

Town of Wales

Municipal Vulnerability Preparedness and Hazard Mitigation Plan 2025



Adopted by the Wales Board of Selectmen on _____

Prepared by:

The Town of Wales MVP-HMP Core Team

And

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John Croke, EMD and Fire Chief
John Grasso, Board of Selectmen Vice Chairman
Thomas Ford, Police Chief
David Foote, Board of Health Chair
Chris Ryan, Interim DPW Director

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1: INTRODUCTION AND PLANNING PROCESS

Introduction

The Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) define Hazard Mitigation as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards such as flooding, storms, high winds, hurricanes, wildfires, earthquakes, etc. Mitigation efforts undertaken by communities will help to minimize damages to buildings and infrastructure, such as water supplies, sewers, and utility transmission lines, as well as natural, cultural and historic resources.

Planning efforts, like the one undertaken by the Town of Wales and the Pioneer Valley Planning Commission, make mitigation a proactive process. Pre-disaster planning emphasizes actions that can be taken before a natural disaster occurs. Future property damage and loss of life can be reduced or prevented by a mitigation program that addresses the unique geography, demography, economy, and land use of a community within the context of each of the specific potential natural hazards that may threaten a community.

Preparing a hazard mitigation plan before a disaster, can save the community money and facilitate post-disaster funding. Costly repairs or replacement of buildings and infrastructure, as well as the high cost of providing emergency services and rescue/recovery operations, can be avoided or significantly lessened if a community implements the mitigation measures detailed in the plan.

FEMA requires that a community adopt a pre-disaster mitigation plan as a condition for mitigation funding. For example, the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), and the Pre-Disaster Mitigation Program are programs with this requirement.

This is an update to Wales's first Hazard Mitigation Plan from 2015, and it will be updated moving forward every 5 years.

Planning Process

The hazard mitigation planning process for the Town of Wales included the following tasks:

- Reviewing and incorporating existing plans and other information including changes in development in the last five years since the Town's previous Hazard Mitigation planning process
- Updating the natural hazards that may impact the community from the previous plan
- Conducting a Vulnerability/Risk Assessment to identify the infrastructure at the highest risk for being damaged by the identified natural hazards, particularly flooding
- Identifying and assessing the policies, programs, and regulations the community is currently implementing to protect against future disaster damages
- Assessing the current Hazard Mitigation strategies and establishing goals for updating, revising or adopting new strategies
- Adopting and implementing the final updated Hazard Mitigation Plan

The key product of this process is the development of an Action Plan with a Prioritized Implementation Schedule.

A Municipal Vulnerability Preparedness (MVP) Plan identifies priority action items to address vulnerabilities and utilize strengths in preparation for climate change. In 2017, the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) initiated the state's MVP grant program to help communities become more resilient to the impacts of climate change. The program has two grant phases:

1. The first phase of grants are Planning Grants, which fund the vulnerability analyses, engagement, and planning processes. Towns convene a team of municipal staff, engage stakeholders in a Community Resilience Building (CRB) Workshop, and engage community members in developing the plan. Communities that complete the Planning Grant program and prepare an MVP plan are eligible for the second phase of MVP grant funding and receive increased standing for other state grants.
2. The second phase of the MVP program are Action Grants, which fund the implementation of priority climate adaptation actions described in the MVP plan. Action grants are competitive, however they are less competitive than some similar grants awarded at the national level.

Community Resilience Building Workshop

The Community Resilience Building Workshop was developed by the Nature Conservancy and provides a process for developing resilience action plans with stakeholder input. The process has been successfully implemented in over 350 communities.

The Community Resilience Building Workshop's central objectives are to:

- Define top local natural and climate-related hazards of concern
- Identify existing and future strengths and vulnerabilities
- Develop prioritized actions for the Community
- Identify immediate opportunities to collaboratively advance actions to increase resilience

Each step in the process (below) is rich in information and dialogue and results in actionable plans and strong collaboration.



MVP-HMP Report Layout

The report presents the results of the planning process, which was informed by input received from the Core Team and during the CRB Workshop and Public Listening Sessions. This report is organized as follows:

Chapter 1: Project introduction and overview; summary of planning process

Chapter 2: Hazard mitigation and climate adaptation goals

Chapter 3: Community profile; societal, economic, infrastructural, and environmental features; and land use and development

Chapter 4: Detailed assessment of the Town's vulnerability and strengths by hazard type. The hazard types include flooding, wind-related risks (such as hurricanes, tropical storms, tornadoes, nor'easters, and severe thunderstorms), winter storms, geological hazards (such as earthquakes and landslides), brush fires, extreme temperatures, and drought. Each profile also describes the hazards' historic occurrences and impact, frequency, level of risk, and climate change projections.

Chapter 5: Critical Facilities

Chapter 6: The Town's mitigation capabilities and mitigation measures

Chapter 7: Plan adoption, maintenance, and implementation

Chapter 8: Appendices

Combining Hazard Mitigation and Municipal Vulnerability Preparedness Planning in Wales

The Town of Wales received an MVP Planning Grant and a FEMA Grant to simultaneously prepare an MVP plan in conjunction with an HMP plan. This combined approach enabled Wales to consider the impacts of climate change in addition to historic hazard events as part of its planning process. Also, many of the required steps of the MVP process satisfy FEMA requirements for updating an HMP. For example, MVP requires convening a Core Team and hosting a CRB Workshop and Public Listening Session, which are not required specifically by FEMA, but do meet the public input requirements of the hazard mitigation planning process. Figure 1.1 below shows the overlaps between the two processes, as well as some of the unique features of each.

The Town prepared this joint MVP-HMP in accordance with FEMA guidelines for hazard mitigation planning (Title 44 Code of Regulations (CFR) 201.6) and with the Massachusetts Executive Office of Energy & Environmental Affairs' (EOEEA) requirements for MVP plans. This approach followed the state's lead in adopting the first-ever Massachusetts State Hazard Mitigation and Climate Adaptation Plan (EEA and EOPSS, 2018). By completing a joint MVP-HMP, Wales was able to fulfill the requirements and enhance the impact of both processes.

Figure 1.1: MVP and HMP Integrated Plans



Planning Process Summary

Facilitating discussion among stakeholders about creating a safer, more resilient community is an important aspect of the natural hazard and climate change impact mitigation planning processes. The involvement of a variety of stakeholders in identifying mitigation strategies helps reflect the Town’s values and priorities and builds greater community support and success in implementing actions that reduce risk. The planning and outreach strategy used to develop this MVP-HMP collected input from three categories of stakeholders:

1. The Core Team, which includes representation from municipal and local leadership
2. Local, regional, and state-level stakeholders who could be vulnerable to, or provide strength against, natural hazards and climate change
3. Residents, business owners, and all those who are interested in the Town’s future

Core Team

The Town of Wales convened the Core Team to act as a steering committee for the development of the MVP-HMP. A kickoff meeting was held on January 9, 2024, to discuss the project overview and Core Team roles and responsibilities, and plan for the CRB workshop. More information on this meeting is included in Appendix C. The Core Team also provided regular input through email and interviews. The Core Team played an important role in identifying critical infrastructure, involving key stakeholders, and

assessing the Town’s capacity to mitigate hazards alongside ongoing operations. Members of the Core Team are listed in Table 1.1.

Table 1.1: Wales MVP-HMP Core Team

Name	Title
John Croke	Fire Chief and Emergency Management Director
Thomas Ford	Police Chief
John Grasso	Board of Selectmen Vice Chairman
Chris Ryan	DPW Director
David Foote	Board of Health Chair

The Core Team and Pioneer Valley Planning Commission (PVPC) suggested or made available reports, maps, and other pertinent information related to natural hazards and climate change impacts in Wales. These were used to provide planning guidance, demographic data, and data on natural hazards and climate change projections and impacts in Wales. These included:

- **Wales Master Plan (Town of Wales and PVPC, 2021):** The Master Plan was used to identify actions to increase resiliency to hazards and climate change, and safety and inclusion for all residents.
- **Wales Comprehensive Emergency Management Plan:** the Critical Infrastructure section was used to identify those infrastructure components in Wales that have been identified as crucial to the function of the Town.
- **Wales Zoning Bylaws and Subdivision Regulations:** The Town's Zoning Bylaws were used to identify those actions that the Town is already taking that are reducing the potential impacts of a natural hazard (i.e. floodplain regulations) to avoid duplicating existing successful efforts.
- Massachusetts State Hazard Mitigation and Climate Adaptation Plan (2018),
- **ResilientMass Plan (2023) Massachusetts State Hazard Mitigation and Climate Adaptation Plan (2018)** (EEA, EOPSS, and MEMA): The state plans were used to ensure consistency with state identification of mitigation strategies, critical infrastructure, natural hazards, and impacts of climate change.
- **FEMA Flood Insurance Study for Hampden County (2023):** This report was released in 2023 as the most updated Flood Insurance Study (FIS) for Hampden County. The FIS revises and updates information on the existence and severity of flood hazards for Hampden County, including for Wales. The FIS and accompanying Flood Insurance Rate Maps (FIRMs) include data on flooding sources, FEMA flood zone designations, base flood elevations, and discharge rates of flooding sources. This data was reviewed and incorporated into the plan update process by informing the risk assessment for flooding.
- **Local Mitigation Planning Handbook (FEMA, 2023):** This handbook provided guidance on the planning process, content and format of the HMP update.

