Scale (EF)		
F Number	Fastest ¼ mile (MPH)	3 Second Gust (MPH)	EF Number	3 Second Gust (MPH)	Damage Scale
3	158-207	162-209	3	136-165	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
4	208-260	210-261	4	166-200	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars were thrown; and large missiles generated.
5	261-318	262-317	5	Over 200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Probability of Future Occurrence

Possible

Location

As per the Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan, the entire town is at risk of high winds, severe thunderstorms, and tornadoes. Especially as weather patterns change, the Maynard HMAG expects more tornadoes in the future.

Extent (Event Magnitude)

In Middlesex County, there have been a number of F0, F1, and F2 tornadoes occurring sporadically over the years. It is expected that future tornadoes will be 0 or 1 on the F-Scale of magnitude.

Impact and Damage Extent

Tornadoes can cause significant damage to buildings, trees, and above ground utility lines. Flying debris can cause injuries to residents.

Climate Change Impacts

It is uncertain how climate change will affect tornado outbreaks in Maynard.

History

Table 16 Significant and Recent Tornado Events in Middlesex County[25]

Date	EF-Scale	Injuries	Damage	Location
10/24/1955	F1	0	$2,500	-
06/19/1957	F1	0	$25,000	-
06/19/1957	F1	0	$250	-
07/11/1958	F2	0	$250,000	-
08/25/1958	F2	0	$2,500	-
07/03/1961	F0	0	$25,000	-
07/18/1963	F1	0	$25,000	-
08/28/1965	F2	0	$250,000	-
07/11/1970	F1	0	$25,000	-
10/03/1970	F3	1 death	$250,000	-
07/01/1971	F1	1 injury	$25,000	-
11/07/1971	F1	0	$250	-
07/21/1972	F2	4 injuries	$2,500,000	-
09/29/1974	F3	1 injury	$250,000	-
07/18/1983	F0	0	$250	-
09/27/1985	F1	0	$250	-
08/7/1986	F1	0	$250,000	-
08/22/2016	EF1	0	$1,000,000	Concord
08/23/2021	EF0	0	$8,000	Marlborough
08/23/2021	EF0	0	$2,000	Stow

Brushfires/Wildfires

Description

Wildfires are typically larger fires, involving full-sized trees as well as meadows and scrublands. Brushfires are uncontrolled fires that occur in meadows and scrublands, but do not involve full-sized trees. Brushfires are fueled by natural cover, including native and non-native species of trees, brush and grasses, and crops along with weather conditions and topography. While available fuel, topography, and weather provide the conditions that allow fires to spread, most wildfires/brushfires are caused by people through criminal or accidental misuse of fire. This 2024 HMP Update considers the risks and impact from brushfires.

Brushfires pose serious threats to human safety and property in rural and suburban areas. They can destroy crops, timber resources, recreation areas, and habitat for wildlife. Wildfires are commonly perceived as hazards in the western part of the country; however, smaller

[25] NOAA Storm Events Database.

brushfires are a growing problem in the wildland/urban interface of the eastern United States, including Massachusetts.

Brushfires are dependent upon the quantity and quality of available fuels. Fuel quantity is the mass per unit area. Fuel quality is determined by a number of factors, including fuel density, chemistry, and arrangement. Arrangement influences the availability of oxygen. Another important aspect of fuel quality is the total surface exposed to heat and air. Fuels with large area-to-volume ratios, such as grasses, leaves, bark, and twigs, are easily ignited when dry.

Climatic and meteorological conditions that influence wildfires include solar insulation, atmospheric humidity, and precipitation, all of which determine the moisture content of wood and leaf litter. Dry spells, heat, low humidity, and wind increase the susceptibility of vegetation to fire. In Central Massachusetts, common factors leading to large fires include short-term drought, humidity below 20 percent, and fuel type.

Various natural and human agents can be responsible for igniting brushfires. Natural agents include lightning, sparks generated by rocks rolling down a slope, friction produced by branches rubbing together in the wind, and spontaneous combustion.

Human-caused brushfires are typically worse than those caused by natural agents. Arson and accidental fires usually start along roads, trails, streams, or at dwellings that are generally on lower slopes or bottoms of hills and valleys. Nurtured by updrafts, these fires can spread quickly uphill. Arson fires are often set deliberately at times when factors such as wind, temperature, and dryness contribute to the fires' spread.

The temperate climate in Maynard is not set up to endure long periods of drought that lead to widespread vegetation loss. Destructive lightning fires in remote locations are rare but there is always a risk of fires from arson or careless fire use.

Location

The open fields, forested areas, and grassy areas throughout the town are most at risk. Maynard has about 3 square miles of undeveloped land that is at risk of wildfires. There are many walking/hiking trails in these areas, and fires are generally caused by human error or lightning. When brushfires occur in the remaining 2.5 square miles of Maynard, they are usually quicky reported by occupants.

Maynard fire crews have been deployed to assist neighboring communities with brushfires but the fires were extinguished before impacting Maynard lands.

Probability of Future Occurrence

Likely

Extent (Event Magnitude)

Brushfires average about five per year with a burn area of generally under an acre. The extent has decreased over the years due to better response equipment, faster response time, and the widespread use of cell phones used to report fires. However, the wildland-urban interface is growing, potentially putting more infrastructure and lives at risk.

In Maynard over 50 percent of the town's total land area is forested, and is therefore at risk of fire, but this forested area is highly fragmented, with developed areas, rivers, and roadways breaking up the forest. In drought conditions, a brushfire or wildfire would be of concern.

Impact and Damage Extent

Individual buildings may be more or less vulnerable to damage from brushfires based on factors such as the clear distance around the structure and the structure's construction materials. Brushfires primarily impacts timber and forest ecosystems, although the threat to nearby buildings and neighborhoods is always present.

The ecosystems that are most susceptible to the wildfire hazard are pitch pine, scrub oak, and oak forests, as these areas contain the most flammable vegetative fuels. The Town's schools – including Green Meadow, Fowler, and the High School -may be particularly vulnerable due to their proximity to the Assabet River National Wildlife Refuge and the School Woods.

The likelihood of brushfires occurring and having widespread impacts has decreased over the years as fields and wooded areas are taken over by development.

Climate Change Impacts

Longer dry periods and droughts may increase the probability of brushfires, but their extent has diminished over the years due to advances in detecting and firefighting technologies.

MVP Workshop participants expressed concern that more frequent and severe droughts may increase risks from wildfire as droughts can lead to drier conditions.

Climate change is also predicted to bring increased wind damage from major storms, as well as new types of pests 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.

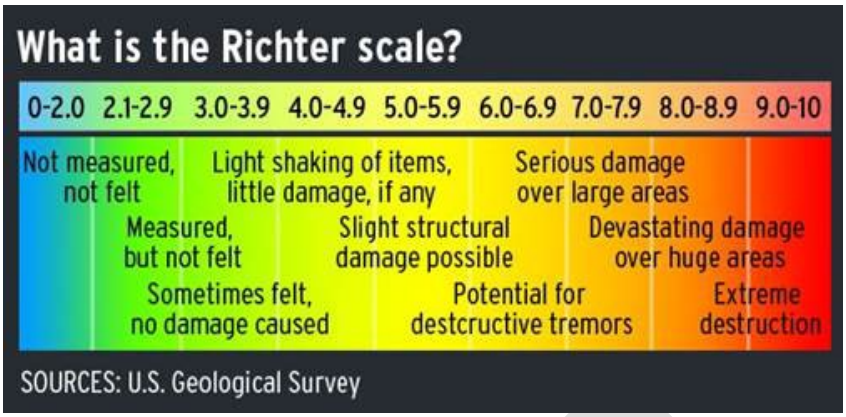
History

Nineteen permanent and six call firefighters staff Maynard's fire department. There have not been any major brushfires in Maynard in recent decades. Brushfires have occurred in recent years due to vandalism and lightning strikes. In 2023, the Maynard Fire Department responded to seven brushfires, all of which were under an acre in size.

Earthquake

An earthquake (also known as a quake, tremor, or temblor) is the result of a sudden release of energy in the Earth's crust that creates seismic waves. The seismicity or seismic activity of an area refers to the frequency, type and size of earthquakes experienced over a period of time. Earthquakes are measured with a seismometer. The size or magnitude is recorded on a device known as a seismograph. Earthquakes with a magnitude 3 or lower are mostly imperceptible (too low to recognize) and magnitude 7 or higher earthquakes cause serious damage over large areas.

Figure 6 Richter Scale



Although earthquakes are not considered to be a major problem in the Northeast United States, they are more prevalent than one might expect. **Table 18** presents historical seismic activity for the Maynard area. This table highlights the earthquake epicenter, the Richter magnitude at the epicenter, and the Mercalli Intensity Level. Richter magnitudes are technical quantitatively based calculations that measure the amplitude of the largest seismic wave recorded. Richter magnitudes are based on a logarithmic scale and are commonly scaled from 1 to 8. The higher the magnitude on the Richter Scale, the more severe the earthquake. Mercalli intensity levels are based on qualitative criteria that use the observations of the people who have experienced the earthquake to estimate the intensity level. The Mercalli scale ranges from I to XII (see **Table 17**). The higher the intensity level on the scale, the closer the person is to the epicenter.

Table 17 Mercalli Scale[26]

Modified Mercalli Intensity	Description of Intensity Level
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably by people indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration is similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built

[26] United States Geological Survey.

Table 17 Mercalli Scale[26]

Modified Mercalli Intensity	Description of Intensity Level
	or badly designed structures; some chimneys broken. Noticed by persons driving motorcars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse. Damage is great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage is great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level distorted. Objects thrown into the air.

Despite the low probability of a high impact earthquake, physical characteristics in Massachusetts may increase earthquake vulnerability:

- **Hard Rock:** Due to the geological makeup of New England's base rock, seismic energy is conducted on a greater scale (four (4)-10 times that of an equivalent Richter magnitude earthquake in California).
- **Soft Soil:** Many coastal regions of New England are made up of soft soils. These soils can magnify an earthquake as much as two times.
- **Structures:** The New England region, being one (1) of the first settled areas of the United States, has an abundance of older, unreinforced masonry structures that are inherently brittle and very vulnerable to seismic forces.
- **Low Public Awareness of Vulnerability:** Little public recognition of earthquake threat, and no established system of educating or informing the public of the threat or how to prepare for or respond during an earthquake. Therefore, higher losses will occur here than in other regions of the country.

Location

Massachusetts is located in the North Atlantic tectonic plate and is in a region of historically low seismicity.

Probability of Future Occurrence

Possible

"A 1994 report by the USGS, based on a meeting of experts at the Massachusetts Institute of Technology, provides an overall probability of occurrence. Earthquakes above about magnitude 5.0 have the potential for causing damage near their epicenters, and larger magnitude earthquakes have the potential for causing damage over larger areas. This report found that the probability of a magnitude 5.0 or greater earthquake centered somewhere in

New England in a 10-year period is about 10 percent to 15 percent. This probability rises to about 41 percent to 56 percent for a 50-year period. The last earthquake with a magnitude above 5.0 that was centered in New England took place in the Ossipee Mountains of New Hampshire in 1940."[27]

Extent (Event Magnitude)

Damaging earthquakes do not normally occur in this region. Massachusetts is located in an area of "moderate" seismicity and "high" risk. Seismic risk applies to the seismic hazard, location demographics, and regional economics to the vulnerabilities of the structure or lifeline on the site. Seismologists have estimated that there is about a 50 percent probability of a very damaging magnitude 5.0 earthquake occurring anywhere in New England, in a 50-year period.[28]

Impact and Damage Extent

The entire population of Massachusetts is potentially exposed to direct and indirect impacts from earthquakes. The degree of exposure depends on many factors, including the age and construction type of the structures where people live, work, and go to school; the soil type these buildings are constructed on; and the proximity of these building to the fault location. In addition, the time of day also exposes different sectors of the community to the hazard.

HMAG recognizes that the potential for an earthquake to strike the Town of Maynard is relatively low, but the hazard could afflict town-wide damage, causing power outages, building collapses, water main breaks, dam failures, gas leaks, fires and injuries or deaths. Buildings that are most at risk from earthquakes are the historic structures.

Climate Change Impacts

Climate change is not expected to significantly impact the risk from earthquakes. The state Hazard Mitigation and Climate Adaptation Plan notes that there may be additional earthquake risk in conjunction with other hazards such as higher rainfall (which can contribute to soil liquefaction during earthquakes), but that research is not yet mature. At this time, overall risk from earthquake to people and property can be expected to stay around the same as the current risk level.

History

No major earthquakes have happened in Maynard. **Table 18** presents seismic activity with epicenters near the town.

Table 18 Historic Seismic Activity near Maynard[29]

Date	Epicenter	Epicenter Magnitude
09/01/1978	Acton	2.0

27 2018 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan

28 Maynard Hazard Mitigation Plan, 2011.

29 United States Geologic Survey. 2023. https://earthquake.usgs.gov/earthquakes/search

Table 18 Historic Seismic Activity near Maynard[29]

Date	Epicenter	Epicenter Magnitude
10/15/1985	Boxborough	3.0
02/22/2016	Acton	1.3
11/28/2017	Boxborough	1.6
01/26/2019	Boxborough	0.9
02/18/2019	Boxborough	1.1
09/24/2022	Boxborough	1.8

Climate Change

Changing climate patterns globally and in Massachusetts will worsen the effects of natural hazards and affect future planning and mitigation efforts. Changes are already being observed and documented. Long-term climate change is likely to cause the following impacts in Maynard:

- Heavier, more frequent precipitation events, which may cause more riverine flooding and flash flooding events.
- Longer periods of drought adversely affect water availability and increasing the threat for wildfires.
- Increasing air and water temperatures.
- More frequent high heat days and heat waves.

How rapidly these changes will be felt is debatable but there is certainty within the state that municipalities need to be prepared. The Town aims to become more adaptable/resilient to the changing conditions.

Through the exercise of creating this plan, the Town of Maynard is exploring ways to reduce their long and short-term risks to a variety of hazards. Any storm that comes up the eastern seaboard will likely impact the town. As climate conditions intensify, the HMAG is prepared to update this plan accordingly.

A more thorough discussion on anticipated climate changes in Maynard and the implementation of resiliency actions, please refer to the "Community Resilience Building Workshops- Summary of Findings, Maynard, MA 2020".

4

Risk Assessment

Facilities/Resources Inventory

The first step in the risk assessment process was to create the inventory of facilities and resources of special concern to the town. The HMAG identified the following as community assets:

- Flood prone drainage systems and streets
- Bridges
- Wastewater facilities
- Water supply systems
- Utility facilities
- Communication towers
- Dams
- Critical municipal hazard response facilities
- Populations
- Businesses
- Schools
- Recreation facilities
- Natural resources
- Historic resources

During their review of these assets and critical infrastructure, the HMAG came to the conclusion that all of these are vulnerable enough that they require mitigation actions within the next 5 years. For most assets, the Town will continue with ongoing actions. As

infrastructure ages, and climate conditions change, the HMAG will update this plan accordingly.

These most vulnerable assets are identified in the Critical Infrastructure/Community Assets Matrix located at the end of this section.

Hazard Mitigation Mapping

The Town's GIS database, including parcel data, orthophotography, and FEMA flood zone information, was utilized to complete the assessment. The use of this system allowed the HMAG to estimate potential fiscal and population impacts for individual parcels.

The final output of this exercise is the Town of Maynard Community Assets Map in **Appendix C**. The focus of the map is not to duplicate all of the spatial information generated through the inventorying process but rather to present the location of the identified risks as they relate to the Town's response facilities.

Fiscal Impact Analysis

Although wind and heavy snow can certainly rack up substantial damage, flooding is one of the hazards that most frequently affects area populations. The Town of Maynard's parcel data and FEMA's 1 percent annual chance floodplain data were utilized to generate estimates of potential fiscal impacts from natural hazard events such as flooding. The information utilized from the tax assessor's database and GIS included the improvement values, land usage, and unit counts. The analysis showed that Maynard is comprised of 3,437 acres of land, with about 59 acres in the regulatory floodplain (10.4 of which are floodway). These 59 acres are largely located along the Assabet River and the northern corner of the town.

HAZUS-MH is a software tool that contains models for estimating potential losses from earthquakes, floods, and hurricanes. HAZUS-MH was used to further understand the potential risk from a large hurricane. For the purpose of this plan, a scenario was run that captures the town's risk from hurricane damage. **Table 20** summarizes some of the potential damages. The hurricane scenario model uses the same path as the hurricane which tracked through Central Massachusetts.