- Decennial Census (US Census Bureau, 2010 and 2020) and American Community Survey, 5-year estimates (US Census Bureau, 2018 – 2022): The Census and ACS provided demographic and economic data for HMP.

Core Team Meetings

Meetings of the Core Team took place at the Wales Town Hall and the Wales Senior Center. Meetings were held on the dates listed below, and agendas for these meetings are included in Appendix C.

January 9, 2024

The Core Team meeting included an overview of the Hazard Mitigation Plan update process and Municipal Vulnerability Preparedness program overview, an initial assessment of hazards, and discussion of participants to invite to the CRB workshop.

February 27, 2024

The Core Team updated the previous occurrences of hazards that have impacted the Town and conducted the risk assessment. The work group also developed an outreach and engagement plan for the workshops and public meetings, and finalized the workshop stakeholder list.

March 12, 2024

The Core Team updated the critical facilities and vulnerable populations in Town and completed the capabilities assessment.

January 27, 2025

The Core Team assessed the status of the previous mitigation strategies, and identified and prioritized new mitigation strategies to implement.

Participation by Stakeholders

A variety of stakeholders were provided with an opportunity to be involved in the development of the Wales MVP-HMP. The different categories of stakeholders that were involved, and the engagement activities that occurred, are described below.

Stakeholder Engagement: Community Resilience Building (CRB) Workshops and Public Listening Sessions

The Town held the CRB workshop on April 27th from 8 am to 4 pm. The workshop was held in person at Norcross Sanctuary. The workshop covered infrastructure, environmental, and societal features. Stakeholders with subject matter expertise and local knowledge and experience were invited to attend, including town staff and board members, public officials, local and regional organizations, neighboring communities, media organizations, environmental and social service organizations, and local businesses.

Leadership from neighboring communities of Monson, Brimfield, and Holland, Massachusetts were also invited to participate in the workshops.

During the workshop, PVPC provided information about the MVP program and climate change and natural hazards and impacts. Participants decided on the top four hazards impacting Wales: Flooding, high winds, extreme temperatures and weather, and invasive species. Participants generated a list of infrastructural, societal, and environmental features in town that are vulnerable to these climate change hazards or provide strength and resilience in the face of these hazards. Participants also identified and prioritized key actions that would improve the Town's resilience to natural and climate-related hazards.

A list of community representatives who participated in the process are presented in the Appendix, along with the materials from the workshop. The broad representation of local and regional entities that participated in these workshops ensures that the MVP-HMP aligns with the operational policies and hazard mitigation strategies at different levels of government and implementation. The invited participants included representatives from the business, non-profit, and education sectors, in addition to municipal representatives and community members. A list of all the representatives who were invited is below.

Stakeholder	Name	Affiliation
Board of Selectmen	Michael J. Valanzola	Clerk (2025)
Board of Selectmen	John A. Grasso	Chairman (2026)
Board of Selectmen	William J. Matchett III	Vice Chairman (2024)
Board of Selectmen	Pamela Leduc	Executive Sec.
State Senator	Senator Fatima	
State Representative	Todd Smola	
Director Rural Affairs	Anne Gobi	
Planning Board	Danelle Laflower	Member
Planning Board	Jason Oney	Chair
Planning Board	Sarah Ryan	Member
Planning Board	Melanie Oney	Member
Conservation Com	Jennifer Bothwell	Member
Conservation Com	Joanie D'Ambrosia	Member
Conservation Com	Zachery Berry	Member
Conservation Com	Tom Brown	Member
Recreation Committee	Nicole Croteau	Member
Parks Commission	Peter Higgins	Member
Senior Center	Cheri Fisher	Director
COA	Ann Chrabascz	Chair
COA	Trent Bradbury	Vice-Chair
COA	Lynn Greene	Secretary
COA	Dennis Ward	Member
COA	Analia St. George	Member
Building Department	Rich Buccelli	Gas & Plumbing
Building Department	Scot Mansfield	Electrical Inspector

Stakeholder	Name	Affiliation
Building Department	Bill Cantell	Building Inspector
Building Department	Sarah Ryan	Code Enforcement
Building Department	Rich Buccelli	Gas & Plumbing
Veterans Agent	Rodney Kincaid	
Board of Health	David Foote	Chair (2025)
Board of Health	Michelle Blanchard	Clerk to the Board
Board of Health	Jill Cafarelli	Title 5 Health Agent
Board of Health	Kenny Moore	Member (2024)
Board of Health	Dan Haley	Member (2026)
Capital Improvement	Michael J. Valanzola	Chairman representing
Capital Improvement	Danelle Laflower	Member
Capital Improvement	Ed Boyce	Secretary
Capital Improvement	Guy Lucia	Member
Cultural Council	Sue Gregory	Chairperson
Cultural Council	Amy Adams	Secretary
Cultural Council	Meghan Matczak	Member
Cultural Council	Eleanor Pitcher	Member
Cultural Council	David Foote	Member
Cultural Council	Meghan Matczak	Member
Cultural Council	Eleanor Pitcher	Member
Historical Commission	Rebecca Smith	Chair
Historical Commission	Robyn Chrabascz	Clerk
Historical Commission	Rodney Kincaid	Member
Historical Commission	Lynn Greene	Member
Historical Commission	Carolyn A. Boehne	Member
Parks Commission	Doug Bready	Member
Parks Commission	Bill Luchon	Member
Parks Commission	John A. Grasso	Member
Conservation Commission	Jennifer Bothwell	Chair
ZBA	Joel Jette	Chair (2017)
ZBA	Adam Brassard	Member
ZBA	Ed Boyce	Alternate Member
ZBA	Nathan Collins	Member

Fire Department	John Croke	Fire Chief
Fire Department	Cheri Fisher	Administrative Assistant
Fire Department	Matthew Greene	Deputy Chief
Police Department	Chris Ryan	School Resource Officer
Norcross Wildlife	Ed Hood	Executive Director
Norcross Wildlife	Dan Wilder	
Opacum Land trust	Laney Wilder	Executive Director

DCR – State Forest		
Cemetery Commission	Wilfred "Bill" Anair	Chairperson
Cemetery Commission	Joel Robert Jette	Member
Cemetery Commission	Peter S. Haley	Member
Library	Nancy Baer	Director
School	Deb Boyd	Superintendent
School Committee	Christine Randall	Chair
School Committee	Michael Valanzola	Tantasqua Regional
School Committee	Carolyn A. Boehne	Member
School Committee	John Croke	Member
School Committee	Ashley Gallant	Member
Wales Baptist Church	Gary Burdick	
Choice Foods		
Resident	Joe Buldoc	Cattle Farm
Resident	TP Tunstal	Large Landowner

Public Engagement

Public Listening Sessions

Two public meetings were held as part of the development of the Wales plan – on June 17, 2024 and March 8, 2025. Both meetings occurred after the Core Team had provided input on hazards and mitigation strategies relevant to the community. Notice of both public meetings was posted at Wales Town Hall in compliance with the Commonwealth of Massachusetts’ open meeting law, as well as publicized on the Town website and on social media. Public meeting agendas and notices can be found in Appendix B.

On May 9, 2024 and again on June 13, 2024, PVPC sent out a press release indicating that a public meeting would take place on June 17, 2024 during a Board of Selectmen meeting. A list of all media outlets contacted is provided in the appendix. Mimi Kaplan from PVPC gave a presentation about plan and the planning process. Afterward there was a public comment period. All of the Selectmen were present, as well as two members of the committee and three members of the public.

A press release sent out on February 24 publicized the public meeting to be held on March 8 and provided a link to the draft plan. It also indicated that hard copies were available at Wales Town Hall, and that all residents, businesses and other concerned parties of Wales were encouraged to comment on the plan by e-mailing or calling staff contacts at PVPC or the Town. Notice of the public meetings was sent to Emergency Management Directors of neighboring towns (Monson, Holland and Brimfield) via email as well as to local media outlets. The press release indicated that residents of Wales were invited to attend the event, as well as representatives of businesses in Wales and residents of neighboring communities. A flyer publicizing the meeting was posted on the Town website and on the Town Facebook page. A copy of the press release, flyer, and emails can be found in the Appendix.

The public meetings/listening session included presentations by PVPC about the hazard mitigation planning process and MVP program, climate change and natural hazards in Wales, local strengths and

vulnerabilities, existing mitigation measures, and priority action items for future climate adaptation. A public comment period was provided for attendees to share thoughts, concerns, comments and questions. There were three attendees at the first public meeting and 21 attendees at the second public meeting. PVPC staff took notes and recorded all public comments at both public meetings, and these were discussed by the Core Team. The comments informed the action items in particular and were incorporated into the plan. Comments about the plan included a suggestion that drought be rated as a more serious risk than “5-very low risk,” due to shallow well failures and other impacts; and a suggestion that the Town conduct a public water supply feasibility study at Needham Park.