In 1954 Hurricane Carol (Category 1, peak gusts at 89 mph) tore through Southern New England, causing extensive damage throughout Connecticut, Rhode Island, and Massachusetts. If this same storm were to strike again today, it would cause over $10.5 million dollars in total economic losses (property damage and business interruption loss) in Maynard.[30] About 16 buildings are expected to be at least moderately damaged.[31]

[30] 2014 dollars.

[31] A representative analysis. No particular buildings are identified.

HAZUS Qualitative Damage Description

No Damage or Very Minor Damage

- Little or no visible damage from the outside. No broken windows, or failed roof deck.
- Minimal loss of roof over, with no or very limited water penetration.

Minor Damage

- Maximum of one broken window, door, or garage door. Moderate roof cover loss that can be covered to prevent additional water entering the building. Marks or dents on walls requiring painting or patching for repair.

Moderate Damage

- Major roof cover damage, moderate window breakage. Minor roof sheathing failure. Some resulting damage to interior of building from water

Severe Damage

- Major window damage or roof sheathing loss. Major roof cover loss. Extensive damage to interiors from water.

Destruction

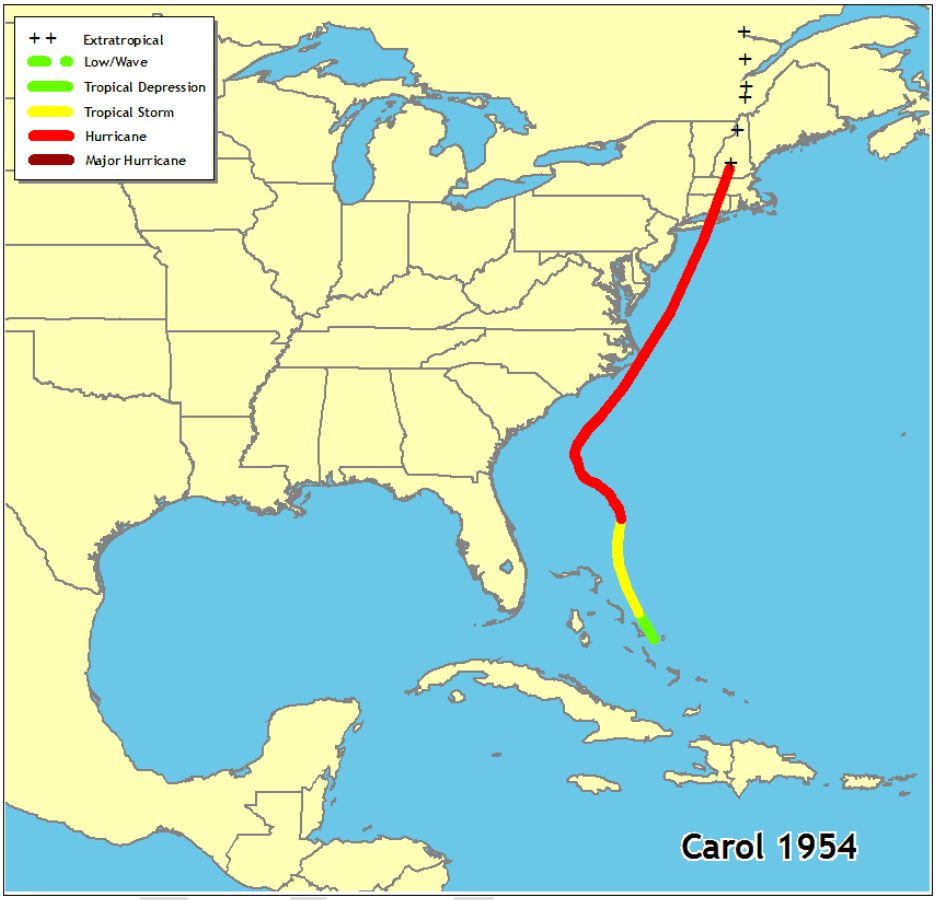
- Complete roof failure and/or, failure of wall frame. Loss of more than 50 percent of roof sheathing.

Table 19 HAZUS-MH Scenarios for Maynard, MA[32]

1954 Hurricane Carol Scenario – If It Happened Today	
Estimated Damage	**Amount**
Debris generated	2,582 tons
Buildings destroyed	0
Buildings at least moderately damaged	16 (0.4 percent of total number of buildings)
Displaced households	4 households may be displaced. 2 people out of a population of 10,746 will seek temporary shelter in public shelters.
Essential facility damage (fire, police, schools)	8 facilities would expect to be non-operational for less than a day.
Residential property (capital stock)	$10,014,580
Business interruptions	$509,770A

[32] FEMA HAZUS September 2023.

Figure 7 Hurricane Carol Path



During non-cyclone events, flooding can still impact the Town. **Tables 21** and **22** display potential damage estimates of property values of buildings within the Town's Special Flood Hazard Area (SFHA), or regulatory floodplain. The parcel information, using the best available data, provides the number of parcels in the SFHA, and values of the buildings on each property. Land value was not considered for this exercise. The values provided are an estimate considering some properties are located in more than flood zone. This percentage was calculated in order to assist with identifying which areas are at greater risk. According to **Tables 21** and **22**, the town-wide total potential building damages for these floodplain areas are over $24,000,000.

Approximately 79 percent of Maynard's revenue is generated from real estate taxes.[33] Should any of the properties forming the tax base be destroyed by a hazardous event, a causal effect would be those property owners whose parcels remain intact would carry and increased financial burden with regards to property taxes. It is an important course of action for the Town to protect both lives and property from natural disasters. However, as Maynard's population grows, the burden of protecting lives and property grows.

[33] Town of Maynard Fiscal Year 2024 Budget.

Using data from the MassGIS (Bureau of Geographic Information), FEMA National Flood Hazard Layer, and the Maynard Tax Assessor, the following table summarizes the value of the structures that are located within the Special Flood Hazard Areas.

Using data from the MassGIS, FEMA National Flood Hazard Layer, and the Maynard Tax Assessor, **Table 20** summarizes the value of the structures located within the Special Flood Hazard Areas, while **Table 21** presents the same value data only broken out by land use category.

Table 20 Building Values with Structures in Special Flood Hazard Areas by Flood Zone[34,35]

Flood Zone	# of Parcels	Total Acres	Building Value
A	23	11.7	$24,738,500

Table 21 Building Values with Structures in Special Flood Hazard Areas by Land Use

Land Use Category	# of Parcels	Building Value
Health Care Industrial	1	17143900
Business	19	6,858,100
Residential	3	736500
TOTAL	**23**	**24,738,500**

Built Environment

According to HAZUS-MH, Maynard has over an estimated 3,632 buildings with a total replacement value (excluding contents) of $1.8 billion. Approximately 87 percent of the buildings and 70 percent of the value are associated with residential housing.

Using the MassGIS structure file, and the Town's GIS, it was determined that there are total of 80 structures within 378 parcels that are located in Town's Special Flood Hazard Areas.

According to the FEMA Community Information System (CIS) database, there are nine flood insurance policies in place for a town that has 80 buildings in the regulatory floodplain (AE-zone) (see **Table 22**). Three properties in the AE zone have flood insurance policies. In the lower risk X-zones, six policies are in place, just in case it floods. These polices are more affordable than those in the AE-zones.

34 Based on Maynard Structures Polygons, FEMA 2017 Flood Insurance Rate Maps, and most recent parcel information from the Town. This data is to be used for planning purposes only to prove estimate values.

35 Method: Selected structures that are located in the SFHA. Selected the parcels that contain the selected structures. Using the parcel data, derived the building value only. Flood insurance only covers the structure, not the value of the land.

Table 22 Flood Insurance Information[36]

Total Number of Policies	9
Total Premiums	$11,875
Insurance in Force	$3,459,000
Total Number of Closed Paid Losses	2
$ of Closed Paid Losses	$29,073
Repetitive Loss Properties	0
Severe Repetitive Loss Properties	0

Number of Policies in Each Zone:

Zone	Policies
A-Zone	0
AE-Zone	3
X-Zone (Standard)	6

Areas that did not used to flood are now more vulnerable as riverine flood intensity and frequency increases.

The HMAG has identified critical infrastructure listed in the Community Asset Matrix (see **Table 24**). The list includes flood prone drainage systems and streets; bridges; wastewater; water supply; utility facilities; public communication equipment; dams; critical municipal hazard response facilities; populations; businesses; schools; recreation facilities; and historic resources. All of these important community resources have the potential to be affected by natural disasters. The magnitude of the losses would be dependent upon the type, location, and extent of each unique hazard.

FEMA A-Zone vs. AE-Zone

Both are considered Special Flood Hazards Areas- areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage.

AE Zone: Base Flood Elevations (BFEs) are provided on the FEMA maps. Formerly A1-A30 numbered zones.

A Zones: Detailed studies have not been conducted which indicate depth or base flood elevation.

The Town's zoning laws help dictate future development while maintaining Maynard's unique character. Continued enforcement of Massachusetts State building codes and new regulations as required will lessen potential damage caused by a natural hazard event. The codes adopted by the Town of Maynard range from building codes and design standards, to zoning regulations.

36 As per FEMA CIS database on 10-2-23.

Of the zoning recommendations made in the 2001 Comprehensive Master Plan,[37] the Town has implemented various forms of mixed-use zoning, in part to preserve historic mill villages and in part to facilitate mixed use development in the commuter rail station area.

Population Impact Analysis

Of primary concern during a hazard event is protecting the health and safety of Maynard residents. In addition to knowing the total population, it is also important to estimate how many people would be impacted by loss of service or need to evacuate. According to the 2020 American Community Survey 5-Year Estimates,[38] there are 4,250 housing units in Maynard supporting a population estimate of 10,700 people. The population in Maynard is generally clustered in the central and north parts of Town. The 2020 Census data[39] was used in **Figure 8** to estimate the most densely populated areas based on the best available data.

Employees from out-of-town represent a segment of the vulnerable population. These non-residents may be unfamiliar with evacuation routes, or flood risks.

Residents and non-residents may not be familiar with the flood risk along the rivers and streams, or emergency procedures during severe weather. Improving emergency response and educating these populations is important to the Town.

A significant hazard can significantly cripple the Town. In addition to direct damage to personal property, impacts can include the disruption of vital services, the loss of utilities, and the emotional strain from financial and physical losses. This is especially jarring when residents are forced to evacuate their homes.

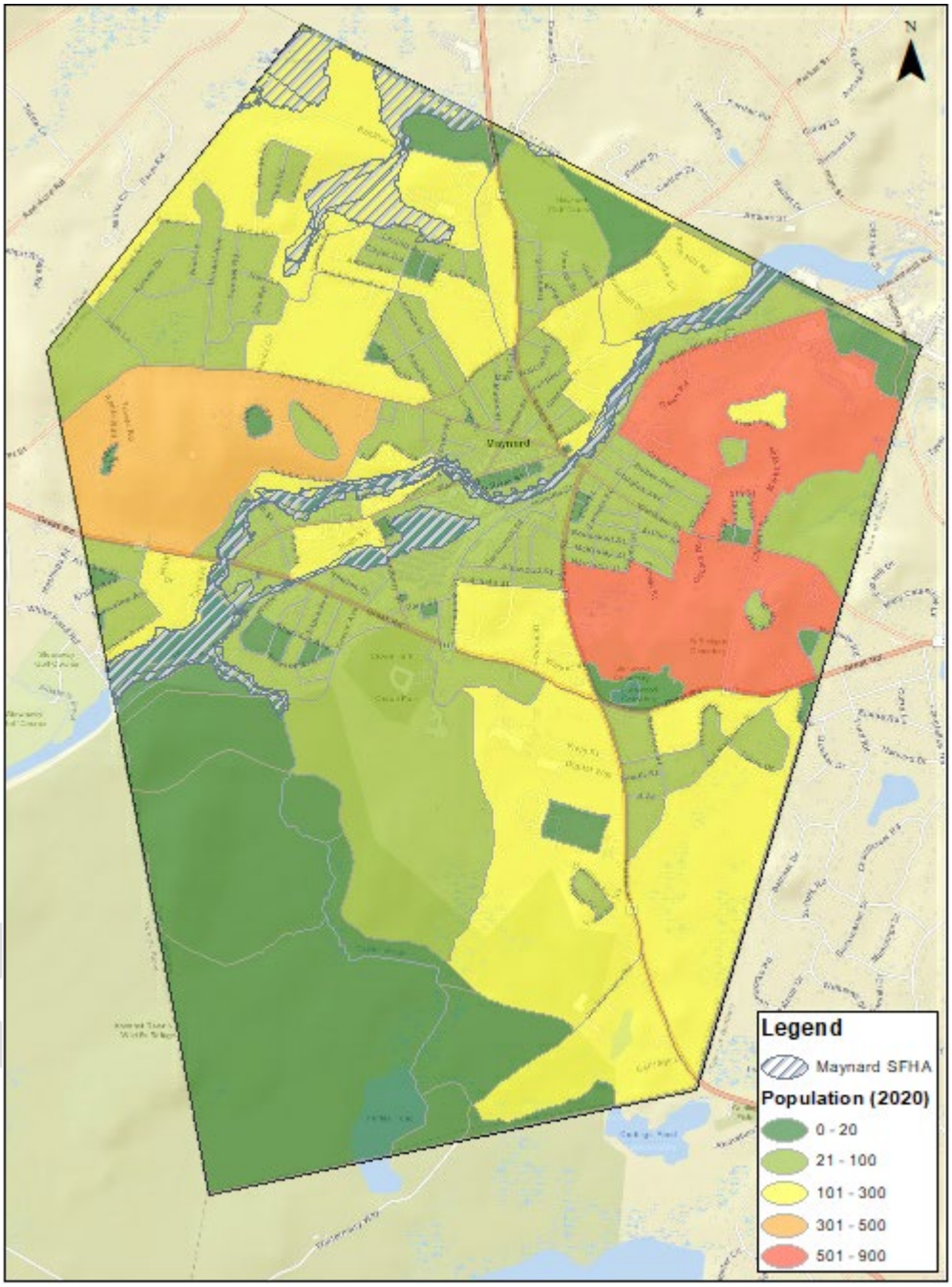
In Maynard, one block group in North Maynard (Block Group 2, Census Tract 3641.01) was identified as an EJ population meeting the low-income EJ criteria under the 2021 *Environmental Justice Policy Of The Executive Office Of Energy And Environmental Affairs*. Because the ACS recorded most of the households in these areas as English-speaking, there is no suggestion that household disaster preparations or response would be impacted negatively. In addition, the median household income in the EJ block group ($55,063) is well below the state and county norms. This suggests that residents may not have the financial means to prepare for and respond to hazards. Expanding outreach and engagement efforts on emergency response and community needs with residents in this EJ block group is a goal of the HMAG.

[37] Maynard Comprehensive Plan, 2001.

[38] See https://censusreporter.org/profiles/06000US2502726430-Maynard-town-worcester-county-ma/

[39] Best available population data for mapping purposes.

Figure 8 Population Distribution in Maynard



Source: MassGIS, U.S. Census Bureau, FEMA National Flood Hazard Layer

Natural Environment

The HMAG identifies the following critical natural resources:

- Assabet River National Wildlife Refuge
- Cuttings Pond
- Mill Pond
- Open Space
- Pratt's Brook
- Puffer Pond
- Taylor Brook
- Wetlands

With development and changing populations comes the challenge of protecting remaining open spaces, particularly critical habitats for nature-based mitigation like wetlands and waterways.

The biggest threats to the natural environment in Maynard are non-point source pollution, point source pollution, water flow problems that occur due to the many dams, and development pressures.

Impacts of severe weather events to the natural environment include loss of habitat (e.g., development and flooding), damage to trees, threats to ecosystems/species, and contamination of potable water supply.

Vulnerability of Future Structures

There is potential for additional growth in Maynard. Ideally, growth should only occur when there is an available capacity for municipal services to absorb the growth, and there is a fiscal ability and community agreement to the expanded infrastructure required for growth.

Maynard's vulnerability to natural hazards is not expected to change dramatically over the next 5 years due to increased development. Further protection of open space in the wake of development is important in order to ensure that future development does not increase vulnerability to natural hazards, such as flooding. Enforcement of current building codes will ensure that development will be stronger and more resilient than some of the older, historic structures in Maynard.

Future Vulnerability

As climate conditions change, high winds, winter weather, and increased rainfall intensity will continue seriously threaten the sustainability of individual homes, buildings, and infrastructure in Maynard. Roads will flood more often and may eventually become unusable. Drainage infrastructure may be overwhelmed more often. Fire hydrants, pump stations, and sewer and

water lines will be stressed or inaccessible by the rising streams and rivers. Residents in areas that are not used to flooding may see flood waters inch closer to their property.