Any future input received from the public, as well as any other stakeholders, will be incorporated into the plan during future regular updates. Public participation will be a critical component of the MVP/Hazard Mitigation Plan implementation process. The Core Team will hold all future meetings in accordance with Massachusetts open meeting law. In addition, the public will be invited to provide comments through e-mail. The comments will be reviewed by the Core Team and incorporated as appropriate.

Representatives of business, academia, and other private organizations

Businesses, academic institutions, non-profits, community groups, and neighboring communities were invited to attend the public meetings to provide input. The following businesses, academic institutions, and non-profit organizations listed below were invited to the HMP/MVP public listening sessions (the complete list can be found in the Appendix). There were three attendees at the June 17, 2024 public meeting, plus Town staff and members of the committee. There were 21 participants at the March 8, 2025 public meeting, which also fulfilled the listening session requirement for the MVP part of the process.

Participation by Neighboring Communities

Neighboring communities were provided with an opportunity to attend the meetings and comment on the draft plan. These communities are Monson, Holland, and Brimfield. These communities and many of the institutions mentioned above are provided opportunities to provide feedback as well through the Pioneer Valley Planning Commission (PVPC). PVPC is regularly involved in land use, transportation, and environmental planning initiatives in Wales and surrounding communities. Regular feedback received from these other initiatives were incorporated into the hazard mitigation planning process.

Representatives of non-profit organizations and outreach to vulnerable populations

Ed Hood, the Executive Director of Norcross Wildlife Foundation, attended both the Community Resilience Building (CRB) Workshop on April 27, 2024 and the Public Listening Session on March 8, 2025. Amy Adams, the Chief Operating Officer of Opacum Land Trust attended the CRB workshop and Listening Session as well. The pastor of Wales Baptist Church was invited to the meetings but could not attend. The Council on Aging was involved with the plan development and members attended the Community Building Workshop and the Listening Session. The COA provided direct outreach to members about the plan development, posted flyers about the meetings and included information about the meetings in their newsletter.

Regional Stakeholder Involvement

The Pioneer Valley Planning Commission is a regional planning agency for 43 towns and cities in Massachusetts' Hampden and Hampshire Counties. PVPC regularly engages with the Town of Wales as part of its regional planning efforts, which include the following:

- Developing the Pioneer Valley Regional Land Use Plan, Valley Vision 2, which advocates for sustainable land use throughout the region and consideration for the impact of flooding and other natural hazards on development.
- Developing the Pioneer Valley Climate Action and Clean Energy Plan, which assesses the impact that climate change will have on the region and recommends strategies for mitigation that can be implemented by local municipalities and businesses.
- Collaborating with state agencies, such as the Department of Conservation and Recreation, to maintain inventories of critical infrastructure throughout the region.

All of these PVPC initiatives considered the impact of natural hazards on the region and strategies for reducing their impact to people and property through hazard mitigation activities. The facilitation of the Wales Hazard Mitigation Plan by PVPC ensured that the information from these plans was incorporated into the Hazard Mitigation Planning process.

The Pioneer Valley Planning Commission is involved in the Western Region Homeland Security Advisory Council (WRHSAC). WRHSAC, which includes representatives from Western Massachusetts municipalities, Fire Departments, Public Works Departments, Police Departments, area hospitals and regional transit from throughout the four counties of western Massachusetts, is responsible for allocating emergency preparedness funding from the US Department of Homeland Security. The representatives of these disciplines who serve on the WRHSAC are charged with sharing the information discussed at meetings with their colleagues at their regular meetings.

In addition, PVPC staff regularly present to their Executive Committee and Commission (representatives from the 43 cities and towns that comprise the Pioneer Valley, when new projects are launched and when funding opportunities are available). As result, all the communities in the region were informed of Wales's Hazard Mitigation Plan update process and encouraged to comment.

Agencies that have the authority to regulate development

The primary Town entities that have the authority to regulate development in Wales are the Planning Board and Zoning Board of Appeals. Feedback from these stakeholder agencies was ensured through the participation of the Core Team members, who regularly meet and collaborate with members of these entities.

In addition, the Pioneer Valley Planning Commission, as a regional planning authority, works with all agencies that regulate development in Wales, including the municipal entities listed above and state agencies, such as Department of Conservation and Recreation and MassDOT. This regular involvement ensured that during the development of the Wales Hazard Mitigation Plan, the operational policies and any mitigation strategies or identified hazards from these entities were incorporated into the Hazard Mitigation Plan.

Board of Selectmen Adoption

In 2023, the Board of Selectmen agreed to begin the process of updating the Hazard Mitigation Plan. Once the plan was provisionally approved by FEMA in 2025, the Board of Selectmen held a public hearing on the plan and voted to adopt it.

2: HAZARD MITIGATION AND CLIMATE ADAPTATION GOALS

The Core Team convened to discuss, review, and endorse the following hazard mitigation and climate adaptation goals for the MVP-HMP. The Town of Wales aims to minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to flooding, severe snowstorm and ice storms, severe thunderstorms, hurricanes, tornadoes, brushfires, earthquakes, dam failures, drought, and global health crises through the following avenues:

Protection: Develop programs, strategies, and actions to protect the following Town assets and vulnerabilities from natural hazards and climate change impacts:

-
- | | |
|--|---|
| • Residents, with an emphasis on supporting the elderly, young, and low-income populations | • Public facilities and services |
| • Cultural and historic resources | • Homes and businesses |
| • Critical infrastructure | • Open space and other environmental features |
| • Utilities, including electric power, water, and wastewater | • Future development |
-

Planning: Incorporate climate adaptation and hazard mitigation measures into local plans, bylaws, regulations, and practices to protect critical infrastructure and property and to encourage resilient development, based on up-to-date information on climate change projections and emerging risks.

Nature-based Solutions: Investigate, design, and implement hazard mitigation and climate adaptation measures that employ nature-based solutions and protect the natural environment.

Coordination: Collaborate in hazard mitigation planning and climate adaptation with utility providers, local businesses, institutions, non-profits, surrounding communities, and state, regional and federal agencies.

Capacity: Increase the capacity for all Town departments, committees, and boards to respond to climate change impacts and natural hazard events with adequate data, guidance, staff, training, and equipment.

Public Outreach: Increase awareness and provide resources for hazard mitigation and climate resilience to businesses and residents through outreach and education.

Funding: Identify and seek funding for measures to mitigate or eliminate each known significant hazard area and reduce the impacts of climate change.

3: LOCAL PROFILE

Community Setting

Geography

Wales is a rural town approximately 16 square miles in area, located in eastern Hampden County. The town is situated in the uplands east of the Connecticut River Valley and it lies within the Chicopee and Quinebaug River drainage basins. The town is bordered by Brimfield, to the north; Stafford and Union Connecticut, to the south; Holland, to the east; and Monson, to the west. Wales is about 28 miles east of Springfield and 70 miles southwest of Boston.

Town History

Wales was settled by colonists from Brimfield and Springfield during the mid-18th century. Primarily an agricultural community since its establishment in 1762, the town attracted a number of small industries during the 19th century. Townspeople in Wales farmed and made shoes and boots and in the 19th century the Wales and the Shaw companies made the town an important woolen producing town. The jobs in the mills drew immigrants from Ireland and French Canada. The peak population in 1880 was 1,033 people, reflecting this immigration. Residents who didn't work in the mills worked in market gardens, dairy farms and woodlands as some of them continue to do in the 20th century.

The prospering new businesses attracted new residents to the town. However, by 1900 all seven of its woolen mills had closed. The town continued to develop slowly, mainly as a popular summer recreation area centered on Lake George. Much of the population remained only during the summer months. The town center of Wales retains a remarkable early 19th century character as a street village with several stylish brick houses and a Greek revival meeting house.

Government

Wales is governed by an Open Town Meeting form of government in which any registered voter may participate. Acting as the legislative branch of local government, the Town Meeting enacts bylaws, appropriates the operating budget, and makes other important decisions about the Town's resources and services. An elected three-member Board of Selectmen act as the Town's chief executive officers. A variety of appointed volunteer committees are responsible for budget preparation, policy development, town bylaws, and state codes and regulations, and advisor responsibilities.

Demographics

As of the 2020 U.S. Census, Wales had a population of 1,832, which was a very slight decrease from 1,838 in 2010. The racial composition of the population is 92.7% White, 0.6% Native American, 0.4% Black, 0.1% Asian, and 1.5% of another race. A total of 4.8% of the population identified as being of two or more races, and 2.2% of the population identified as Hispanic or Latino of any race.

The U.S. Census Bureau's American Community Survey (ACS) provides additional demographic information about Wales. As of 2023, approximately 24.0% of the town's population is under the age of 18, and 16.1% of the population is 65 and older. The median age is 41.2 years, which is slightly higher than both the statewide (39.9 years) and countywide (39.8 years) medians.