Critical Infrastructure Community Assets Matrix

Table 23 presenting the Town of Maynard's critical infrastructure/community assets represents the culmination of the risk assessment process and is the final product. Its purpose is to gather all the pertinent results in one place for ease of presentation and to serve as a starting point for discussion of specific mitigation actions. It not only lists the specific areas of concern, but provides detailed location information, summarizes the applicable hazard, problem, and mitigation benefits.

Table 23 Maynard Critical Infrastructure/Community Assets

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
Flood Prone Drainage Systems/Streets	Summer Hill Road Main Street near Town Hall Randall Road Burns Court Swamp North of Powder Hill Road Puffer Road/Parker Street Tobin Drive and Old Marlboro Road Great Road and Sherman Street Waltham St. near #49, Front Street Fowler Athletic Field Deer Path Condominium Complex Great Road Auto (Rte. 117). Carbone Circle	Blockages of roadways or bridges vital for emergency response, and breaching of dams	Ongoing Culvert and Drainage Upgrades (checked yearly as part of the MS4 permitting by the Town) *Participation in the National Flood Insurance Program (NFIP)* – The town participates in the National Flood Insurance Program and has adopted the effective FIRM maps. The town actively enforces the floodplain regulations. FEMA maintains a database on flood insurance policies and claims. This database can be found at www.fema.gov/business/nfip/statistics/pcstat.htm *Stormwater System and Outfalls Mapped in GIS* – Working with a consultant, the town has developed a drainage system inventory and integrated the data into the Town's Geographical Information System (GIS). *Drainage System Maintenance* – As per MS4 compliance, the town uses a contractor to inspect and clean all 901 catch basins annually. All streets are swept by the town two times per year, in the spring and fall. *Drainage Improvement Program* – The Public Works Department provides maintenance to culverts, drainage pipes, and other drainage infrastructure on an as-needed basis.	From the MVP Planning Report: 1. Improve flood resilience for the Town Hall/Police Department. 2. Complete a drainage study and ensure adequate drainage at roads and the rail trail.

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
			Floodplain District and Regulations – The town has a floodplain overlay district and regulations (Protective Zoning By-Laws Section 9) that restrict certain activities and requires a special permit for activities located within a flood zone. Floodplain regulations have been effective at preventing new construction in the flood plains. Wetlands Protection Bylaw and Regulations – The town has a Wetlands Administration Bylaw (Chapter XXVII of the Town By-Laws) to protect resource areas in and around wetlands, including land subject to flooding. The wetland regulations provide more detail with regards to submittal requirements and performance standards. The bylaw and regulations also have a no-disturb zone of 50-feet around any wetland, 25-feet around isolated land subject to flooding, 100-feet for vernal pools, and a 200-foot riverfront buffer (state regulation). *The Massachusetts Stormwater Policy* – This Policy is applied to developments within the jurisdiction of the Conservation Commission. *Subdivision Development Drainage Design Controls* – The subdivision regulations require runoff from subdivision developments to not increase in proposed conditions more than in existing conditions for the 2- and 10-year storms, but may be required for up to the 100-year storm at the discretion of the Planning Board. Being revised to encourage LID. Detention basins must meet the standards of the Massachusetts Stormwater Policy.	

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
			Site Plan Development Drainage Design Controls - The Town has Site Plan review requirements (Section 10 of the Protective Zoning By-Laws). Pre- and post-development discharge rates must be provided for the 2-, 10-, and 100- year storm events. *Aquifer Protection Bylaw and Water Supply District* - The town has an Aquifer Protection Bylaw and Water Supply District (Section 9 of the Protective Zoning By-Laws) to protect its subsurface drinking water supplies. The bylaw limits the types of development and requires recharge in the Water Supply District where feasible. Draft Stormwater/Low-Impact Development Bylaw – Through a Smart Growth grant from EEA, the town has drafted stormwater and low-impact development bylaw and regulations adopted at Town Meeting. Review of new developments – Through various departments, committees and boards, the town provides thorough and effective reviews of new developments. Open Space Initiatives – Maynard has substantial protected open space (1,700 acres) and proactive land acquisition and preservation programs. Public Education on Stormwater – The town continues to implement its NPDES Phase II	

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
			stormwater program (MS4 permit) that includes public education programs. In addition, the town provides educational stormwater materials on the Conservation Commission's website at: https://www.townofmaynard-ma.gov/193/Conservation-Commission	
Bridges	Great Road Bridge (N and S) Mill Street Bridge Great Road Bridge Sudbury Street Bridge Florida Road Bridge Main Street Bridge Walnut Street Bridge Waltham Street Bridge	All hazards as it relates to access the bridges provide.	• State-owned bridges are inspected annually by MASSDOT. • Waltham Street was replaced by MASSDOT in 2013. • Florida Road is currently 2023-2024) being replaced by MASSDOT. • Walnut Street is in poor condition. • Main Street is in poor condition. In preliminary stage of MASSDOT project replacement • Sudbury Street is in medium condition, reconstructed in 2001. Pedestrian access is the issue. • Great Road is in poor condition	3. Complete structural improvements at Assabet River crossings. a. Great Road/Ben Smith Bridge (MASSDOT). b. Walnut Street bridge (Town)
Wastewater	Wastewater Treatment Plant	Flooding, Loss of power from other hazards.	• Investigating alternative green energy infrastructure. • Seasonal educational campaign for deicing; added protective measures to the Town's stormwater bylaw. • Securing funding for sewer collection system improvements (infiltration and inflow repairs). • Performing upgrades at sewer pump stations, including acquiring back-up parts and equipment; redesign such infrastructure for redundancy.	From MVP Planning Report: 4. Explore enforcement mechanisms for low-impact development ("LID") requirements as part of the town's stormwater bylaw. 5. Develop a stormwater enterprise fund.

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
Water Supply Systems	Water Tower 1 Water Tower 2 GP Well #4 Great Road, RT 117 GP Well #1a satellite: Old Marlboro Rd GP Wells #1 & 1a Old Marlboro Rd GP well #3 Old Marlboro Rd Rock well #3 Rock well #2 Rock well #5 Mill Pond (emergency and back-up for firefighting) Old Marlboro Road Water Treatment Green Meadow Water Treatment Rockland Avenue Water Treatment	Drought, Hazardous material contamination, Loss of power from other hazards.	The Town has an Aquifer Protection Bylaw and Water Supply District (Section 9 of the Protective Zoning By-Laws) to protect its subsurface drinking water supplies. The bylaw limits the types of development and requires recharge in the Water Supply District where feasible. The Fire department reviews all subdivision and site plans for compliance with site access, water supply needs, and all other applicable regulations. Rain barrel incentive program run by Green Maynard, a citizens group. Well #4A is currently undergoing upgrades to create redundancy and improved capacity.	From MVP Planning Report 6. Upgrade treatment facilities and processes to adapt to changes in water quality and quantity.
Utility Facilities	Maynard-wide utilities Department of Public Works Verizon Telephone Switching Station	Wind Ice	Dedicated tree trimming funding ($23k FY24). New town facilities have incorporated all new underground utilities. Communicate with utility and telecommunication companies (i.e., Verizon, Eversource, etc.) on mutual aid.	From the MVP Planning Report: 7. Provide protection for utilities in flood zones or flood-prone areas.
Communication Towers	Comcast Communications Tower Town-owned Tower at Town Hall	Wind Lightning	The Town has recently acquired a new mobile/portable repeater.	8. Improve robustness of communication equipment.

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
	Verizon Cell Phone Tower			
Dams	Ben Smith Dam Mill Pond Dam Lake Boom Dam Assabet River Dam Maynard Rod & Gun Club Dam Cuttings Pond Dam Taylor Brook Reservoir Dam	Flooding upstream and downstream	Dam Safety Regulations are in place. Permits required for construction.	9. Improve communication with private dam owners.
Critical Municipal Hazard Response Facilities	Maynard Fire Station, 30 Sudbury St. Maynard Police station, 197 Main St. FEMA Center (Bunker), 65 Old Marlboro Rd. Town Hall, 195 Main St. Department of Public Works, 195 Main St. State Police Crime Lab, 124 Acton St. Schools are used as shelters	All hazards.	ATV Vehicle (Brush Truck) was purchased to provide better fire access to the Assabet River National Wildlife Refuge. Conducted a green/renewable infrastructure study. Not well received by own but elements are encouraged to be incorporated. New Fire Station (completed in 2022) • Backup generators for the Police and Fire Stations. • Recent upgrades to the Police Station and Fire Station (action from 2011 HMP). • Police and Fire Stations have natural gas backup generators. From the MVP Planning Report: • Maynard is revamping the volunteer program (MRC) post-COVID for emergency management. • Assessing staffing capacity to support critical services. • Locations have been identified for staging equipment in the event of flooding at the DPW garage facility.	From the MVP Planning Report: 10. Protect DPW assets from flooding. a. Elevate/relocate fuel tanks at the DPW-Highway garage. b. Build a new DPW-Highway garage facility away from the Assabet River and Taylor Brook. 11. Obtain funding to support the town's Emergency Management Department's activities. 12. Consolidate emergency response trailers and equipment that is located at school and at fire station.

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
			• Provide emergency response trailer and signage resources (DPW).	
Populations	Elderly (Powdermill Senior Housing Concord Street Cir. Elder House Summerhill Glen Apartments) Special Needs (Minuteman Community Residence) Community Gardens (Assisted Living) EJ Community (1 census tract identified January 2023)	Personal safety for all hazards Drought - water supply	• Green infrastructure improvements in the downtown area. Ongoing. Volunteer approaches. • Creating subsidies to encourage the use of bike share facilities and other alternative transportation options. • Rain Gardens in public areas. • Considering a shading program in the downtown area. Removed pervious areas around shade trees. • Maynard has adopted an enhanced energy code which encourages private investment. • Promote and maintain the emergency registry.	From the 2011 HMP: 13. Enhance Public Education on the Town Website for the Natural Hazard Emergency Preparedness and the National Flood Insurance Program. From MVP Planning Report: 14. Prepare a performance assessment of the town's outreach and resources available to address language and speech needs/mobility needs for town residents. Move to updated web platform. 15. Develop building-specific emergency plans (i.e., senior housing facilities). 16. Promote social connections within neighborhoods to support emergency communications. 17. Expand methods and efforts for educating the public on the town's CEMP.

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
Businesses	Mill and Main (formerly Clock Tower Place) Digital Way Development Maynard Country Club Rod and Gun Club Powell Flute (hazmat) Mill and Main Boiler Room (hazmat)	Flooding		From MVP Planning Report: 18. Encourage businesses/ private employees to sign up for Hyper-Reach.
Schools	Fowler School Maynard High School Green Meadow School Imago School Community Day School Knowledge Beginning	All hazards.	Back-up Generators for the Middle and High Schools (installed), Elementary School (new school will incorporate a back-up generator), and Town Hall (installed but under capacity). Back-up communications systems in place.	From MVP Planning Report: 19. Assess school facilities for susceptibility to wildfires and mitigate risk, as necessary.
Recreation Facilities	Bleachers Fowler Gym Maynard High School Baseball Field Alumni Field (football and soccer) Coolidge Playground Reo Road Playground Assabet River National Wildlife Refuge	All hazards.	Allow the soccer fields on Rockland Avenue to flood and serve as flood storage; prevent chemical applications to fields. None of the town's budget goes to lawn chemicals.	2. Complete drainage study and ensure adequate drainage at roads and rail trail.
Natural Resources	Mill Pond Assabet River National Wildlife Refuge Cuttings Pond Puffer Pond	Flooding	Expanding educational resources and continue promoting information about invasive species. Six invasive plant species pulls are performed annually. Developed an urban forestry management plan. Tree protection bylaws.	From the MVP Planning Report: 20. Develop and implement a town-wide green infrastructure plan.

At Risk	Location	Hazard/Problem	Ongoing Actions	2024 Mitigation Actions
	Taylor Brook Pratt's Brook Wetlands		Implementing reforestation of native species in rural areas for monoculture management. Identifying and tracking endangered species at vernal pools and other sensitive habitats. Partnering with USFWS. Study and quantify algae/algal blooms, leveraging volunteers. Partnership with OARS. Identifying fertilizer/pesticide controls and exploring opportunities for enforcement/education. Continuation of Open Space Protection and Land Acquisition. Implemented reforestation in urban areas for heat mitigation.	21. Increase dedicated open space. Build support for a community garden and conduct a town-wide site assessment for suitable areas. 22. Wetland preservation. a. Complete a digital map of existing wetlands. b. Implement additional communication methods to prevent degradation of existing wetlands.
Historic Resources	More than 540 recorded individual historic resources and districts/areas	All hazards.		From the MVP Planning Report: 23. Identify a new storage location(s) for the town's critical/historical records.

5

Programmatic Capabilities

Purpose

This capability assessment examines the existing studies, plans, programs, and policies that have incorporated hazard mitigation and other pro-active tools into Town operations. The purpose of the capability assessment is to highlight successes, identify shortcomings, and to lay the groundwork for possible improvement. The Town of Maynard recognizes that the inclusion of mitigation initiatives not only benefits the community by reducing human suffering, damages, and the costs of recovery, but also helps build and maintain the sustainability and economic health of the town. This section details the Town's existing relevant plans, programs, and policies that were reviewed during the drafting of this Plan.

Primary Plans, Regulations, and Departments

Plans and Programs

Comprehensive Emergency Management Plan: The Maynard Comprehensive Emergency Management Plan (CEMC) 2018 details the duties of the Fire, Police and EMS departments during an emergency. This plan builds on the partnership between emergency responders, support staff, Maynard's business community, and Maynard residents. Currently, no Emergency Manager position has been confirmed.

Dam Emergency Action Plans (EAPs): Two of the eligible dams have dam EAPs on file with the State. The two dams, Mill and Main dams, are privately-owned. Eligible dams are those which have a high or significant hazard potential and are regulated by the Office of Dam Safety. The EAPs identify incidents that can lead to potential emergency conditions at a dam, identify the areas that can be affected by the loss of reservoir and specifies pre-planned

actions to be followed to minimize property damage, potential loss of infrastructure and water resource, and potential loss of life because of failure or mis-operation of a dam.

Master Plan: This comprehensive plan, developed in 2021, was used to identify major topics and future development plans in Maynard. The plan summarizes current conditions and outlines goals for natural resources, economic development, infrastructure, transportation, historic and cultural resources, open space and recreation, land use, housing, and implementation. Based on substantial community input, the plan was valuable for identifying critical infrastructure and for understanding future goals and implementation timetables that relate in many cases to natural hazards

Municipal Vulnerability Program (MVP) Summary of Findings: The Commonwealth inaugurated the MVP program in 2017 to help Massachusetts towns and cities plan for and adapt to our changing climate. In 2019, Maynard applied for a Planning Grant under the Municipal Vulnerability Preparedness ("MVP") program and was selected by the Commonwealth of Massachusetts to complete the Community Resilience Building ("CRB") Workshop to assess potential climate change impacts, vulnerabilities, and to prioritize actions for enhanced short- and long-term community sustainability and resilience. Upon completion of this Project, Maynard is eligible to apply for Action Grants under the MVP program to advance priority climate adaptation actions.

Through the MVP process, the following systems were identified as Maynard's greatest strengths and assets:

- System redundancies & communications network;
- Flood control measures (flood storage capacity, etc.);
- Emergency management;
- Collaboration with neighboring towns to secure shared resources and services; and
- Efforts in place to protect the Town's natural resources.
- The following priority actions were identified through the MVP process:

<u>Infrastructural</u>

- Upgrade treatment facilities and processes to adapt to changes in water quality and quantity.
- Perform upgrades at sewer pump stations, including acquiring back-up parts and equipment; redesign such infrastructure for redundancy.
- Conduct condition assessments and perform repairs for existing bridges.
- Build a new DPW Garage facility; re-locate it away from the Assabet River and Taylor Brook.
- Secure funding for sewer collection system improvements (infiltration and inflow repairs)

<u>Social</u>

- Prepare a performance assessment of the town's outreach and resources available to address language and speech needs/mobility needs for town residents.
- Apply for funding to complete an HMP.

- Update the American with Disabilities Act ("ADA") Plan with a self-assessment.
- Promote social connections within neighborhoods to support emergency communications.
- Assess the potential to repair existing and/or install new publicly-accessible drinking water fountains (i.e., water bubblers).
- Explore opportunities and potential sites for a publicly-accessible splash pad.

Environmental features

- Explore a stormwater enterprise fund.
- Develop an urban forestry management plan.
- Coordinate with the Town of Stow on White Pond watershed protection.
- Implement reforestation in urban areas for heat mitigation.
- Identify and track endangered species at vernal pools and other sensitive habitats.
- Introduce tree protection bylaws.

National Flood Insurance Program (NFIP): The Town of Maynard has been an active and compliant member of the National Flood Insurance Program since 1978. As such, Maynard residents are able to purchase flood insurance to protect their property against flood losses. The Town of Maynard has adopted the most recent (July 6, 2016) Flood Insurance Rate Maps (FIRM) and Flood Insurance Study (FIS). The Town has designated the Building Commissioner as the NFIP Coordinator to manage the program. Section 6 of the Zoning By-Laws is dedicated to the floodplain management program. The special flood hazard areas make up the floodplain overlay district. Maynard monitors building activity within the floodplain to ensure compliance with provisions of the state building code.

Floodplain Education: The NFIP Coordinator is available to answer questions that residents may have about flood insurance, compliance, or floodplains. There are also flood-related print materials available at the Building Commissioner office.

Open Space and Recreation Plan: The 2004 Maynard Open Space and Recreation Plan is part of a Town-wide effort to manage growth and protect the natural and built resources that Maynard has to offer. It provides guidance for decisions regarding the use, acquisition, and management of Maynard's treasured open spaces, conservation areas, recreation facilities, and natural resources. The Town of Maynard is in the process of updating the Open Space and Recreation Plan, and is scheduled to be enacted in 2023.

Public Health Emergency Operations Plan (EOP): The Local Emergency Planning Committee (LEPC) develops a written plan for communications and obtaining accurate information during emergencies. The LEPC details the incident command structure, describes responsibilities, and defines to whom staff should report during emergency events.

Sewer inflow/infiltration repair program: Since 2008, the Maynard Sewer Department has comprehensively inspected its lines and made regular repairs to address infiltration and inflow. This effort has reduced the vulnerability of sewer infrastructure and operations to storm events (heavy rainfall and floods).

Shelter Operations Plan: Maynard's Sheltering Plan identifies shelter locations and agency roles during prolonged power outages due to weather emergencies such as snow or ice storms, hurricanes, dam failure, flood, hazardous materials release, and attacks using or potentially using chemical, biological, radiological, or nuclear weapons or explosives.

Snow Plowing & Sidewalk Plowing Policy: Outlines the Town's response during a winter snow and ice event to keep roadways clear and reasonably safe for public travel. The Town's Department of Public Works (DPW) employs up to 7 pieces of Magnesium Treated Granular Chloride de-icing equipment during a winter event, including 11 from outside contractors. The DPW has two pieces of snow removal equipment for 11 miles of sidewalks. The DPW also plows all municipal parking lots, Cemetery, and all school properties, including school sidewalks. When snow accumulates to at least 2 inches, the Town has approximately 24 pieces of snow fighting equipment (13 town and 11 private contractor pieces) at their disposal.

Stormwater Management By-Laws: These By-Laws was adopted to protect, maintain, and enhance the public health, safety, environment, and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased post-development stormwater runoff and non-point source pollution associated with new development and redevelopment construction activity.

Stormwater Management Regulations: These regulations were created to clarify and define the administration of the stormwater By-Laws. The Municipal Separate Storm Sewer System (MS4) is in the process of being updated.

The Town is interested in strengthening enforcement mechanisms for the Stormwater By-Laws. Specifically, they want to include low-impact development (LID) requirements. See Mitigation Action #4.

The development of a Stormwater Enterprise Fund will help offset the costs associated with continued maintenance of Town-owned drainage infrastructure. See Mitigation Action #5.

Subdivision Rules and Regulations: The Subdivision Rules and Regulations provide guidance for the Planning Board with regard to adequate access to all of the lots in a subdivision by ways that will be safe and convenient for travel; for lessening congestion in such ways and in the adjacent public ways; for reducing danger of life and limb in the operation of motor vehicles; for securing safety in the case of fire, flood, panic and other emergencies; for ensuring compliance with the Zoning By-Laws; for securing adequate provision for water, sewerage, drainage, underground utility services, fire, police and other similar municipal equipment, and street lighting and other requirements where necessary in a subdivision and for coordinating ways in a subdivision with each other and with the public ways in the Town and with the ways in neighboring subdivisions.

Tree Resource Management Plan and Tree Trimming Program: The Tree Resource Management Plan focuses on quantifying the benefits provided by the inventoried tree resource and addressing its maintenance needs. The Town has a Tree Warden and, as Maynard has fewer young trees than recommended by a consultant review, manages juvenile tree growth. Tree trimming (take-downs and clearing dead branches) takes place as needed, primarily in the Town's right of way. The Town does not work near power lines. Trimming near power and utility lines is done by the various utilities using their own crews and equipment or contractors.

Wetlands Protection By-Laws and Regulations: These local By-Laws (Article 25) build upon the State's Wetlands Protection Act and Regulations. They add regulatory oversight provisions for development within the jurisdictional buffer zone, adding increased attention to alteration of wetlands and the opportunity to preserve capacity and quality.

Zoning By-Laws: The Maynard Zoning By-Laws promotes the health, safety, convenience, morals, and welfare of the inhabitants of the Town and provide the regulatory framework for development. Additionally, the Zoning By-Laws include regulations for the floodplain overlay district, the water supply protection overlay district and other special zoning districts.

Departments and Organizations

Board of Health: The Maynard Board of Health, in conjunction with the Central Mass Regional Public Health Alliance in Worcester, provides services including medical screening clinics, vaccines, CPR and first aid training, and administration of health-related regulations (including well and septic systems in compliance with Title V).

Building Department: The Maynard Building Department is comprised of the Building Inspector/ Zoning Enforcement Officer and support staff. The Department provides guidance to residents, realtors, contractors, and attorneys on compliance with the Town's Zoning Bylaw. The Maynard Building Inspector ensures that construction complies with the local and state building codes and regulations. This department is also tasked to ensure that new construction will be more resilient to natural hazards.

Conservation Commission: Among other things, the Commission is responsible for the administration of the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131 Sec. 40), the Maynard Wetlands Protection Bylaw, and the Maynard Stormwater Management Bylaw. Additionally, the Commission manages over 940 acres of town-owned conservation land. The Commission is comprised of five appointed volunteer members.

Department of Public Works/Engineering: The Department Public Works (DPW) consists of the Administration, Highway, Parks and Cemetery, Engineering, Urban Forestry, Sanitation and Street Lighting Divisions. The highway garage has a generator for emergency back-up power. All the departments have specialized functions but work together to maintain the Town's infrastructure. Street sweeping and snow plowing is done by the town.

> *Street sweeping* – 84 miles of public roads are swept each year from April to November and as necessary (storms, local projects, grass & brush cutting – as necessary).

Catch basin cleaning –They are cleaned annually from April to November. In areas that normally clog up, such as at the bottom of hills, inlet screens are cleaned when a storm is forecast.

Catch basin and culverts inspection- Catch basins and culverts are regularly inspected and upgraded as appropriate.

Roadway treatments – Maynard uses very little sand on their roads. This is done to minimize the amount of sand that enters catch basins and streams. The Town of Maynard pre-treats roads with salt to prevent snowpack and to reduce storm recovery time.

Road Safety Signage- The Town regularly monitors its stock of traffic barriers, cones, and temporary signage to direct traffic away from flooded or blocked streets.

The DPW garage is located adjacent to the floodplain associated with the Assabet River, putting the stored hazardous materials at risk. The Town would like to mitigate the risk. See Mitigation Action #10.

Emergency Management (EM): The Town of Maynard's Emergency Management Agency is the local public safety organization providing comprehensive, risk-based, and coordinated emergency management operations. Maynard EMA's primary mission is to reduce the loss of life and property and to protect Maynard's infrastructure from all types of dangers through a program of mitigation, preparedness, response, and recovery.

Hazard messaging from the Massachusetts Emergency Management Agency (MEMA) is posted on the Town's website and promoted through the Town's official social media accounts.

The Town maintains and regularly updates the Life Safer Registry to identify vulnerable town residents and facilities with a focus on seniors and people with disabilities.

The permanently established Emergency Operations Center (EOC) is located at the Police Station at 28 Providence Road. The EOC has a diesel generator servicing the entire building.

Maynard uses the CodeRED emergency notification system via phone, text, and email to provide important emergency information to citizens.

There is currently no annual operating budget for the department. Mitigation Action #11 proposes that the Town secure funds to support the Emergency Management Agency.

Emergency Medical Services (EMS): The Town of Maynard contracts out their ambulance services stationed at Fire Department Headquarters.

Facilities: Responsible for the maintenance of all school and municipal buildings and school grounds. This includes snow and ice clearing from roofs and around storm drains.

Fire Department: Maynard businesses and residents are protected from fires, medical, hazardous material, or environmental mishaps. The town is served by one Chief, four full-time Captains, and approximately 16 firefighters. The Fire Headquarters is located at 30 Sudbury Street and has a generator. Overall equipment inventory includes:

- 2 pump engines
- 1 ladder truck
- 1 forestry brush truck
- 2 ambulances

Permits Required for Outdoor Burning – The Fire Department requires a written permit for outdoor burning. Open burning is only allowed (with a permit) from January 15 to May 1 of each year.

Subdivision Review – The Fire Department is involved in reviewing all subdivision plans from the preliminary stages to the acceptance of roads upon project completion.

Planning: The Town Planner is responsible for providing potential developers and Town departments and agencies with professional guidance and service with regard to the overall physical, social, and economic development of the Town.

In conjunction with the Conservation Commission, the Planning Department helps the Town improve resiliency and reduce damages and cost from hazards by reviewing every site that is proposed for new development and/or redevelopment to ensure the sewer, water and stormwater regulations are followed during the design, the construction, and the final acceptance of the site.

Part of the role of the Planning Department is to monitor and implement the HMP into other planning documents.

Planning Board: The Planning Board consists of five members and one alternate, appointed by the Select Board to three-year terms and works closely with the Planning Department. It is responsible for preparing and periodically updating the Town's Comprehensive Master Plan and for carrying out other plans and studies as needed to guide development. The Planning Board is the custodian of the Town's Zoning By-laws; reviews and acts on Site Plan and Subdivision Reviews/Approvals; and often is a Special Permit Granting Authority (SPGA) for development-related applications. The Board's authority comes from Massachusetts General Law and the Town's Zoning By-laws. This regulatory framework is further implemented by the Planning Board's Rules and Regulations.

Police: The Police Department aims to create a partnership with the community to provide the best in public safety and service to the Town of Maynard. The members of the department are empowered to enforce state and local laws to ensure that the peace and tranquility of the neighborhoods are maintained, and that crime and the fear of crime are reduced. The Maynard Police Department is staffed by 22 sworn police officers and supported by 6 part-time officers who are utilized for traffic detail, 3 full-time dispatchers, 3 permanent part-time dispatchers, and one Executive Assistant to the Chief.

The Police Department operates twenty-four hours a day and responds to all criminal complaints, calls for service and Town-wide emergencies. The Department is located at 197 Main Street and has a generator. The Department owns the following equipment to help respond to emergencies:

- 11 vehicles, 5 of which are front line vehicles

The Police Department and the Town Hall are in the same building which is located adjacent to a floodplain associated with the Assabet River. The Town would like to consider options to reduce the flood risk at the critical facility. See Mitigation Action #1.

Select Board: The Select Board heads the executive branch of Maynard's Town Government. The Board consists of five members who serve without compensation. The Board acts as the Town's primary policy-making body for a wide variety of issues affecting service delivery, finance, and development. The Select Board is the governing body which will vote to adopt the 2024 HMP Update.

Town Administrator: Provides day to day oversight of the Select Board's Office, supervises all departments under the jurisdiction of the Select Board, conducts personnel and benefits administration and financial management.

***Ability to Expand on Capabilities*:** Maynard struggles financially to enhance resources and expand the staffing capacity in order to meet the growing needs of the community.

State Programs

Massachusetts Comprehensive Fire Safety Code: Adopted by the Town of Maynard, these minimum requirements and controls to safeguard life, property, and public welfare from the hazards of fire and explosion created by the storage, handling or use of substances, materials, or devices, or from conditions, or materials hazardous to life, property and the public welfare.

Massachusetts Department of Agriculture: The Agricultural Climate Resiliency & Efficiencies (ACRE) program is a competitive, reimbursement grant program that funds materials and labor for the implementation of practices that address the agricultural sector's vulnerability to climate change, improves economic resiliency and advances the general goals identified in the Massachusetts Local Action Food Plan.

The Massachusetts Department of Agricultural Resources ("MDAR") invites responses from Massachusetts farmers who raise and sell agricultural products who wish to participate in the Agricultural Climate Resiliency & Efficiencies (ACRE) Program. ACRE provides reimbursement funds to agricultural operations for the implementation of practices that address the agricultural sector's vulnerability to climate change, improve economic resiliency and advance general goals identified in the Massachusetts Local Action Food Plan. Innovative proposals are sought for practices that protect the environment, ensure food safety, improve soil health, protect water resources, increase energy efficiency and/or promote renewable energy. https://www.mass.gov/service-details/agricultural-climate-resiliency-efficiencies-acre-program

Massachusetts Department of Conservation and Recreation (DCR): Manages state parks and oversees more than 450,000 acres throughout Massachusetts. It protects, promotes, and enhances the state's natural, cultural, and recreational resources. In Maynard, the DCR manages the rail trail and DCR owned property.

Office of Dam Safety: Maintains records of dams located state-wide ensuring compliance with acceptable practices pertaining to dam inspection, maintenance, operation, and repair.

Massachusetts Department of Environmental Protection (MassDEP): Oversees the safe management and recycling of hazardous waste and ensures the timely cleanup of hazardous

waste sites and spills. MassDEP also oversees preservation of the state's wetlands and coastal resources via enforcement of the Wetlands Protection Act. The public water supplies are also regulated by MassDEP.

Massachusetts Department of Public Health: Focus on preventing disease and promoting wellness and health equity. During a regional or state-wide emergency, this department can provide support during the response and recovery phases.

Massachusetts Department of Transportation: Among other things, responsible for maintaining the safety of the state roads within Maynard.

Massachusetts Emergency Management Agency (MEMA): Statewide response and recovery from all types of emergencies and disasters. MEMA is also the pass-through agency for FEMA mitigation funding.

Metropolitan Area Planning Council (MAPC) Technical Assistance Program (TAP): The MAPC Technical Assistance Program (TAP) is a funding program that enables and assists cities and towns in implementing projects that are beneficial to the community. Example projects which advance equity and inclusivity in communities include climate change (mitigation/resilience), clean energy and reducing carbon footprint, environmental and resource protection, and improving public safety and public safety practices.

Massachusetts Small Bridge Program: The Municipal Small Bridge Program is administered by the Massachusetts Department of Transportation (MassDOT). The program provides funding to municipalities for the replacement, preservation, and rehabilitation of eligible bridges. To be considered for funding, bridges must be on a local public way and must be on the State Bridge Inventory with a span between 10 and 20 feet. The program provides grants in two phases for the design and construction of bridge projects. Selection is based on need and merit.

Massachusetts State Building Code: Adopted by the Town of Maynard, the Code (which incorporates the International Building Code) was last amended in 2017 and provides comprehensive construction requirements designed to mitigate the impacts from natural hazards, such as high wind events, heavy snow, and floods. The Code is enforced by the Maynard Building Department and provides an additional layer of regulatory control to those discussed above.

Regional and Massachusetts Mutual Aid: Mutual aid agreements are vital for hazard response and recovery. The Town collaborates closely with surrounding communities through its Regional Emergency planning Committee (Blackstone Valley REPC) and has opted into fire, police, and highway mutual aid agreements with the State. MOUs are vital for hazard response & recovery.

Federal Programs

American Rescue Plan Act (ARPA): Under the American Rescue Plan Act of 2021 (ARPA), Massachusetts state, county, tribal and local entities are receiving federal aid to respond to the public health and economic impacts of the COVID-19 pandemic. Funding can be used for projects such as maintenance or pay-go funded building of infrastructure, including roads; modernization of cybersecurity, including hardware, software, and protection of critical infrastructure; health services; environmental remediation; school or educational services; and the provision of police, fire, and other public safety services.

Department of Housing and Urban Development (HUD): HUD's Community Development Block Grant Mitigation Program (CBDG-MIT) provides assistance to disaster-hit communities to implement activities which mitigate disaster risks and reduce future losses.

Federal Emergency Management Agency: The Federal Emergency Management Agency (FEMA), an agency of the U.S. Department of Homeland Security, coordinates disaster response when local and state resources are maxed out. The agency also provides grant funding for pre-and post-disaster mitigation projects.

United States Department of Agriculture (USDA): USDA Rural Development forges partnerships with rural communities, funding projects that bring housing, community facilities, business guarantees, utilities, and other services to rural America. USDA provides technical assistance and financial backing for rural businesses and cooperatives to create quality jobs in rural areas. Rural Development promotes the President's National Energy Policy and ultimately the nation's energy security by engaging the entrepreneurial spirit of rural America in the development of renewable energy and energy efficiency improvements. Rural Development works with low-income individuals, State, local and Indian tribal governments, as well as private and nonprofit organizations and user-owned cooperatives. https://www.rd.usda.gov/programs-services/all-programs.