According to the 2023 ACS 5-year estimates, the median household income in Wales is \$93,971, which is significantly higher than the Hampden County median of \$70,535. The town also has a low poverty rate (4.8%) when compared to the county as a whole (15.7%). An estimated 26.1% of Wales residents aged 25 or older have a bachelor's degree or higher, which is slightly lower than the countywide estimate of 28.9%.

Because Wales is primarily a rural residential community, the vast majority of residents are employed elsewhere. As of 2022, 95.4% of employed Wales residents worked somewhere outside of the town. Many residents travel long distances to work; the average commute time is 34.5 minutes, and as of 2022 over 22% of employed Wales residents work more than 50 miles from their home. Worcester is the single largest place of employment for Wales residents, followed by Southbridge, Boston, Sturbridge, Palmer, and Holland. According to the 2023 ACS 5-year estimates, 86.3% of employed Wales residents drive to work, either alone or in a carpool. Approximately 11.5% work from home, and only 2.2% commute via other means, including walking or utilizing public transportation.

Housing

As of the 2020 U.S. Census, there were a total of 896 housing units in Wales, of which 139 were vacant at the time of the census. This vacant figure includes 91 that are classified as seasonal, recreational, or occasional use, which reflects the large number of seasonal homes in Wales, particularly on Lake George. Of the occupied housing units, 83.2% were owner-occupied, and 16.8% were renter-occupied.

According to the Census Bureau's 2023 American Community Survey (ACS) 5-year estimates, about 85.5% of the housing units in Wales are single-family detached units. Another 0.3% of units are single-family attached, 3.4% of housing units are in 2-unit buildings, 3.1% are in buildings with 3 or more units, and 7.7% of housing units are mobile homes.

The majority of the existing housing stock (56.4%) was built between 1960 and 1999. Another 12.5% was built between 1940 and 1959, and 11.1% in 1939 or earlier. About 16.2% were built between 2000 and 2009, but only 3.8% of existing housing units in Wales have been built since 2010.

Land Use and Infrastructure

Land Use

According to the 2024 assessor's data, most of the developed land in Wales is single-family residential. This use comprises about 2,600 acres, or about 25% of the town's total area. Other residential uses comprise 670 acres (6.6% of the town), while developable or potentially developable residential land is another 874 acres (8.5% of the town). Only about 26 acres (0.3% of the town) is commercial development, and another 26 acres is classified as industrial. The latter consists primarily of utility infrastructure, such as cell phone towers.

Just over half of the land in Wales (5,160 acres) is classified as tax exempt, and it includes land owned by the town, the state, and nonprofit organizations. Most of this is undeveloped, and it includes 1,302 acres of Brimfield State Forest, 205 acres of the state-owned Wales Wildlife Management Area, and 2,996 acres that is owned by the Norcross Wildlife Sanctuary.

Despite its history of agriculture, only a small amount of land in Wales is currently used for agricultural purposes, with about 256 acres (2.5% of the town) as of 2024. Most of this land is temporarily protected through the Chapter 61A program.

Transportation

Wales has one numbered route, Massachusetts Route 19, which runs north-south through the town for approximately five miles. Aside from this state route, Wales has approximately 25 miles of town roads. Most of these are paved, but about four miles of town roads have dirt or gravel surfaces. In addition, there are approximately 21 miles of private roads in Wales, including an extensive network of internal roadways at Norcross Wildlife Sanctuary that are closed to public access. Approximately 2.6 miles of private roads serve camps and year-round residences around Lake George. Aside from roads, Wales does not have any significant transportation infrastructure. Wales does not have any bus service, and there are no railroads in the town, nor are there any bicycle trails or other bicycle infrastructure.

Water and Sewer Service

All of Wales is on private wells and septic systems. The lack of public water and sewer system throughout the town of Wales remains of great concern, especially for properties on the east side of Lake George in the Woodland Heights area. Maintaining this stock of relatively dense housing can be problematic for residents relative to properly designed and maintained private wells and septic systems.

Wales residents are served by individual, on-site sanitary treatment systems. Stormwater management is also handled on-site although in most cases stormwater management and erosion control have not been addressed formally. Residential homes in this region are suspected of contributing excess nutrients to the lake due to dense residential development and antiquated septic systems.

Landfills

One active solid waste facility is located in town. The Wales Transfer Station, located on Hollow Road has been in operation since 1979 and is managed by the Wales Board of Health. The Wales Dump, formerly located on Ainsworth Road, and the Wales Landfill were closed in 1960 and 1984, respectively and were not lined or capped. The Town of Wales Community Development Plan recommended that soil and groundwater assessments should be conducted if future development is considered in these areas.

Community Development and Development Trends

The topography of Wales has long played a role in limiting development within the town. Also contributing to this is the extensive amount of land that is protected from development, either as part of Norcross Wildlife Sanctuary or Brimfield State Forest. Because of this, most of the existing development is in the town center area, where Main Street is still lined with many historic homes. Just

to the southeast of the town center is Lake George, which has a number of homes along the lakefront and on adjacent side streets. Otherwise, there are few residential subdivisions in Wales, and most of the development in the outlying parts of town is along the main roads, most of which were laid out in the 18th and early 19th centuries.

Zoning

Wales has one base zoning district, General Rural District. Zoning use district and two overlay districts. The use district is General Rural District. The district principally provides for as-of-right development of agricultural, single-family dwellings, and some service and business uses. A minimum of one acre is required to develop any use with no set back requirements for single family residential development or any other use that is not related to earth removal, racetrack, or duplex/multi-family residential development. Some uses are allowed by Special Permit from the Planning Board. These include more intense recreational facilities like campgrounds; more intense service and business uses such as restaurants, hotels, automobile related businesses, and retail stores with 2,000 square feet or more; duplex or multifamily residential development; and large-scale ground-mounted solar installations. The BOS can also issue special permits, as prescribed by the Zoning Bylaw. However, the current schedule of use regulations does not list any use that would require a special permit issued by the BOS.

In addition to the base zoning district, Wales also has a Flood Plain District, which encompasses the area that is designated on the 2023 FEMA Flood Insurance Rate Maps (FIRMS) as Zone A, AE, AH, AO, or A99. The town's building inspector serves as the floodplain administrator, and a permit is required for all proposed construction, changes to existing buildings, or any other types of activity or development that might increase flooding or adversely impact flood risk to other properties.

The following uses are permitted within the Flood Plain District, provided that they do not require structures, fill, or storage of materials or equipment:

- a. Agricultural uses such as farming, grazing, truck farming, and horticulture;
- b. Forestry and nursery uses;
- c. Outdoor recreational uses, including fishing, boating, play areas, etc.;
- d. Conservation of water, plants, wildlife;
- e. Wildlife management areas, foot, bicycle and/or horse paths;
- f. Temporary non-residential structures used in connection with fishing, growing, harvesting, storage, or sale of crops raised on the premises;
- g. Buildings lawfully existing prior to the adoption of these provisions;
- h. Reconstruction or improvement provided that any square foot increase does not exceed 25% of the overall square footage of the structure existing at the time of adoption of this Bylaw and in accordance with the MA state building code regulations for Substantial Improvement.

The following uses are prohibited within the Flood Plain District:

1. Industrial uses;
2. Junkyards, solid waste landfills, auto salvage and recycling facilities, and dumps
3. Business and industrial uses, not agricultural, involving manufacture, use, processing, storage or disposal of hazardous materials or wastes as a principal activity, including but not limited to

metal plating, chemical manufacturing, wood preserving, furniture stripping, dry cleaning and auto body repair;

4. The outdoor storage of salt, other de-icing chemicals, pesticides or herbicides, flammable, explosive or toxic materials;
5. Excavation or disposal of soil or mineral substances, except as necessary for construction of foundations, utilities or roads;
6. All other uses not specifically permitted or allowed by special permit approval within the overlay zone are prohibited.

Current Development Trends

To control the rate of development, the town zoning bylaws limit the number of building permits for new dwelling units to 40 per year. This was adopted in 1986, at a time when Wales was experiencing rapid growth. According to the 2024 town assessor's data, a total of 140 existing buildings were constructed between 1986 and 1991, for an average of 23 per year. However, this rate of growth has slowed substantially in more recent years, particularly after the 2007-2009 economic recession. Only 31 buildings in Wales have been constructed in 2010 or later, as shown in Figure 3.1, for an average of just over 2 per year.