Other

United Way 2-1-1: United Way 2-1-1 in Massachusetts is a free, confidential service that provides information, referrals, and is available in multiple languages. This service connects residents with community services they may need such as childcare, housing, health insurance, and tax preparation.

6

Mitigation Actions

Mitigation Goals

The Town of Maynard establishes the following hazard mitigation goals, toward which all action must reach:

1. Prevent and reduce the loss of life, injury, public health impacts, and property damage resulting from all major natural hazards.
2. Identify and seek funding for measures to mitigate or eliminate each known significant flood hazard area.
3. Integrate hazard mitigation planning as an integral factor in all relevant municipal departments, committees, and boards.
4. Prevent and reduce the damage to public infrastructure resulting from all hazards.
5. Encourage the business community, major institutions, and non-profits to work with the Town to develop, review, and implement the HMP.
6. Work with surrounding communities, state, regional, and federal agencies to ensure regional cooperation and solutions for hazards affecting multiple communities.
7. Ensure that future development meets federal, state, and local standards for preventing and reducing the impacts of natural hazards.
8. Take maximum advantage of resources from FEMA and MEMA to educate Town staff and the public about hazard mitigation.

Status of 2011 Mitigation Actions

In April and July of 2023, the HMAG reviewed the actions proposed in the 2011 Hazard Mitigation Plan. See summary in **Table 24**.

Table 24 Status of Proposed 2011 Actions

Action	Status	Reason it is not complete	Other comments
Tree Trimming Funding In order to better mitigate downed trees and power outages, additional funding for the town's tree maintenance program is necessary. Currently the Public Works Department has just enough resources to trim or remove trees on public property and Right-of-Ways on an as-needed basis, but additional funding would help formalize a program to inventory trees and implement a regular rotation schedule for maintenance. The goal would be to have a preventative program rather than a reactive program for both town property and along the utility-owned power lines.	Ongoing	This is and will be an ongoing effort.	Dedicated tree trimming funding ($23,000 for FY24).
Install Underground Utilities at Critical Locations Maynard experiences frequent downed trees and limbs that cause power outages during wind or winter storm events. In order to prevent this from happening in critical locations where power is supplied to densely populated portions of the town, the installation of underground utilities is necessary. Critical intersections as identified by the town include Waltham and Parker Streets, and Summer and Main Streets.	Ongoing	This is and will be an ongoing effort depending on funding availability.	New town facilities have incorporated all new underground utilities.
ATV Vehicle (Brush Truck) to Provide Better Fire Access to the Assabet River National Wildlife Refuge The Assabet River National Wildlife Refuge encompasses 3.5 square miles located within the towns of Hudson, Maynard, Stow, and Sudbury. The town has identified this area as an increased fire risk due to its recent opening to the public. Response to any incidents in the refuge is largely the responsibility of the surrounding towns, therefore having the necessary resources for fire hazard mitigation is critical. An ATV to better access the Assabet River National Wildlife Refuge would be a useful piece of equipment to the town to respond to brush fires. The Fire Department could transport portable pumps, hose, and equipment through the woods to take advantage of the many static water sources in the complex.	Complete	-	-

Table 24 Status of Proposed 2011 Actions

Action	Status	Reason it is not complete	Other comments
Ben Smith Dam and Mill Pond Dam Information Sharing Both the Ben Smith Dam and Mill Pond Dam are owned by Mill and Main (formerly called Clocktower Place),and are critical to controlling water flow and levels in the Assabet River and Mill Pond. The Mill Pond is a backup water supply for fire protection, and if the levels of the pond are too low, this would be a fire risk to the town. In order to ensure proper river and pond levels (and avoid flooding or fire risk) inspections and repairs of these two dams should be performed on a regular basis, and these inspection reports should be routinely submitted to the Town.	Ongoing	This is and will be an ongoing effort.	
Further Public Education on the Town Website for the NFIP and Natural Hazard Emergency Preparedness and the National Flood Insurance Program A simple and inexpensive mitigation measure for the town of Maynard would be to provide additional documents on the town website on the National Flood Insurance Program and emergency preparedness. Many of the town's neighboring communities have this information posted online, such as preparedness and contact information for power outages, hurricanes, tornadoes, how to prevent fires, and open burning requirements.	Not complete	This previously was a medium priority for the Town and did not take precedence over other high priority actions.	Move to 2024 Actions.
Participate in a Regional Emergency Planning Committee (REPC) The town of Maynard currently has its own Local Emergency Planning Committee (LEPC), but the LEPC has not been part of a Regional Emergency Planning Committee (REPC). Many regional committees meet with groups of towns to discuss sharing of resources and emergency response procedures. Maynard would benefit from participating in a regional group in addition to its local committee.	Ongoing	This is and will be an ongoing effort by the EM Director.	-
Back-up Generators for the High School, Elementary School, and Town Hall Several town facilities do not have an adequate generator for use in the event of a power outage. The Police and Fire Stations have backup generators, and the Middle School has a backup generator. The alternate shelter locations, the High School and Elementary School, do not have generators. The Town Hall does have a generator, but it is outdated and has limited power. The addition of generators in any of these facilities, or even a portable generator, would help ensure critical facilities remain online in the event of a power outage.	Partial	Generators were installed at some of the listed facilities, with plans to install generators for the remaining.	Back-up Generators for the Middle and High Schools were installed; the new Elementary School will incorporate a back-up generator; and Town Hall has a generator installed but it is under capacity.

Table 24 Status of Proposed 2011 Actions

Action	Status	Reason it is not complete	Other comments
New Fire Station The town has completed the construction of a new Police Station, and is in the process of planning for a new Fire Station. A new facility would help make the emergency response process more thorough and efficient and would provide a better level of protection against a natural disaster such as an earthquake.	Complete	-	-
Bridge Maintenance and Repair The numerous bridges in the town are critical for Emergency Response Access. If the bridges are not maintained for weight loads, are vulnerable to earthquakes, or are flooded out, emergency response would be compromised. The state-owned bridges on Great Road (117 & 62) and on Waltham Street (Route 62) are already scheduled for upgrades, and the town and state should ensure that all of the other critical bridges are also maintained.	Ongoing	This is and will be an ongoing effort due to funding and shared responsibility with MassDOT.	Move to 2024 Actions. Focus on bridges that are vulnerable to flooding.
Ongoing Culvert and Drainage Upgrades The town should continue to monitor and alleviate localized flooding problems with culvert or pipe upgrades. This may include installing new culverts or even bridges in order to keep debris from blocking waterways and causing flooding. For example, this may be useful for a site near the Great Road Auto that has periodic culvert backups on Route 117.	Ongoing	This is and will be an ongoing effort.	Culverts are checked yearly as part of the MS4 permitting by the Town. The DPW provides maintenance through the Drainage Improvement Program.
Continuation of Open Space Protection and Land Acquisition Although Maynard is generally built-out and has a significant amount of protected land, further protection of open space in the wake of development is important in order to ensure future development does not increase vulnerability to natural hazards, such as flooding. The town should continue its efforts for open space protection and purchases as prioritized in the Open Space Plan and Community Preservation Plan.	Ongoing	This is and will be an ongoing effort.	Maynard has substantially protected open space (1,700 acres) and proactive land acquisition and preservation programs.

Mitigation Actions

The HMAG has proposed actions that address certain vulnerabilities that were identified earlier in the planning process (see **Chapter 4,** *Risk Assessment*). The worksheets below summarize the specific problem and proposed possible solution(s), detail the primary tasks to be undertaken, and identify an appropriate lead and anticipates financing options.

After all of the action details were completed, the HMAG discussed the priority level of each action. The HMAG went through each action and decided if it was a high, medium, or low priority for the town. This helps to generally prioritize needs when funding becomes available or budgeted. Actions that received a high priority ranking would provide more benefits than low priority items. Understanding that priorities can and will change, it was helpful to document what is important at that moment in time. Having this discussion as a group helped the HMAG consider maximum benefits to the entire town, not just individual departments.

The HMAG was encouraged to propose a range of mitigation actions regardless of project costs. Some of the less expensive action items such as enhancing public education may be completed in less time but can still provide a lot of benefit to the town. Improving the flood resiliency of the Town Hall/Police Department is of high importance, yet it will require substantial funds. It is still a high priority for the town to pursue funding and support to get this accomplished. If costs have already been set aside for a particular mitigation action, the HMAG prioritized that action to ensure that it was completed, and funds were spent in a timely manner.

Funding and staff time will be the determining factors on when various actions are completed. The HMAG understands that implementation of many of these proposed actions requires the university to secure external funding.

This 2024 HMP Update includes actions that prevent or reduce the consequences of disaster (mitigation), planning and education (preparedness), improved response in the immediate aftermath of an event (response), and improved restoration efforts (recovery). Those which are true mitigation actions are noted as such. There are necessary planning elements that need to be completed before additional mitigation actions can be considered. The HMAG has identified a range of actions below, some of which are planning activities. However, there is a mitigation action identified for each vulnerable area where applicable.

Priority Level

- ***High:*** Reduces the greatest risks, is important to accomplish first
- ***Medium:*** May need other actions to be completed first
- ***Low:*** Less of an impact on safety and property

Time Frame (from date of plan adoption)

- ***Short Term:*** within 1-3 years
- ***Medium Term:*** within 3-5 years
- ***Long Term:*** greater than 5 years

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
1. Improve flood resilience for the Town Hall/Police Department.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☒2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Assabet River runs behind the building which is adjacent to a floodplain.

BENEFITS	OBSTACLES
Improved resilience to changing climate conditions. Reduce street flooding during heavy rain.	Funding

LEAD/CHAMPION	SUPPORT
Public Works	Conservation Commission

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
American Rescue Plan Act (ARPA)	$600,000	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

ARPA funding to install a BMP and mitigate flooding on Main Street near Town Hall.

June 2023 Phosphorus Source Identification Report identified another potential BMP opportunity behind Town Hall.

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
2. Complete a drainage study and ensure adequate drainage at roads and rail trail.	☒Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☒2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Route 27 (Brown Street and Parker Street), and Route 117 (Great Road) are just two examples of heavily trafficked roads that flood. Culverts along Rockland Ave. and Old Marlboro Road are undersized.

BENEFITS	OBSTACLES
Improved resilience to changing climate conditions. Reduce street flooding during heavy rain. More green infrastructure to pull more water off the streets. Mapped drainage areas and identifying which culverts are undersized and which are frequently clogged by leaves.	Funding Priorities

LEAD/CHAMPION	SUPPORT
Public Works	Conservation

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
FEMA State green infrastructure funding	$250,000	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

Stormwater drainage improvements are needed town-wide, including the rail trail.

VULNERABLE AREA: Bridges

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
3. Complete structural improvements at Assabet River crossings. *a.* Great Road/Ben Smith Bridge. (owned by MASSDOT) *b.* Walnut Street bridge (Town-owned)	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☒3 ☐4 ☐5 ☐6 ☐7 ☐8	☒High (Walnut St.) ☒Medium (Great Rd) ☐Low **ACTION STATUS** New and 2011

RATIONALE- WHY IS THIS IMPORTANT?
The Great Road/Ben Smith Bridge which crosses the Assabet River was originally built in 1816 and rebuilt in 1922. The Walnut Bridge is also becoming structurally deficient and is heavily trafficked.

BENEFITS	OBSTACLES
Improved resilience to river flooding.	Permitting Funding

LEAD/CHAMPION	SUPPORT
Public Works	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Town funding MASSDOT Small Bridge Replacement Program	$4m each	☐Short Term (0-3 years) ☐Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

In 2017 The Town applied for a small bridge program grant for Great Road Bridge over canal (which is town-owned) but was not selected by MassDOT.

Main St, Great Road, and Waltham St bridges are owned by MassDOT.

Mill and Main do not want to replace the dam next to an old Great Road bridge.

VULNERABLE AREA: Wastewater

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
4. Explore enforcement mechanisms for low-impact development (LID) requirements as part of the Town's stormwater bylaw.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☒3 ☐4 ☐5 ☐6 ☒7 ☐8	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Currently there are no legal ramifications especially if the project does not need Conservation Commission sign off.

BENEFITS	OBSTACLES
Encouraging LID to allow rainwater to infiltrate the ground and not flood the streets.	Funding Would have to be approved by Town Meeting.
LEAD/CHAMPION	**SUPPORT**
Conservation Commission	Planning Department, Legal

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
MAPC grants	$250-500,000	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

No requirements for LID. More effective through Conservation. But when Conservation is not required, it gets through the cracks.

Rules and Regulations LID requirement/stormwater analysis.

VULNERABLE AREA: Wastewater

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
5. Develop a stormwater enterprise fund.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

To offset costs associated with continued maintenance of Town-owned drainage infrastructure. Allows the Town to expand drainage infrastructure to meet increased demand.

BENEFITS	OBSTACLES	
Dedicated funding.	Local support	
LEAD/CHAMPION	**SUPPORT**	
Public Works	Conservation Commission, Select Board	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Town funding State stormwater funding	$200,000	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report. The town is currently studying the feasibility of a stormwater enterprise (Step 1). Currently entering into Step 2 of 5.

A Stormwater Utility Enterprise Fund is a dedicated revenue to meet increasing demands on the Town's stormwater management program. A stormwater fee, charged to all non-municipal properties, may be based on the amount of impervious surface on each property. Funds can be used to replace drainage infrastructure for flood prevention and protect waterbodies from harmful runoff pollutants. The Environmental Protection Agency (EPA) considers an enterprise fund to be a best practice to promote and maintain long-term financial sustainability for stormwater activities.

VULNERABLE AREA: Water Supply Systems

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
6. Update treatment facilities and processes to adapt to changes in water quality and quantity.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The Town of Maynard is experiencing an increase in housing development and continued development is anticipated over the next decade particularly as the Town implements "3A or MBTA Community" zoning as required by the Commonwealth to meet its housing goals which is expected to increase demand substantially. The Town is unable to meet future maximum daily demands with current water supplies.

Current water quality concerns: PFAS, excessive organic compounds, iron, manganese.

BENEFITS	OBSTACLES
Development is not hindered by water availability. Improved water quality.	Funding

LEAD/CHAMPION	SUPPORT
Public Works	Select Board

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
State	TBD $5-10m	☐Short Term (0-3 years) ☐Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

Assessment has been done for 2 out of 3 treatment facilities.

See Stantec memo dated May 23, 2023 related to quantity.

The Town has been cooperating with other communities to connect into the Massachusetts Water Resources Authority (MWRA) feeder branch. This is a 5 to 10-year process.

VULNERABLE AREA: Utility Facilities

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
7. Provide protection for utilities in flood zones or flood-prone areas.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Some substations are located within a filled wetland/floodplain. If they become inoperable, there is no redundancy.

BENEFITS	OBSTACLES	
Fewer power outages, safer infrastructure.	Public utility priorities	
LEAD/CHAMPION	**SUPPORT**	
Eversource	Public Works, Conservation Commission	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Eversource	Varies, depends on the facility.	☐Short Term (0-3 years) ☐Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

For example, the Acton St. substation and others need backup generation or to be elevated.

VULNERABLE AREA: Communication Equipment

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
8. Improve robustness of communication equipment. - Establish a reliable point of contact at AT&T.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The communication equipment is housed in a building owned by AT&T. The Town has had access issues when the door code is changed without their knowledge.

The status of the generator, owned by AT&T, is uncertain.

BENEFITS	OBSTACLES
Continuity of equipment operability. Improve radio reception.	

LEAD/CHAMPION	SUPPORT
Public Safety Communications	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Town Emergency Management funding.	Staff time.	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

New communication equipment recently updated.

VULNERABLE AREA: Dams

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
9. Improve communication with private dam owners.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☐1 ☐2 ☒3 ☐4 ☐5 ☒6 ☐7 ☐8	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The Town would appreciate communication from the dam owners if a dam has breached or if the gates are opened for controlled releases. That way abutting property owners can be notified.

BENEFITS	OBSTACLES

LEAD/CHAMPION	SUPPORT
Maynard Fire Department	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Town Fire Department budget	Staff time	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Ben Smith Dam (significant hazard), owned by Wellesley/Rosewood/Maynard Mills, L.P.

Millpond Dam (significant hazard), owned by Artemis Real Estate Partners

Cutting Pond Dam (low hazard), owned by US. Fish and Wildlife

This will be an ongoing action.