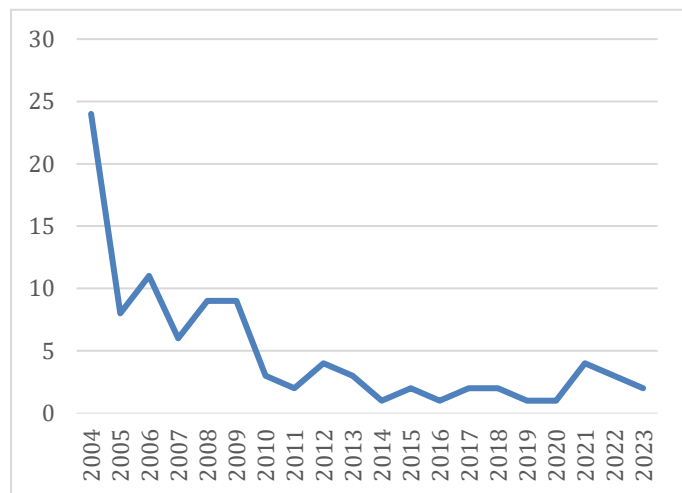


Figure 3.1: Dates of construction of existing Wales buildings, 2004-2023. Source: MassGIS, Property Tax Parcels 2024

This limited amount of development corresponds to the minimal population change that the town has experienced during this period, with a decrease of six residents between the 2010 and 2020 censuses. However, there is still a considerable amount of developable or potentially developable residential land in the town. As housing costs increase elsewhere in the state, it may lead to future development pressure here in Wales, especially if remote or hybrid work remains a viable option for many workers.

Development in Hazard Areas

The 100-year floodplain is defined as an area with a 1 percent chance of flooding in a given year. There are approximately 3,316 acres in the 100-year floodplain. Areas in the 100-year flood zone are primarily those lands adjacent to and including the open water areas at Lake George, Vinica Brook, Hollow Brook, Wales Brook, Delphi Brook, and Stevens Brook. Flooding of Wales Brook in 2005 caused significant flooding to the Fire Station. Much of the 100-year flood zone area in Wales is currently open wetland adjacent to large areas in forest cover; however, the floodplain lands surrounding Lake George and Delphi Brook have been developed as seasonal residences. There is no significant development that has occurred since the last plan that increases the Town's vulnerability to natural hazards.

Historic, Natural/Environmental and Cultural Resources

Natural Resources

Healthy wetlands, forests, vernal pools, lakes, and ponds play an important role in the environmental and ecological protection of the town, and support some of the most diverse habitats in the Commonwealth. In Wales, residents have been fortunate to have abundant, clean groundwater supplies.

Wales has a mountainous landscape highlighted with steep forested slopes, rivers, and wetlands. Elevations in town range from 1,264 feet above sea level at Mount Pisgah to approximately 600 feet above sea level along Wales Brook. Other significant peaks in Wales include Grandy Hill, Moss Hill, Bear Hill, Mount Hitchcock, and Haynes Hill.

Forests and Fields

Native woodlands are the principal vegetation type in Wales. As of 2016, forests cover 8,945 acres of Wales, or approximately 87% of the town's area. Types of woodlands in Wales include hardwood forests, coniferous forests, and mixed woods. The predominant forest type in Wales is the transition hardwoods-white pine forest. Within this forest type, northern hardwoods such as yellow birch (*Betula alleghaniensis*), paper birch (*Betula papyrifera*), beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and red maple (*Acer rubrum*) are the major species. On the drier sites, oaks and hickories can be found with red oak (*Quercus rubra*) being the most abundant deciduous species. Hemlock (*Tsuga canadensis*) occurs in the moist cool valleys, north and east slopes, and sides of ravines in Wales. White pine (*Pinus strobus*) is characteristic of the well-drained sandy sites.

Water Resources

Approximately 150 acres of the town's landscape is covered with surface water. These water resources provide valuable and critical wildlife habitat and unique natural environments that provide Wales's residents with recreational opportunities. Encompassing about 95 acres, Lake George is the largest water body in town. Most of its shoreline is developed with seasonal and year-round residences. Other lakes and ponds include Vinica Pond (10 acres) and the four Norcross Ponds (9, 7, 6, and 3 acres), all of which are undeveloped and located within the Norcross Wildlife Sanctuary.

Wales is located on the divide between two major watersheds. Most of the western part of the town is drained by Vinica Brook, which flows westward into Monson and eventually into the Chicopee River and Connecticut River. The eastern part of the town is drained by Wales Brook, Delphi Brook, Hollow Brook, and Stevens Brook, all of which eventually flow into the Quinebaug River. Overall, about 38% of the town is in the Chicopee River watershed, and 62% in the Quinebaug River watershed.

Wetlands

According to MassDEP wetlands data on MassGIS, there are about 700 acres of wetlands in Wales, not including areas of open water. This includes wooded deciduous swamps (258 acres), deep marshes (179 acres), shrub swamps (164 acres), wooded mixed swamps (47 acres), wooded coniferous swamps (22 acres), shallow marsh meadow/fen (17 acres), and bogs (3 acres). These wetlands are scattered

throughout the town, and are often found along the various streams that flow through Wales. The most extensive wetland area in town is located in the vicinity of Stevens Brook along the Holland Border.

The Massachusetts Wetlands Protection Act (WPA) limits development activity in wetlands that border rivers and streams called bordering vegetated wetlands (BVW). The Massachusetts Rivers Protection Act offers additional protection of lands in the area between 100 feet and 200 feet of the mean high water mark of a qualifying stream or river. However, this outer riparian zone is susceptible to limited development in certain instances.

State law does not protect non-BVWs, called isolated wetlands, unless they are certified vernal pools. Because Wales currently has no local wetlands bylaw, protection of these critical natural areas is not guaranteed. Historically, and for practical reasons, both wetlands and floodplain development in the town has been limited.

Protected Open Space

A total of 4,548 acres in Wales is open space, comprising about 45% of the town's total area. These lands include properties owned by the state, by the town of Wales, by nonprofit organizations, and by private owners. In addition, a total of 1,098 acres of land in Wales is protected in a more limited fashion under a Chapter 61, 61A or 61B programs, comprising about 10.8% of the land area in the town.

Norcross Wildlife Sanctuary is the single largest landowner in Wales. It encompasses the entire southwestern quarter of the town, along with outlying parcels throughout the southern and western parts of the town. Overall, Norcross includes nearly 3,000 acres in Wales, amounting to about 30% of the town's total area. Most of the wildlife sanctuary is closed to public access, but about 75 acres are open to the public seasonally, including several miles of walking trails. Other protected open space areas include Brimfield State Forest (1,302 acres), and the state-owned Wales Wildlife Management Area (205 acres), both of which cover a significant portion of northern Wales. There is a limited amount of privately owned, permanently protected open space in Wales. There are no properties with agricultural protection restrictions, and only a single 35-acre property with conservation restrictions.

Historic & Cultural Resources

Wales does not currently have any listings on the National Register of Historic Places, but the town has nearly 100 buildings and other sites that have been inventoried by the Massachusetts Historical Commission. Most of these are houses, and they range from 18th/early 19th century farmhouses, to late 19th century mill worker housing, to early 20th century lakeside cottages. More than half of the inventoried properties in Wales are located within the Wales Center Area, which includes most of Main Street from near Union Road in the south to just past Church Street to the north. This area was inventoried in 1991-92, and at the time the Massachusetts Historical Commission indicated that the district was eligible for listing on the National Register of Historic Places, although this has not occurred yet.

Probably the single most distinctive historic building in Wales is the old town hall near the corner of Main Street and Union Road. Built in 1802, it was subsequently altered in 1845 with the addition of a belfry (removed 1985) and Greek Revival portico. It served as a house of worship for several different churches, and it was also the town hall until 1970. It has seen only infrequent use since then, and it is in

need of considerable repair and renovation work in order to maintain its structural integrity and bring it into compliance with modern building code. The building was recently the subject of a feasibility study to determine the work that will need to be done in order to accomplish this goal.

Aside from buildings, the other historic sites in Wales include several cemeteries. Three burial grounds have been inventoried by the Massachusetts Historical Commission, including Wales Cemetery #1. Located on Union Road on a hill overlooking Lake George, it is the final resting place for many of the town's 18th and early 19th century residents. The earliest dated gravestone is from 1763, and there are about a dozen other stones that date to the 18th century.

The town has an active Council on Aging with a variety of activities and services for seniors. The Wales Recreation Committee oversees sports and recreation for children, including soccer, basketball, field hockey, volleyball, and baseball. The Parks Commission maintains the three town-owned properties on Lake George and the Town Fountain, including the Town Beach on Lake George, and George A. Needham Memorial Park on the shores of Lake George.

Commerce, Industry, Academia

Wales has very limited commercial development and no industrial development. The only significant commercial area is at the corner of Main Street and Union Road, which has a small plaza that features a restaurant and a package store/convenience store. According to the Massachusetts Executive Office of Labor and Workforce Development, the largest employment sectors in Wales are education and health services, and health care and social assistance. The single largest employer is the town government itself, which includes the Wales Elementary School, and the fire and police departments.

Wales is part of the Tantasqua Regional School District that also includes the towns of Sturbridge, Brimfield, Holland, and Brookfield. Wales has its own elementary school, while middle and high school students attend the regional school, which is located in the Fiskdale section of Sturbridge.