VULNERABLE AREA: Critical Municipal Hazard Response Facilities

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
10. Protect DPW assets from flooding. a. Elevate/relocate fuel tanks* at the DPW-Highway garage. Thanksgiving Pond. b. Build a new DPW-Highway garage facility away from the Assabet River and Taylor Brook	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The DPW-Highway garage, at the end of Winter Street, is adjacent to a floodplain associated with the Assabet River. The garage is used for hazardous material storage.

BENEFITS	OBSTACLES
Reducing the change of hazardous material leaks.	

LEAD/CHAMPION	SUPPORT
Public Works	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Town Capital Budget Town Bonds	$35m+	☐Short Term (0-3 years) ☐Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

If you move the garage, you will be moving fuel tanks. Would need to do cleanup on site. The Town is engaged in investigating the feasibility of relocating the whole facility.

*Note that the fuel tanks supply fuel for entire public safety program.

VULNERABLE AREA: Critical Municipal Hazard Response Facilities

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
11. Secure stable funding to support the Emergency Management Department's activities.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☐3 ☐4 ☐5 ☒6 ☐7 ☐8	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
The Department does not have a yearly operating budget.

BENEFITS	OBSTACLES
Financial support.	

LEAD/CHAMPION	SUPPORT
Town Administrator	Emergency Manager, Town Select Board

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Town Operating Budget FEMA/MEMA Grants	$200,000 (maintenance, salary, admin, equipment)	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

The Maynard Emergency Manager is currently the Fire Chief but that is subject to change.

VULNERABLE AREA: Critical Municipal Hazard Response Facilities

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
12. Consolidate and fix Town-owned trailers and equipment between Town Hall and Fire Station.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Currently there are no facilities to house the equipment. The trailers/resources are scattered.

BENEFITS	OBSTACLES
Equipment and resources will be in one location.	Funding to fix the equipment.
LEAD/CHAMPION	**SUPPORT**
Fire Department	Local Emergency Management Committee

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Town Operating budget	$50-75,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

This action came from the MVP Planning Report.

VULNERABLE AREA: Populations

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
13. Enhance public education on the Town's website for the National Flood Insurance Program (NFIP) and Natural Hazard Emergency Preparedness.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☒1 ☐2 ☒3 ☐4 ☐5 ☐6 ☐7 ☒8	☐High ☒Medium ☐Low **ACTION STATUS** 2011

RATIONALE- WHY IS THIS IMPORTANT?
Promote available resources to the entire population including the Environmental Justice communities.

BENEFITS	OBSTACLES
Better education on local hazards and preparedness.	Town priorities, staff resources
LEAD/CHAMPION	**SUPPORT**
Town Administrator	IT, EM Director, additional local committees

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
FEMA Hazard Mitigation Assistance grants Town Operating budget	$20,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Create a dedicated page on the Town's website that is also multilingual.

VULNERABLE AREA: Populations

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
14. Prepare a performance assessment of the Town's outreach and resources available to address language and speech needs/mobility needs for residents. Move to updated web platform.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☒3 ☐4 ☐5 ☐6 ☐7 ☐8	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Current Americans with Disabilities Act (ADA) Transition Plan is not state-compliant.

BENEFITS	OBSTACLES	
Community equity and inclusivity.		
LEAD/CHAMPION	**SUPPORT**	
Town Administrator, Sustainability Committee	ADA Commission, Conservation Commission	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
MVP Action grant Localized funding sources	$200,000 ADA Plan update $75,000 Assessment	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

From MVP Planning Report.

MVP 2.0 is looking for social vulnerabilities. Need to provide in-kind funds.

Update the ADA Transition Plan.

2018 ADA Transition Plan https://townofmaynard-ma.gov/DocumentCenter/View/345/ADA-Transition-Plan-PDF?bidId=

VULNERABLE AREA: Populations

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
15. Develop building-specific emergency plans for town-owned buildings. Coordinate with owners of private/state housing facilities.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☒3 ☐4 ☐5 ☐6 ☒7 ☐8	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

There are currently no emergency plans for town-owned buildings.

BENEFITS	OBSTACLES
Understanding the shelter/evacuation needs of residents in various housing facilities.	Staff availability

LEAD/CHAMPION	SUPPORT
Town Administrator	Town Facilities Manager, Building Commissioner, Fire Department

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
State/Federal Emergency Grants	$200,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

From MVP Planning Report.

Would need to hire a 3rd party consultant.

VULNERABLE AREA: Populations

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
16. Promote social connections within neighborhoods to support emergency communications.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☒1 ☐2 ☐3 ☐4 ☐5 ☒6 ☐7 ☐8	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Need better outreach to some communities especially multi-lingual ones.

BENEFITS	OBSTACLES	
Community equity and inclusivity.		
LEAD/CHAMPION	**SUPPORT**	
Town Administrator	Sustainability Committee, Select Board	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
MVP 2.0	$50,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

From MVP Planning Report.

Use Reverse 911, Hyper-Reach, and trailer variable message board signs

Identify a community liaison/social consultant for social inequity.

Funding has been acquired.

VULNERABLE AREA: Populations

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
17. Expand methods and efforts for educating the public on the Town's Comprehensive Emergency Plan (CEMP).	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☒8	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Need to promote why Emergency Management is important to fund. There are current gaps in resources.

BENEFITS	OBSTACLES
Better visibility, better funding. Education.	
LEAD/CHAMPION	**SUPPORT**
Local Emergency Management Committee	EM Director

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Town operating budget	$20,000	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

From MVP Planning Report.

Add CEMP to new website.

VULNERABLE AREA: Businesses

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
18. Encourage private employers to sign up for Hyper-Reach.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☒6 ☐7 ☐8	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Employees who work outside of Town may not be aware of local hazards or risks being tracked by the Town. By signing up for emergency messaging, commuters can plan for road closures, weather delays, or other concerns.

BENEFITS	OBSTACLES	
Consistent education, promotion of the service		
LEAD/CHAMPION	**SUPPORT**	
Local Emergency Committee		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Town operating costs.	$20,000	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

From MVP Planning Report.

VULNERABLE AREA: Schools

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
19. Assess school facilities for susceptibility to wildfires and mitigate risk, as necessary.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

All three schools are surrounded by vegetated areas that are not regularly maintained and could fuel brushfires. Middle school is also the emergency shelter.

BENEFITS	OBSTACLES
Reduce brushfire risk.	

LEAD/CHAMPION	SUPPORT
Fire Department	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
FEMA Fire Prevention and Safety grants	$80,000	☐Short Term (0-3 years) ☐Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

From MVP Planning Report.

Create fire breaks/lanes

VULNERABLE AREA: Natural Resources

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
20. Develop and implement a town-wide green infrastructure plan.	☒Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
MS4 requirement support

BENEFITS	OBSTACLES
Reduce pollution to Assabet River, Reduce liability for private property.	High costs.

LEAD/CHAMPION	SUPPORT
DPW, Conservation, Sustainability	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Stormwater Utility MADEP/EPA to help fund a plan. Operational costs.	Plan: $500-1m Project costs vary.	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

From the MVP Planning Report.

Include a potential detention basin behind Town Hall and other areas.

VULNERABLE AREA: Natural Resources

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
21. Increase dedicated open space. - Build support for a community garden and complete a town-wide site assessment for suitable areas.	☐Local Plans and Regulations ☐Structure and Infrastructure ☒Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☒3 ☐4 ☒5 ☐6 ☐7 ☐8	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
With increasing development pressures, the Town would like to maintain open space and potentially transform a vacant lot into a natural space that is beneficial to the community. By keeping development out of a flood-prone open space, the Town eliminates the opportunity for property loss and economic disruption.

BENEFITS	OBSTACLES
Sense of community, beautification, maintaining natural spaces for runoff and habitat.	
LEAD/CHAMPION	**SUPPORT**
Town Planner	Sustainability Committee, Conservation Agent

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Operating budget Volunteer effort Private funds	TBD depends on the area that is chosen.	☐Short Term (0-3 years) ☐Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

From the MVP Planning Report.

Look to re-use a vacant lot.

VULNERABLE AREA: Natural Resources

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
22. Wetland preservation. a. Complete a digital map of existing wetlands. b. Implement measures (local regulations, education, awareness) to prevent degradation of existing wetlands.	☐Local Plans and Regulations ☐Structure and Infrastructure ☒Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
In order to protect wetlands, they need to be located.

BENEFITS	OBSTACLES
Ecosystems for plants and animals, natural water filter, drawing sediments out of the water, improve flood capacity.	

LEAD/CHAMPION	SUPPORT
Conservation Agent	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Conservation Trust funds, local funds, State and Federal conservation grants. EPA Wetland Program Development Grants	Mapping: $120,000 Implementation: $15,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Mapping effort is underway. Will be developing a public web viewer for multiple town assets/resources.

Currently using the MassGIS wetland layer. Local data needs to be updated.

See https://www.nawm.org/science/wetlands-one-stop-mapping/funding-for-wetland-mapping for funding examples.

VULNERABLE AREA: Historic Resources

MITIGATION ACTION	MITIGATION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
23. Identify a potential new storage location(s) for the Town's critical/historic records.	☒Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☒4 ☐5 ☐6 ☐7 ☐8	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Some paper copies of Town records are vulnerable to flood and fire. The Town is currently renting space from the Mill complex for historic records. Municipal records at Town Hall are more vulnerable.

BENEFITS	OBSTACLES
Reduces risk of records being damaged.	Funding, priorities, staff time
LEAD/CHAMPION	**SUPPORT**
Town Clerk, Town Administrator	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Operational budget State historic preservation grants Grants in conjunction with local library Community Preservation Committee/ Community Preservation Act	$100,000+	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

From the MVP Planning Report.

Currently renting space from the Mill complex for historic records. Municipal records at Town Hall (more vulnerable). Needs to be a public facility. Building Dept, Conservation records.

All clerk-stamped records are currently being digitized. This is more of a priority than moving.

Accelerating a scanning effort. Cloud-based service. https://townofmaynard-ma.gov/DocumentCenter/View/355/HR032-22-preservation-and-digitization-of-historic-town-records-application-PDF

Need complete record transition. Need a 3rd party to start overhaul.

7

Implementation and Adoption

Prioritization of Mitigation Actions

Implementing the Plan

The Town of Maynard and its HMAG realize that successful hazard mitigation is an ongoing process that requires implementation, evaluation, and updates to this plan. The Town also understands the importance of integrating appropriate sections of the Plan into the Town's Master Plan, Emergency Management Plan, and site plan review process. It is intended that this Plan and the ongoing efforts of the HMAG will preserve and enhance the quality of life, property, and resources for the Town of Maynard.

Adoption of this 2024 HMP Update increases Maynard's eligibility for federal hazard mitigation grants. These grants originate from FEMA's Building Resilient Infrastructure and Communities (BRIC) program, Flood Mitigation Assistance (FMA) grant, and post-disaster Hazard Mitigation Grant (HMGP) Programs.

Monitoring and Evaluation

The HMAG, under the leadership of the DPW Director (or other appointed designee as determined by the Town Administrator), will meet annually in March (or more frequently if necessary), to monitor and evaluate the actions contained in the Plan. During the annual evaluation process, the mitigation plan will be promoted online for public review. Comments

and suggestions will be sent directly to the Town Administrator or brought up at the advertised annual meeting.

At each annual meeting, the HMAG will discuss the actions assigned to them to ensure continual progress with mitigation efforts and consider any additional public comments. The planning process status of each mitigation action will be documented in a spreadsheet, and minutes recorded for the record. The HMAG will base its evaluation on whether the actions have met the following criteria: increased public awareness/education, reduction in hazard damage potential, actions being implemented in the designated time frames, and actions staying within the cost estimate. The HMAG will document its findings and provide an annual summary report to the Select Board.

The Town Administrator will continue to re-evaluate membership of the HMAG to ensure effective engagement of the appropriate parties. New members may be invited to serve on the HMAG as priorities shift.

Revisions

Recognizing that this is a living document, the HMAG will make changes to it after each annual revision or a disaster, as conditions warrant. Otherwise, it is expected that a revised plan will be adopted every 5 years. These revisions will reflect changes to hazards, existing conditions, priorities, and funding strategies.

Eighteen months before the plan is expected to expire, the Town will begin to secure funding for a plan update.

A year before the current plan is expected to expire, the Town will either secure a third-party contractor to lead the update effort or identify a lead in-house. A full revision of the plan will commence a year in advance of the current plan expiration date to ensure the University always has an up-to-date plan. The Town should plan on spending 9 months updating the plan before it is submitted to MEMA and FEMA for review.

During the next plan revision, the Town will enhance the breadth of the HMAG to be more inclusive. The Town will invite MEMA to participate in the planning process. Prior to finalizing the HMAG, the Town will also consider organizations that may provide valuable insight to the plan update. If invitees can commit to being on the HMAG, they may be designated as a stakeholder and brought into the conversation as needed.

All future meetings will again be open to the public and it is the hope of the HMAG that once the public education and outreach actions begin, public involvement in the Plan will increase and will be reflected in future revisions.

The HMAG will involve the public in the annual meeting by posting it on the website, in the local library, and in the local newspaper to encourage involvement.

Revised plans will be sent to the neighboring communities for comment.

The revised plan/update will incorporate a formalized process for prioritizing actions and weighing the cost/benefit of such actions. See FEMA's *Local Mitigation Planning Policy Guide*, Effective April 19, 2023, available at:

https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-policy-guide_042022.pdf. All updates or revisions to the plan will be submitted to MEMA and FEMA.

Adoption

After each evaluation cycle (every 5 years), the HMP will be presented to and adopted by the Maynard Select Board. The associated ordinance documentation will be kept as part of this plan.

Appendix A: Survey Results

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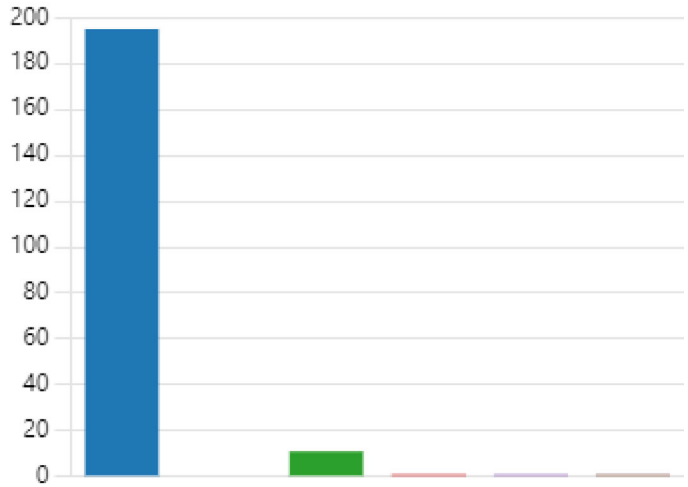
Maynard Hazard Perceptions Survey

209	09:41	Closed
Responses	Average time to complete	Status

1. What is your primary connection to Maynard?

Resident	195
Business Owner	0
Resident and Business Owner	11
Non-Resident Property Owner	1
Local Employee	1
Other	1

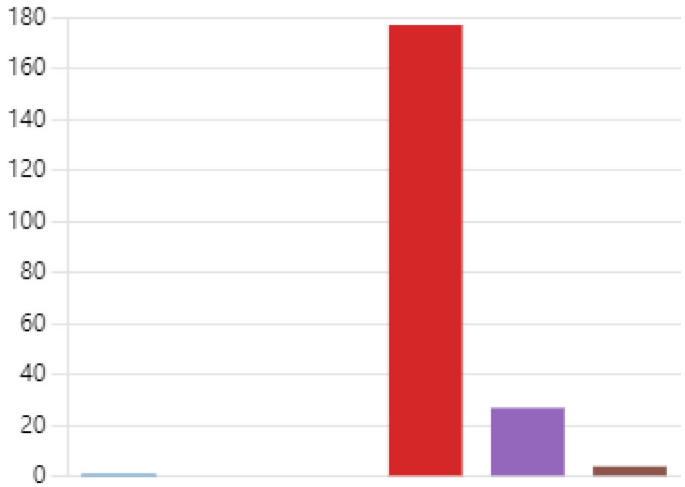


2. How long have you been in Maynard?

Less than a year	1
1 to 5 years	29
6 to 9 years	27
10 to 19 years	60
20 years or more	92

3. What is your race?

Black, African American	1
American Indian or Alaska Native	0
Asian, native Hawaiian, or other ...	0
White	177
Prefer not to say	27
Other	4

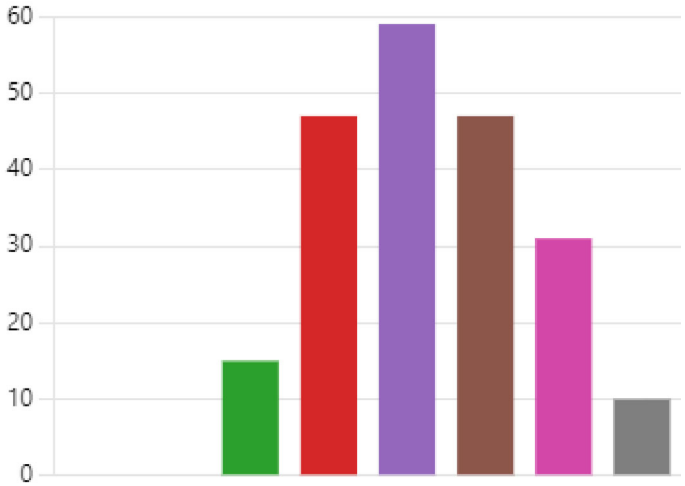


4. What is your ethnicity?

Hispanic or Latino	5
Not Hispanic of Latino	172
Prefer not to say	29

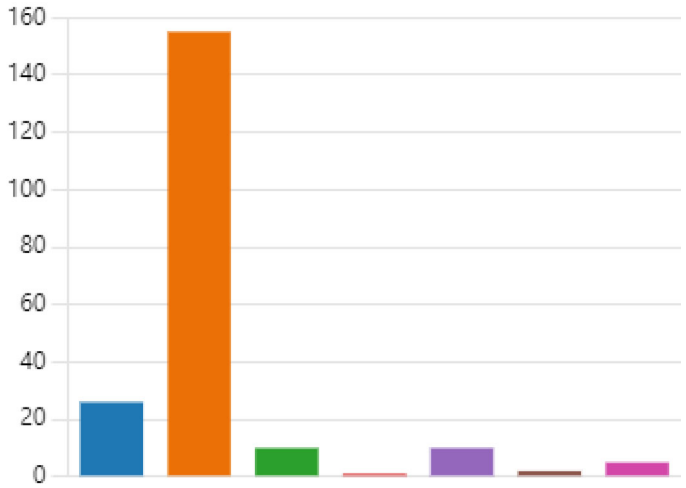
5. What is your age?

Under 18	0
18-24	0
25-34	15
35-44	47
45-54	59
55-64	47
65 or greater	31
Prefer not to say.	10



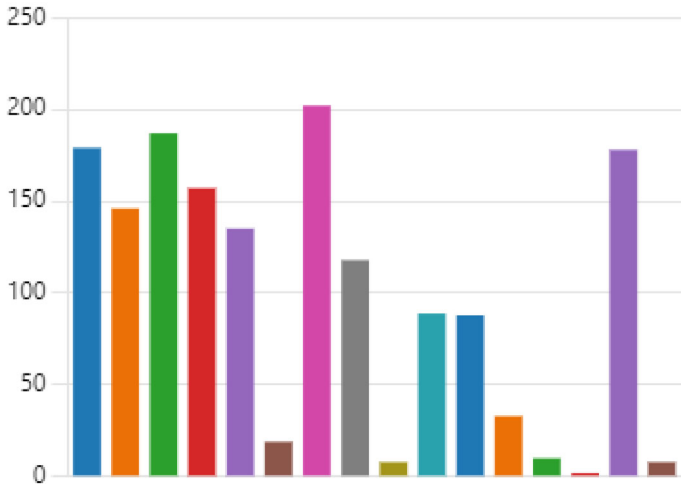
6. If you live in Maynard, what is your residence type?

Single-family attached	26
Single-family detached	155
Duplex (two residential units)	10
Triplex (three residential units)	1
Multi-family (four or more units)	10
I don't live in Maynard	2
Other	5



7. What types of natural events/natural disasters have you experienced in Maynard? Check all that apply.

High Winds	179
Lightning	146
Extreme Cold	187
Extreme Heat	157
Drought	135
Earthquake	19
Winter storm (snow and ice)	202
Hail	118
Tornado	8
Hurricane/Tropical Storm	89
Street Flooding from Heavy Rain	88
Riverine Flooding (when stream...	33
Brushfire	10
Dam Failure	2
Nor'easter	178
Other	8

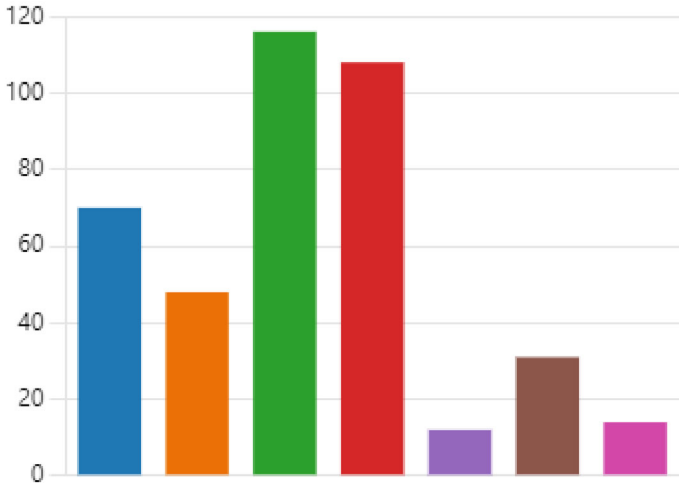


8. How prepared are you for the probable impacts of natural hazards?

Not at all prepared.	22
Somewhat prepared	151
Fully prepared	23
Unsure.	12

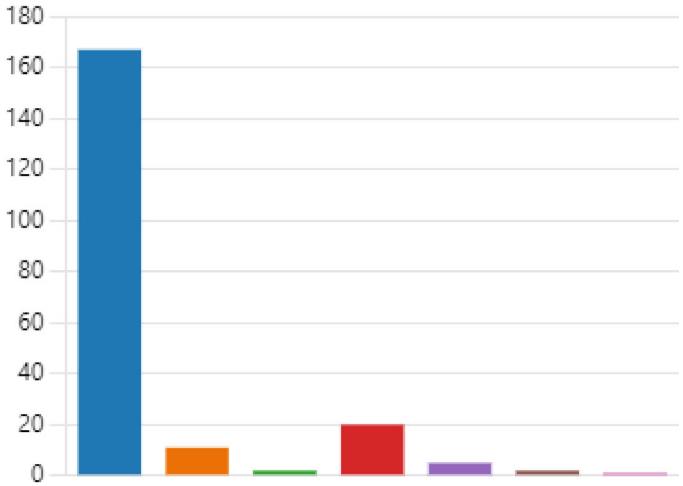
9. How have you prepared for the probable impacts of natural hazards? Check all that apply.

I prepared a household emerge...	70
I developed a household emerg...	48
I know where to find emergency...	116
I have monies set aside for emer...	108
I have flood insurance.	12
I have emergency backup powe...	31
Other	14



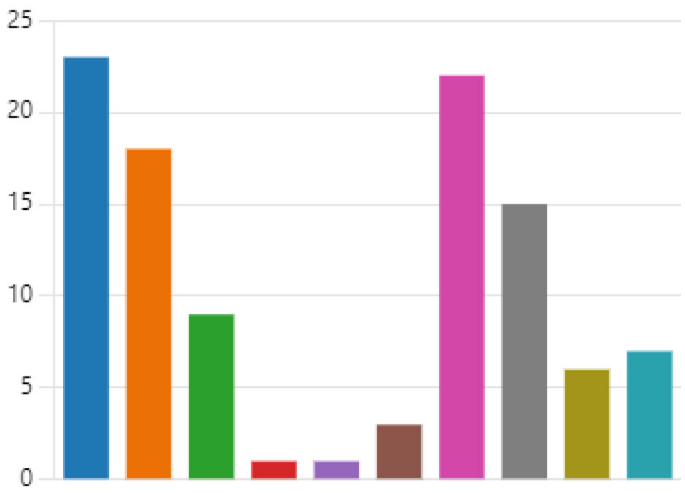
10. Do you have emergency backup power capable of powering your property's critical systems?

No, my property Is not equippe...	167
Yes, it is powered by natural gas.	11
Yes, it is powered by diesel.	2
Yes, it is powered by gasoline.	20
Yes, it is powered by propane.	5
Yes, battery backup connected t...	2
Yes, battery backup not connect...	1



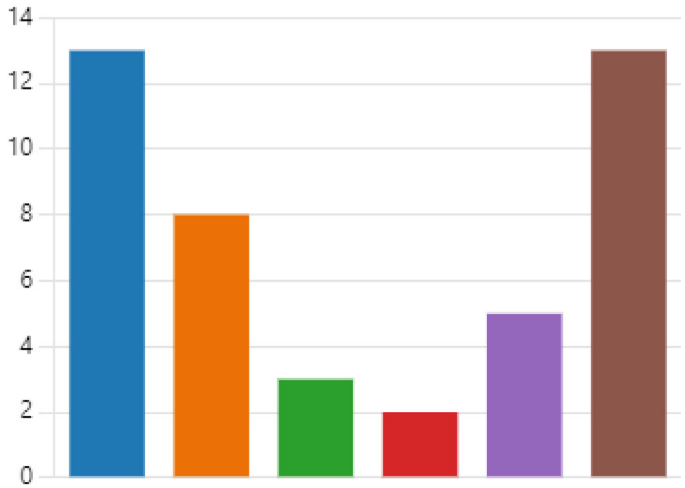
11. If you have backup power, what essential loads does it cover? Check all that apply

Refrigerator	23
Heating system	18
Electric hot water heater	9
Well pump	1
Ejector pump	1
Sump pump	3
Various lights and outlets	22
Communications (e.g. Wi-Fi)	15
Entire building	6
Other	7



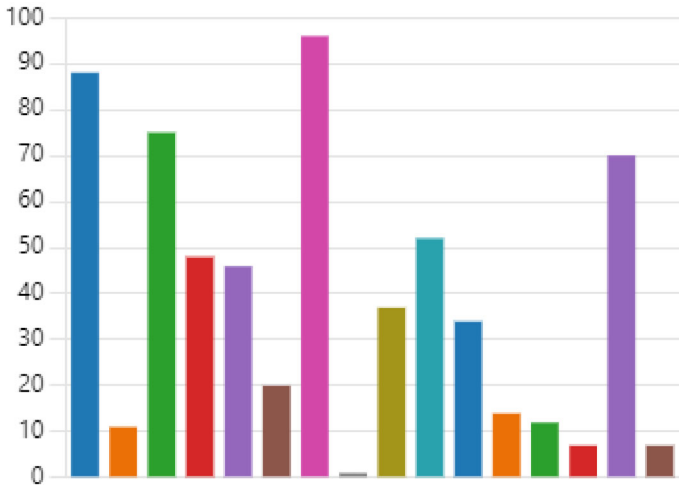
12. If you have emergency backup power, what is the estimated runtime?

Less than 12 hours	13
12-24 hours	8
1-3 days	3
3-4 days	2
More than 4 days	5
Not sure	13



13. Please pick 3 natural hazards you are most concerned about.

High Winds	88
Lightning	11
Extreme Cold	75
Extreme Heat	48
Drought	46
Earthquake	20
Winter storm (snow and ice)	96
Hail	1
Tornado	37
Hurricane/Tropical Storm	52
Street Flooding from Heavy Rain	34
Riverine Flooding (when stream...	14
Brushfire	12
Dam Failure	7
Nor'easter	70
Other	7



14. Are there any Maynard-specific locations, facilities, or resources that you believe are particularly vulnerable to or otherwise at risk from the probably impacts of natural hazards?

66
Responses

Latest Responses

Q14. Are there any Maynard-specific locations, facilities, or resources that you believe are particularly vulnerable to or otherwise at risk from the probably impacts of natural hazards?
Assabet River, water & sewer infrastructure
Our downtown
Most buildings along the Assabet River,
Power lines in high winds
Senior Housing on Rte 62 by the river.
Areas around Assabet prone to flooding
Roadways, Allan drive, Fletcher, etc are a mess already due to drainage issues
Water
Water wells
Areas surrounding the assabett
Mill and Main Buildings. Several neighborhoods.
The shade tree program trees that are dripping limbs/ ice- snow/ rain/wind
Anywhere along the river
Green Meadow School and athletic field structures.
Our river banks

Q14. Are there any Maynard-specific locations, facilities, or resources that you believe are particularly vulnerable to or otherwise at risk from the probably impacts of natural hazards?

downtown area, particularly if there were to be unprecedented river flooding, but even in street flooding because no one clears the drains and they have backed up in the past. Our water system in town also seems particularly fragile, from the old mains to the lax maintenance, flooding or an earthquake, even small, could cause big issues.
All of these flat roofed buildings you keep building are a foolish waste of energy and are vulnerable to large snowfall
Locations near the Assabet River of other small bodies of water
Seniors
Public Housing for Elderly band Handicapped
Main and Nason Street have low spots, Lewis St Area
Downtown businesses
Lower areas located near the Assabet.
Water supply
Electrical transformers
Buildings near Assabet River susceptible to flooding.
by the river
Route 117 in front of Maynard Motors floods during heavy downpours, Field St floods as catch basins are inadequate and road pitch is poor
Water supply. Any property along the river

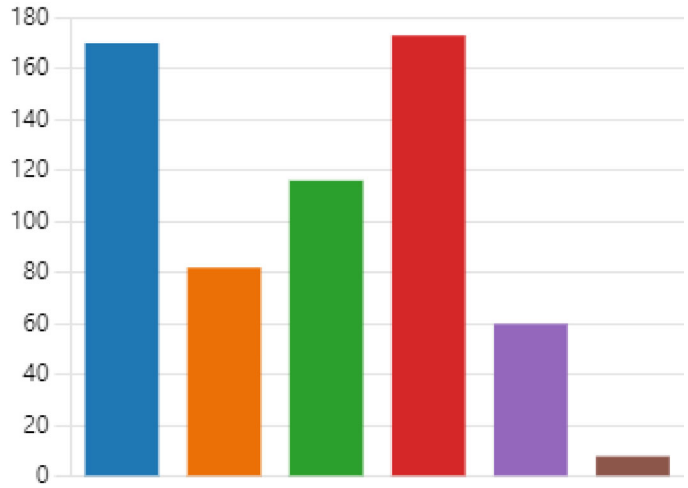
Q14. Are there any Maynard-specific locations, facilities, or resources that you believe are particularly vulnerable to or otherwise at risk from the probably impacts of natural hazards?
properties adjacent to the Assabet. Lack of resources for extremely high temps (cooling centers, spray parks)
Woodbine terrace floods in the circle up to front door
Green Meadow. Florida court area and roads with flooding from Assabet.
Anything along the Assabet
The street flooding that pools and freezes at the bottom of Vose Hill Rd.
School
The dams are concerning and would be a major impact if they failed
Wells
Any of the residences that border the river or are in low-lying areas. The rail trail is also an incredible community resource and one of the main reasons we moved here, and it could be severely damaged if the river floods.
Homes along side the river like ours
Everyone living next to the river
Town water supply in the event of extended drought or frozen pipes.
Our water system. Our aging elementary school. Our senior center
flooding along the river in down town.
Green Meadow
Assabet river banks

Q14. Are there any Maynard-specific locations, facilities, or resources that you believe are particularly vulnerable to or otherwise at risk from the probably impacts of natural hazards?
Water & Sewer system. Drinking water.
The mill
Large number of Slab ranches flooding risk and no tornado shelter
Everyone
See above - water tower and think there is water running down the hill from it into our complex
Trees from wind
Water supply, snow removal (especially sidewalks), natural gas leaks
Power lines vulnerable to untrimmed branches and trees
The streets are in horrible conditions throughout town, even places that were supposed to be paved were not completed - Durant ave, the sidewalks are in disarray
We have a large population of seniors that are isolated and live in homes that do not have air conditioning. Many have limited financial means.
Helping animals
businesses in downtown near the Assabet River are in danger of flooding
All
Green Meadow School

==========

15. Which of the following groups in Maynard are most vulnerable/least prepared for the probably impacts of natural hazards? Choose 3.

Seniors	170
Persons living alone	82
Low-income residents/public ho...	116
Persons with chronic disabilities ...	173
Persons with limited English pro...	60
Other	8



16. Does your street flood when it rains?

Always	9
Sometimes	49
No	149

17. How many times has that street flooded in the last 12 months?

0	111
1	14
2-3	22
Over 5	10
I don't know.	18

18. If "always" or "sometimes", please provide the street name and nearest cross street. Or tell us of a place you know floods.