National Flood Insurance Program (NFIP) Participation

Wales is a participating member of the National Flood Insurance Program, and had the following NFIP policy and claim statistics as of October 2024:

- Food Insurance Maps (FIRMs) are used for flood insurance purposes and are on file with the Wales Planning Board.
- FIRMs have been effective since July 2, 1981 with the current map in effect since June 7, 2023.
- Wales has 4 in-force policies in effect for a total of \$776,000 worth of insurance.
- No NFIP claims have been paid.
- As of 2024, there have been no Repetitive Loss Properties in Wales.
- The Town will maintain compliance with the NFIP throughout the next 5-year Hazard Mitigation Planning cycle by monitoring its Flood Plain Overlay District and ensuring that the district accurately reflects the 100-year flood plain and FEMA Flood Insurance Rate Map (FIRM).

Additional information on NFIP participation and compliance can be found in Section 4.

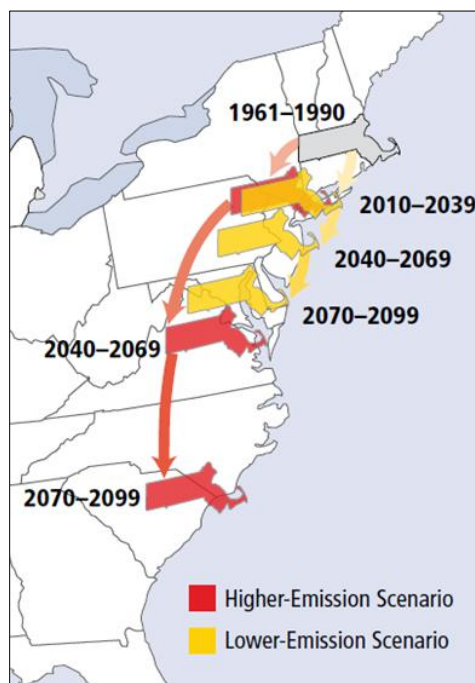
4: HAZARD IDENTIFICATION & RISK ASSESSMENT

The following Chapter includes a summary of hazards that have affected or could affect Wales. Historical research, conversations with local officials and emergency management personnel, available hazard mapping and other weather-related databases were used to develop this list. Each hazard profile contains information on the areas vulnerable to the hazard, documentation of historic events, a risk and vulnerability assessment, and related climate change projections. The risk and vulnerability assessment examines both the frequency and severity of hazards, and their potential impact on the Town of Wales. Each hazard risk and vulnerability assessment use previous occurrences and climate projections to identify high risk areas and the likelihood that a hazard will occur. The vulnerability analysis takes into consideration various factors in the community, including existing and future buildings, infrastructure, and critical facilities. In some cases, an estimate of the potential dollar loss to vulnerable structures is available. Land uses and development trends were also considered as part of the vulnerability assessment.

Impacts of Climate Change

Climate change is impacting communities around the world, and residents of Massachusetts are seeing these changes and their impacts almost every day. At current rates of greenhouse gas accumulation and temperature increases, the climate of Massachusetts is projected to become similar to that of present-day New Jersey or Virginia by 2040-2069, depending on future GHG emissions. These possible scenarios are shown in Figure 4.1 below.

Figure 4.1: Shifting Climate Scenarios



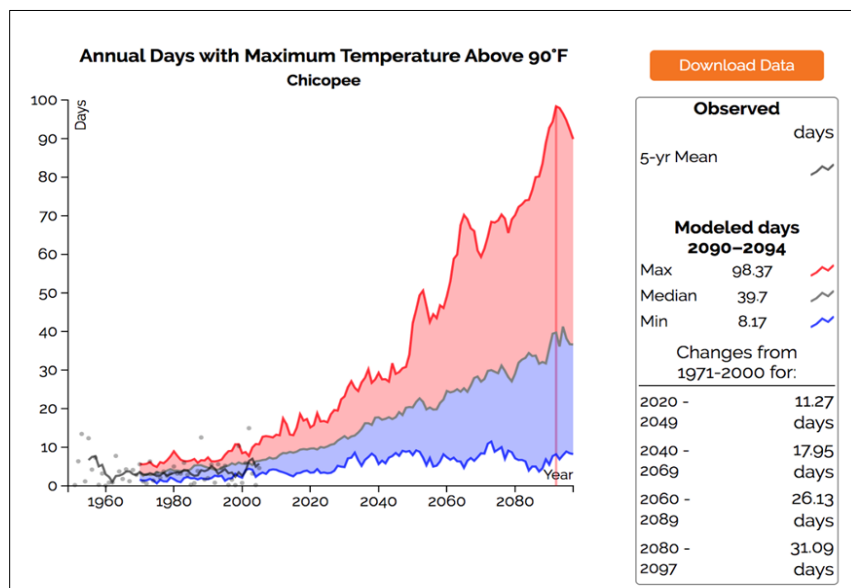
Climate projections from the Northeast Climate Science Center at the University of Massachusetts show with increasing certainty that these changes can be expected to continue. Projections are based on simulations from the latest generation of climate models from the Intergovernmental Panel on Climate Change and scenarios of future GHG emissions, and are downscaled to the watershed and county level across the Commonwealth of Massachusetts.¹

Wales lies within both the Chicopee River and Quinebaug River Basins, where projections show that by the end of this century, communities could see more than 9 inches of additional rainfall annually over a 1971-2000 baseline of approximately 47 inches per year. Winter is expected to experience the greatest seasonal increase both in total precipitation and the frequency of heavy downpours, or days receiving precipitation over one inch. Despite this increase in precipitation, especially large precipitation events, primarily in winter and spring, projections also indicate that there could be an increase in consecutive days without rain during the summer and fall.

With regards to temperatures, projections show that annual average and maximum temperatures will continue to rise. Even a small rise in average temperatures can cause major changes in other factors, including impacts on species and ecosystem health, and the relative proportion of precipitation that falls as rain or snow. In addition to an increase in average temperatures, there is projected to be a significant increase in the number of extreme heat days, meaning days with the temperature above 90°F. This is considered a threshold as heat-related illnesses and mortality show a marked increase at temperatures above 90°F. Projections indicate a possible 2,000% (60 day) increase in 90-degree days per year by the end of the century from a baseline average of three days per year. The graph in Figure 4.2 below from resilientma.org shows these projections for increases in extreme heat days in the Chicopee River basin. Heat waves can lead to illness and death, particularly among vulnerable individuals such as the elderly, the very young, and those with existing health risk factors.

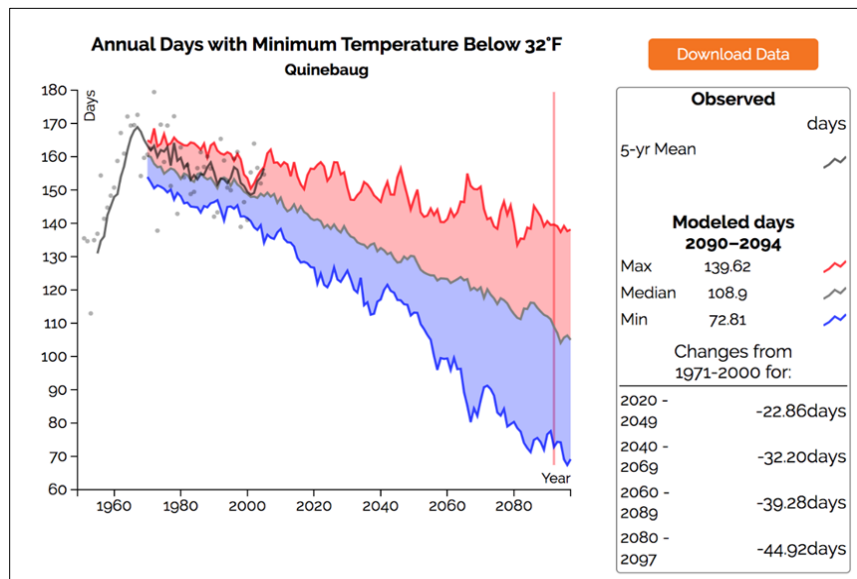
¹ <https://resilientma.org/datagrapher>

Figure 4.2: Projections for annual days above 90°F



There are also significant temperature changes projected for the winter. The days below freezing are projected to decrease from a baseline average of 155 days in the Quinebaug River Basin to possibly only 72 days by the end of the century. Figure 4.3 below shows these projections. Warmer winter temperatures will have a number of impacts, including the following: More rain, sleet, and ice and less snow in winter; less snowpack to replenish groundwater; more freezing and thawing of roads, and longer mud season impacting dirt roads especially; impacts on winter tourism and activities that rely on snow, such as snowmobiling and skiing; impacts on agricultural operations that rely on cold weather such as maple sugaring; stress on native species that are adapted to freezing weather, and increases in invasive species as well as disease vectors such as ticks.

Figure 4.3: Projections for annual days below 32°F



These changes are summed up in Table 4.1 below from ResilientMA, which also provides climate projections for 2030 – 2090 for temperature and precipitation changes in the Quinnebaug River Basin.