46
Responses

Latest Responses

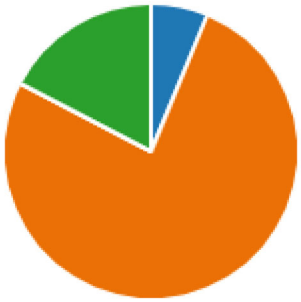
"*Intersection of Charles St and Mayfield Street*"

19. Is your property located in a FEMA designated floodplain?

Yes	4
No	117
I don't know	84

20. Do you currently have flood insurance on your home/business?

Yes	13
No	158
I don't know.	36



Q18. If "always" or "sometimes", please provide the street name and nearest cross street. Or tell us of a place you know floods.
Used to flood on Old Marlboro - but the recent reconstruction/paving improved it significantly
Hillside st.
Chandler street in front of #32. It's at the bottom of the hill and sometimes the storm drains get full.
Bottom of Winter Street - street drain can get clogged with leaves and pine needles and there is a lot of runoff from the hills and the top of the street
Old marlboro at parker
Fewer times this past year because of drought, but Mckinley at Hayes st crossing area typically floods up from the storm drains.
Garfield ave intersect with crane ave
Field Street
Park St
North Street corner of Marlboro
Allan drive, there is always water streaming down the street
Taylor Rd.
Loring ave
Between 27-34 Dix rd. The drain isn't flat to the pavement- nothing drains / causes potholes… Justin demarco is aware . 10/22
Concord

Q18. If "always" or "sometimes", please provide the street name and nearest cross street. Or tell us of a place you know floods.
North St, Old Marlboro Rd
Water builds up chronically due to clogged sewer grates.
Powdermill
Lower Mill Street
Summer Street
assabet st near Elaine Ave
Tremont and Warren
Front street
downtown triangle street flooding, as well as the low neighborhoods off concord street on the Acton side of town (tremont, walcott etc.)
Sheridan
Little Road / Maybury Rd/ Great Rd
End of Dix Road 27-29 Dix/30-32 Dix
Thompson at 117
Parker Street and Vose Hill Road
Field St at catch basins near #10,11,14. #14 one is sinking. Also as mentioned above Rt 117 at Maynard Motors.
Powdermill

Q18. If "always" or "sometimes", please provide the street name and nearest cross street. Or tell us of a place you know floods.
5 Woodbine Terrace in the circle, off of Powdermill Road
Florida Court
Lewis st
Great Rd and Mill St
Vose Hill Rd and Parker St
Mill and main
Brown Street
Not sure how to define “flood” - part of our yard floods next to the river. Water on the road runs like a river
117
Apple ridge building 5
Butler Ave / Walcott St.
linden street
Pretty much anywhere in town, it’s all bad
Mayfield and Charles
Intersection of Charles St and Mayfield St.

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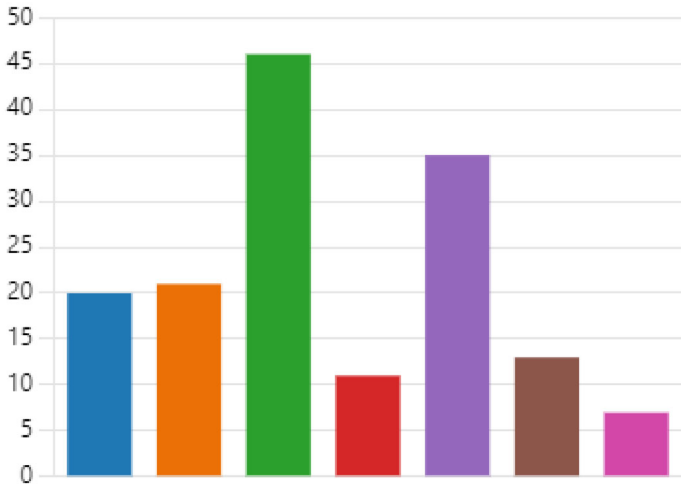
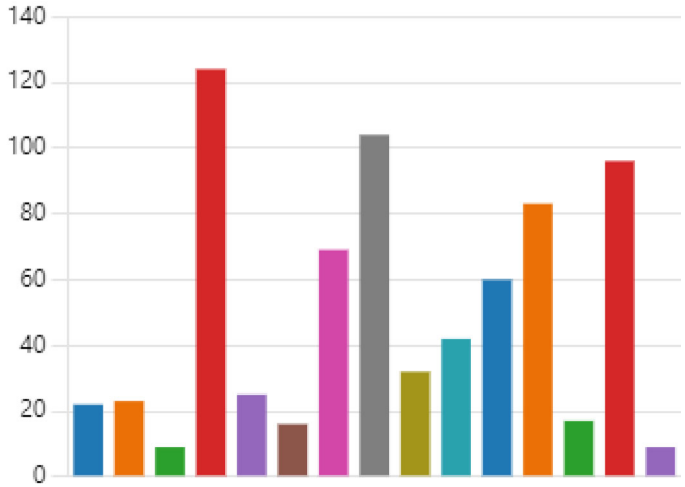
21. If you don't have flood insurance, please indicate the main reason why.

Never really considered it.	20
It never floods.	21
My property is not located in a ...	46
Too expensive.	11
My property is elevated or other...	35
I'm not required to do so.	13
Other	7



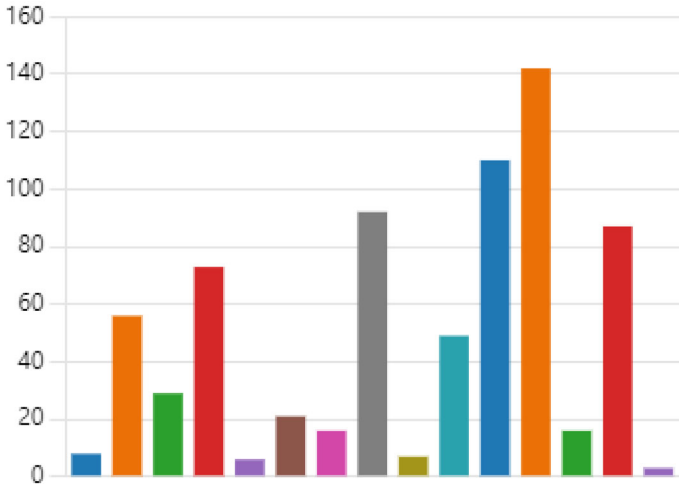
22. How do you prefer to receive educational information about how to better protect your home, business, or neighborhood?
Check all that apply.

Local newspaper	22
Television (news stories, public s...	23
Radio	9
Town Website	124
Public workshops and meetings	25
School direct messaging system	16
Direct mailings	69
Email	104
Information at the library	32
Roadside message boards or bil...	42
Phone call from "Hyper-Reach" ...	60
Text message from "Hyper-Reac...	83
Social Media Post- Twitter	17
Social Media Post- Facebook	96
Other	9



23. How do you prefer to receive EMERGENCY storm information? Check all that apply.

Local newspaper	8
Television (news stories, public s...	56
Radio	29
Town Website	73
Public workshops and meetings	6
School direct messaging system	21
Direct mailings	16
Email	92
Information at the library	7
Roadside message boards or bil...	49
Phone call from "Hyper-Reach" ...	110
Text message from "Hyper-Reac...	142
Social media- Twitter	16
Social Media- Facebook	87
Other	3



24. Please offer anything else you would like to share to help Maynard become better prepared for and recover better from storms.

41
Responses

Latest Responses

"clear the rail trail of snow and ice - it is not walker friendly"

Q 24. Please offer anything else you would like to share to help Maynard become better prepared for and recover better from storms.

I don't see anything here about the town's ability to repair electric lines that are down. Multiple times my dead-end street has been impossible due to downed wires

Move power lines underground

Contamination of ground water and water supply is currently a risk and will continue to be challenging w increased flooding etc. would love to see serious consideration of microgrid development. Would like to see zoning in line with increasing riverfront hazards, especially toxic-generation and storage moved our of flood areas. And lets get eversource to move more power lines underground. Would like to see a town-wide policy of no lawn pesticide/herbicide, no rat poisoning etc to reduce people's exposure. Don't know if the police all use body cameras, but if not, would like them implemented so our residents who might fear calling for help are more willing to do so in emergencies. Thank you very much for doing this for the community.

Keep trees trimmed around power lines.

Better contracted plow drivers. Better sidewalk snow removal. Repairing sidewalk damage along with road damage.

None of the emergency plans are publicized. The public should be made more aware. Do we even have enough staff to handle these problems because it doesn't seems like it when simple fixes and requests take an extended amount of time. Plus the administration seems to mismanage every project. For example, the gas explosion a few years ago had a huge public information gap. More recently the new fire station was built pointing the wrong way and doesn't have enough parking. Seems like it would be everyone on their own in Maynard.

the sidewalk plow makes it worse

My neighborhood is in and around Assabet St. It is consistently plowed poorly, with some of the streets only one lane after a storm. With most of the neighborhood dead end streets or partial dirt roads, this creates a significant safety risk for the residents in the area. The main "entrance" to the area is Fletcher St, which is a sea of potholes and very difficult to get up when it snows because of the poor plowing/road treatment.

Cleaned sewer grates on a regular basis.

Maynard does a good job cleaning up after storms

Q 24. Please offer anything else you would like to share to help Maynard become better prepared for and recover better from storms.

Better management of trees or find ways to help residents with the cost of managing trees that could be at risk of falling limbs or trees falling during high wind storms; distribute rain barrels across town in public spaces or cemeteries to prep for droughts and allow residents to use that water for watering gardens. Especially cemeteries when the water spigots are turned off during those times.

Education on mitigating floods i.e. planting trees, cleaning out storm drains. Specific outreach for those in need could be mitigated by residents or neighbors

Relax, we don't get dangerous weather here.

Drainage from Vose Hill onto Parker Street freezes and is a hazard to travel. Instead of correcting the problem, the town just posts a caution sign and salts the area. This is in spite of many accidents and spin-outs as ice builds. Even though they apply salt and sand, the drain water washes it away. This has become an increasingly dangerous issue in recent years as if the means to drain water coming down from Vose Hill has changed.

How to communicate issues?

We need education for residents regarding preparedness. What would an emergency shelter look like? What spaces in town are appropriate? What are natural disasters that Maynard may face going forward?

Thank you letting me be a part of this survey

Maynard should not be watering the athletic fields during the summer, especially when water restrictions are in place! All of this town communication about how water conservation is so important, then you drive by the football field and the water is being sprayed sky high, in the middle of the day. This is not okay on so many levels.

A better way to communicate with all residents in the town (I.e. text message system). I live with my elderly aunt, in a home she owns, and she doesn't have a cell phone. She'll receive messages on her land line, but she doesn't always answer the phone. Since I'm not the property owner, I don't receive any alerts. I have to rely on various community groups on Facebook and some deductive reasoning. I'm sure I'm not the only one in the Town in similar circumstances.

Q 24. Please offer anything else you would like to share to help Maynard become better prepared for and recover better from storms.

Maybe add a drain halfway down Vose Hill Rd where the water actually flows so it doesn't form a giant puddle that freezes in the street and across my driveway.
Restoring electricity after a winter storm is priority #1. Everything runs off electricity, and cold kills living things and destroys value.
What are you doing about climate change, are you going to include this threat?
Improve the dpw
provide affordable solutions to prepare for storms impact.
Stop allowing the industrial construction going on at 123 summer st. those ppl are vile and abuse their neighbors, while their only contribution to town is making it a less friendly place to live.
Have you considered hosting workshops for residents to show them how to build their own emergency kits and maybe teach some basic survival skills in the event of a electric grid or water system down situation? The more residents who are prepared would free up emergency services for the most critical situations. Have you considered setting up a way to activate grassroots neighborhood networks so residents who want to could help each other in an extreme hazardous event?
Thank you for this survey. We are most concerned about loss of electricity and water quality if there was a severe storm.
We need to save water for extreme heat and drought. No watering lawns (even with well water).
Repair failing water infrastructure while we still have time before a disaster. After trouble strikes, we could face extensive damage that would cause an extended period of reduced or no service. Make a plan now for how to handle emergency distribution of drinking water to residents who are without service for days or weeks.
Town buildings could be resilient with an alternative energy supply, designed to withstand a tornado, earthquake, fire, flood, ect so that residents could be supported from charging phones to those on oxygen concentrators.

Q 24. Please offer anything else you would like to share to help Maynard become better prepared for and recover better from storms.
Updating public building roofs, improve stormwater infrastructure
Where is there 24/7 shelter for people pets for tornado risk? Flooding are old sewer and old water lines prepared? More tree trimming/ removal needed to protect structures and utility lines.
Are there Maynard-specifics hazards vulnerabilities assessments available?
Residents need to be informed on emergency shelter locations
Be sure to use current modeling informed by climate change to determine actual risks, and make sure that nature-based solutions are considered when working to prevent and mitigate impacts from storms
I wish we were better at keeping sidewalks clear of snow and ice
Not in regards to storms but cut the police budget already, it's out of hand. And stop caving to artist who do very little to make the town better, 123 summer st specifically, they are horrid ppl
This town needs to take the threats of climate change more seriously.
clear the rail trail of snow and ice - it is not walker friendly

===end===

Appendix B: Public Outreach

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Appendix C:
Community Assets Map

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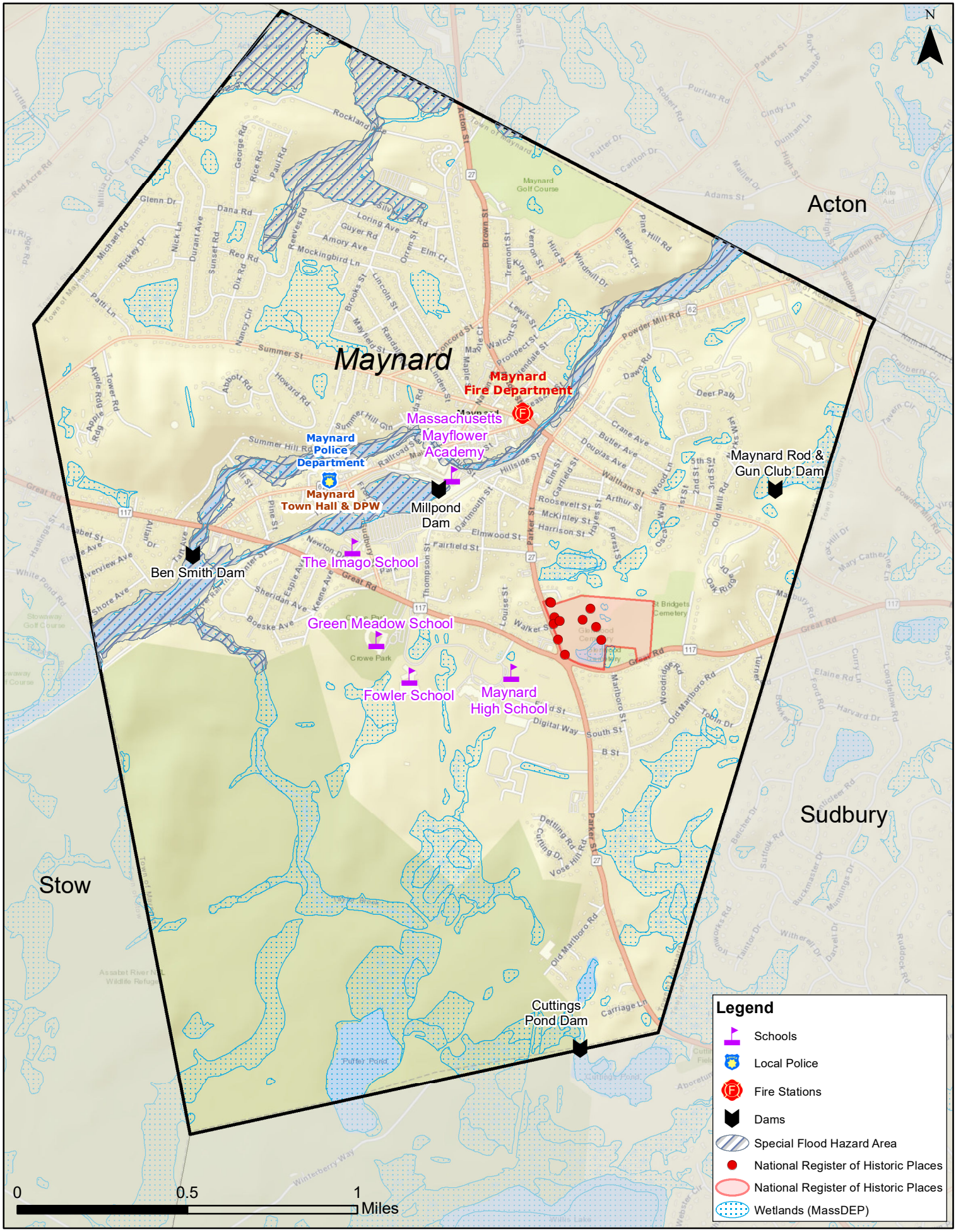

Maynard, MA Community Assets

Source: MassGIS 2024