Table 4.1 Climate projections 2030-2090 from ResilientMA Maps & Data Center

Climate Projection	2030	2050	2070	2090
Days below 32 degrees F	-28	-49	-62	-73
Days above 90 degrees F	9	22	35	49
Total precipitation (percent change)	5.9%	7.7%	9.5%	11.8%

Federally Declared Disasters in Massachusetts

Tracking historic hazards and federally declared disasters that occur in Massachusetts, and more specifically Hampden County, helps planners understand the possible extent and frequency of hazards. Historically, Massachusetts has experienced multiple types of hazards, including flooding, blizzards, and hurricanes. Since 2000, there have been 29 storms in Massachusetts that resulted in federal disaster declarations. Eighteen disaster declarations have occurred in Hampden County (two were related to the Covid-19 Pandemic). Federally declared disasters present additional FEMA grant opportunities for regional recovery and mitigation projects. Table 4.2 below lists all of the Massachusetts emergency declarations since 2011 that have applied to Wales, along with the corresponding federal disaster declarations that applied to Wales.

Table 4.2: Massachusetts Emergency Declarations and Federal Disaster Declarations affecting Wales

Massachusetts Emergency	Start	Termination	Corresponding Federal Disaster Declaration	FEMA Public Assistance	Application to Wales
Hurricane Lee	9/15/2023	9/16/2023	NA	NA	Yes
Severe Weather and Flooding	9/12/2023	9/16/2023	NA	NA	Yes
Covid-19 Pandemic	3/13/2020	5/11/2023	DR-4496-MA	All counties	Yes
Severe Winter Storm, Snowstorm, and Flooding	2/8/2013	2/9/2013	DR-4110-MA	All counties	Yes

Severe Snow and Snowstorm	10/29/2011	10/30/2011	DR-4051-MA	Middlesex, Worcester, Hampden, Hampshire, Franklin, Berkshire	Yes
Tropical Storm Irene	8/27/2011	8/29/2011	DR-4028-MA	Barnstable, Dukes, Plymouth, Bristol, Norfolk, Hampden, Hampshire, Franklin, Berkshire	Yes
Severe Storms and Tornadoes	6/1/2011	6/1/2011	DR-1994-MA	Worcester, Hampden	Yes

Massachusetts State Hazard Mitigation and Climate Adaptation Plan

The 2018 Massachusetts State Hazard Mitigation and Climate Adaptation Plan (SHMCAP; EEA and EOPSS) identified the natural hazards that can occur in the state along with the climate change interaction for each, and the representative climate change impacts. The one hazard without a climate change interaction is earthquakes. These are shown in Table 4.3 below from the SHMCAP. The 2023 Massachusetts State Hazard Mitigation and Climate Adaptation Plan ([ResilientMass Plan](#)) is an update to the 2018 plan and was released in October 2023. Some of the updates to the 2018 plan include the addition of changes in groundwater to the natural hazard assessment, incorporation of updated climate and hazard information and data, and the inclusion of new data and mapping regarding environmental justice and other priority populations.

Table 4.3: Natural Hazard and Climate Change Interactions

Primary Climate Change Interaction	Natural Hazard	Other Climate Change Interactions	Representative Climate Change Impacts
 Changes in Precipitation	Inland Flooding	Extreme Weather	Flash flooding, urban flooding, drainage system impacts (natural and human-made), lack of groundwater recharge, impacts to drinking water supply, public health impacts from mold and worsened indoor air quality, vector-borne diseases from stagnant water, episodic drought, changes in snow-rain ratios, changes in extent and duration of snow cover, degradation of stream channels and wetland
	Drought	Rising Temperatures, Extreme Weather	
	Landslide	Rising Temperatures, Extreme Weather	
 Sea Level Rise	Coastal Flooding	Extreme Weather	Increase in tidal and coastal floods, storm surge, coastal erosion, marsh migration, inundation of coastal and marine ecosystems, loss and subsidence of wetlands
	Coastal Erosion	Changes in Precipitation, Extreme Precipitation	
	Tsunami	Rising Temperatures	
 Rising Temperatures	Average/Extreme Temperatures	N/A	Shifting in seasons (longer summer, early spring, including earlier timing of spring peak flow), increase in length of growing season, increase of invasive species, ecosystem stress, energy brownouts from higher energy demands, more intense heat waves, public health impacts from high heat exposure and poor outdoor air quality, drying of streams and wetlands, eutrophication of lakes and ponds
	Wildfires	Changes in Precipitation	
	Invasive Species	Changes in Precipitation, Extreme Weather	
 Extreme Weather	Hurricanes/Tropical Storms	Rising Temperatures, Changes in Precipitation	Increase in frequency and intensity of extreme weather events, resulting in greater damage to natural resources, property, and infrastructure, as well as increased potential for loss of life
	Severe Winter Storm / Nor'easter	Rising Temperatures, Changes in Precipitation	
	Tornadoes	Rising Temperatures, Changes in Precipitation	
	Other Severe Weather (Including Strong Wind and Extreme Precipitation)	Rising Temperatures, Changes in Precipitation	
Non-Climate-Influenced Hazards	Earthquake	Not Applicable	There is no established correlation between climate change and this hazard

Not all hazards included in the 2018 or 2023 SHMCAP apply to the Town of Wales. Given Wales's inland location, coastal hazards and tsunamis would not affect the Town. The core team did not include landslides in their natural hazard inventory, as they have not previously occurred in the Town. The plan also does not include invasive species as a natural hazard, although they are identified as a vulnerability. It is assumed that the entire Town of Wales and its critical facilities are exposed to earthquakes, high wind events, hurricanes, winter storms, snow and ice, temperature extremes, and drought, to a similar extent. Flood risk from riverine flooding is elevated in the vicinity of flood zones.

Natural Hazard Analysis Methodology

This chapter examines all hazards identified by the Massachusetts State Hazard Mitigation Plan. The analysis is organized into the following sections: Hazard Description, Location, Extent, Previous Occurrences, Probability of Future Events, Impact, and Vulnerability. A description of each of these analysis categories is provided below.

Hazard Description

The natural hazards identified for Wales are: floods, severe snowstorms/ice storms, hurricanes, severe thunderstorms / wind / tornadoes, wildfire/brushfire, earthquakes, dam failure, and drought. Many of these hazards result in similar impacts to a community. For example, hurricanes, tornadoes and severe snowstorms may cause wind-related damage.

Location

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

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

Extent

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

Previous Occurrences

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

Probability of Future Events

The likelihood of a future event for each natural hazard was classified according to the following scale:

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

Impact

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

Impacts, Magnitude of Multiple Impacts of Given Natural Hazard		
Impacts	Potential magnitude of impacts to people	Potential magnitude of impacts to property
Catastrophic	Multiple injuries or deaths possible.	Up to 25 - 100% of property in affected area damaged or destroyed. Complete shutdown of facilities for 1 week or more.
Critical	Multiple injuries and health effects possible.	Up to 10 - 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for 3 days or more.
Limited/Moderate	Minor injuries and health effects, if any. People may be displaced or lose access to heat, cooling, or water.	Up to 5 - 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for a day or more.
Minor	No injuries or health effects.	Only minor property damage and minimal disruption on quality of life. Possible temporary shutdown of facilities.

Vulnerability

Sectors Assessed

Several key sectors were evaluated as part of the risk assessment for each of the hazards profiled in the sections below. These sectors are introduced here and are included in the hazard profiles where appropriate and where sufficient data allowed.

Populations

Vulnerability of populations is influenced by three factors: exposure or contact with the hazard; sensitivity or degree to which people or communities are affected by the exposure to the hazard; and capacity to adapt or the ability of communities, institutions, or people to adjust and respond to and recover from potential hazards.

The major health impacts from natural hazards and climate change include:

- Heat-related illnesses and death from an increase in extreme temperatures and poor air quality (SHMCAP, 2018).
- Increases in food and waterborne illnesses and other infectious diseases from altering geographic and seasonal distributions of existing vectors and vector-borne diseases (SHMCAP, 2018).
- Injuries and accidental premature death associated with extreme weather events. Extreme weather events can result in acute health impacts, such as injuries and accidental premature death during an event (e.g., drowning during floods). In addition, health impacts can also occur during disaster preparation and post-event cleanup. Other impacts include damage to property, destruction of assets, loss of infrastructure and public services, social and economic impacts, environmental degradation, and other factors (SHMCAP, 2018).
- Exacerbation of chronic diseases (SHMCAP, 2018).
- Mental health and stress-related disorders ranging from minimal stress and distress symptoms to clinical disorders such as anxiety, depression, post-traumatic stress, and suicidality. Specific groups of people who are at higher risk for distress and other adverse mental health consequences from exposure to climate-related or weather-related disasters include children, the elderly, women (especially pregnant and post-partum women), people with preexisting mental illness, the economically disadvantaged, the homeless, and first responders. Populations living in areas most susceptible to specific climate change events are at increased risk for adverse mental health outcomes (SHMCAP, 2018).

In most natural hazard events, the vulnerability of a population is largely dependent on local preparedness and availability of human resources for social services staffing and supplies distribution. While this plan does not aim to recommend specific emergency preparedness and response activities, it should be noted that preparing for emergencies by training a large group of public and professional responders to ensure continuity of operations during a hazard event can be a critical tool for mitigating the overall impacts of any hazard event.

Built Environment

The built environment sector includes all buildings in Wales, including critical facilities owned by the municipality and critical infrastructure sectors that provide or link to key lifeline services, social welfare, and economic development. Assessments were based on assessor's data of the total value of all structures in Wales - \$184,187,300.

According to the 2020 Census data, the average household size in Wales is 2.5 persons, and there are approximately 896 households. The critical facilities assessed were derived from the critical facilities inventory as updated by the Town Core Team. The facility types include emergency response services and non-emergency critical infrastructure including transportation facilities, water infrastructure, etc.

Population Impacts

Changes in population patterns can affect the impacts of natural hazards. Over time, the makeup of socially vulnerable populations in a community can change, which affects how the community needs to prepare for and respond to natural hazards and climate change impacts. In Wales, the population of older adults has increased since the last plan, with the percentage of those over 65 increasing by about 5%. While there is not currently significant climate migration from the coasts and other more vulnerable areas impacting Wales, that is likely to occur over time.

Changes in Land Use/Development

Increased development, both residential and commercial, can affect the Town's vulnerability to natural hazards and climate change impacts. This is especially true for development that occurs in areas that are more vulnerable to natural hazards such as flooding or severed winds. Wales has not had significant development since the last plan, and thus this is not currently a factor that needs to be considered, however that may change in the future.

Hazard Index Rating

Based on the above metrics, a hazard index rating was determined for each hazard. The hazard index ratings are based on a scale of 1 (highest risk) through 5 (lowest risk). The ranking is qualitative and is based, in part, on local knowledge of past experiences with each type of hazard. The size and impacts of a natural hazard can be unpredictable. However, many of the mitigation strategies currently in place and many of those proposed for implementation can be applied to the expected natural hazards, regardless of their unpredictability.

- 1 – Highest risk
- 2 – High risk
- 3 – Medium risk
- 4 – Low risk
- 5 – Lowest risk

Table 4.4 below shows the hazard risk rankings the Core Team identified for Wales based on these four criteria. The ranking is qualitative and is based, in part, on local knowledge of past experiences with each

type of hazard. The size and impacts of a natural hazard can be unpredictable. However, many of the mitigation strategies currently in place and many of those proposed for implementation can be applied to the expected natural hazards, regardless of their unpredictability.

Table 4.4: Hazard Identification and Risk Analysis for Wales

Type of Hazard	Location of Occurrence	Probability of Future Events	Impact	Hazard Risk Index Rating
Flooding	Small	High	Limited	2 - High risk
Severe Snowstorms / Ice Storms	Large	High	Limited	2 - High risk
Wildfire / Brushfire	Large	Low	Critical	2 – High risk
Severe Thunderstorms / Winds / Tornadoes	Small	Severe thunderstorms and wind: Moderate Tornadoes: Low	Limited	Severe thunderstorms and wind: 2 – High risk Tornadoes: 4 – Low risk
Hurricanes	Large	Low	Limited	3 - Medium Risk
Earthquakes	Large	Very low	Critical	4 - Low risk
Dam Failure	Medium	Very low	Critical	4 - Low risk
Drought	Large	Low	Minor	4 - Low risk
Extreme Temperatures	Large	Moderate	Minor	4 – Low Risk

Flooding

Hazard Description

There are three major types of storms that can generate flooding in Wales:

- Continental storms are typically low-pressure systems that can be either slow or fast moving. These storms originate from the west and occur throughout the year.
- Coastal storms, also known as nor'easters, usually occur in late summer or early fall and originate from the south. The most severe coastal storms, hurricanes, occasionally reach Massachusetts and generate very large amounts of rainfall.
- Thunderstorms form on warm, humid summer days and cause locally significant rainfall, usually over the course of several hours. These storms can form quickly and are more difficult to predict than continental and coastal storms.

A floodplain is the relatively flat, lowland area adjacent to a river, lake or stream. Floodplains serve an important function, acting like large “sponges” to absorb and slowly release floodwaters back to surface waters and groundwater. Over time, sediments that are deposited in floodplains develop into fertile, productive farmland like that found in the Connecticut River valley. In the past, floodplain areas were also often seen as prime locations for development. Industries were located on the banks of rivers for access to hydropower. Residential and commercial development occurred in floodplains because of their scenic qualities and proximity to the water. Although periodic flooding of a floodplain area is a natural occurrence, past and current development and alteration of these areas will result in flooding that is a costly and frequent hazard.

Floods can generally be classified as one of two types: flash floods and general floods.

- **Flash floods** are the product of heavy, localized precipitation in a short time period over a given location. Flash flooding events typically occur within minutes or hours after a period of heavy precipitation, after a dam or levee failure, or from a sudden release of water from an ice jam. Most often, flash flooding is the result of a slow-moving thunderstorm or the heavy rains from a hurricane. In rural areas, flash flooding often occurs when small streams spill over their banks. However, in urbanized areas, flash flooding is often the result of clogged storm drains (leaves and other debris) and the higher amount of impervious surface area (roadways, parking lots, roof tops).
- **General floods** may last for several days or weeks and are caused by precipitation over a longer time period in a particular river basin. Excessive precipitation within a watershed of a stream or river can result in flooding particularly when development in the floodplain has obstructed the natural flow of the water and/or decreased the natural ability of the groundcover to absorb and retain surface water runoff (e.g., the loss of wetlands and the higher amounts of impervious surface area in urban areas).

In addition to flash floods and general floods, the melting of snow and ice in the spring can also generate flooding during this time of year.

Location

There are approximately 3,316 acres of land within the FEMA mapped 100-year floodplain and approximately 4,659 acres of land within the 500-year floodplain within the Town of Wales. There are a total of 141 structures in both the 100- and 500-year floodplains combined. The floodplain lands surrounding Lake George and Delphi Brook have been developed as seasonal residences. These structures are at risk from flooding during a 100-year storm. The wetlands area west of Walker Road is also in the 100-year floodplain, as is the area immediately bordering Vinica Brook.

In addition, various areas and infrastructure in Wales have issues with localized flooding:

- Route 19, including Fire Department's location at Hegan Street
- Lake George Road
- Walker Road

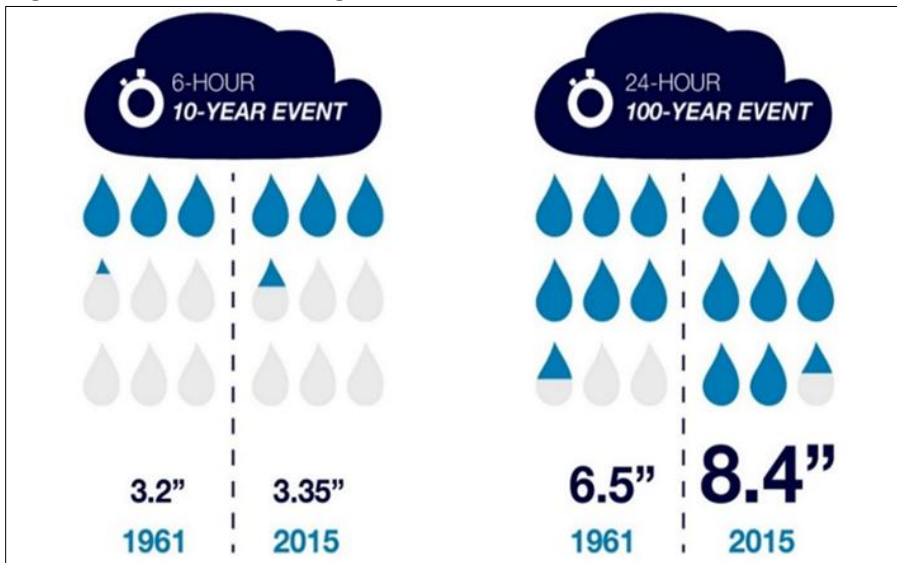
Based on these locations, flooding has a "small" location of occurrence, with less than 10 percent of land area affected.

Extent

Water levels in Wales's rivers, streams, and wetlands rise and fall seasonally and during high rainfall events. High water levels are typical in spring, due to snowmelt and ground thaw. This is the period when flood hazards are normally expected. Low water levels occur in summer due to high evaporation and plant uptake (transpiration). At any time, heavy rainfall may create conditions that raise water levels in rivers and streams above bank full stage, which then overflow adjacent lands. The average annual precipitation for Wales and surrounding areas in Western Massachusetts is 47 inches.

Most stormwater systems in Massachusetts are aging and have been designed with rainfall data that is no longer accurate. Figure 4.4 shows how rainfall during design storms had already increased from 1961 to 2015, especially for the larger 24-hour, 100-year event. These rainfall amounts will likely continue to increase with climate change, and the Town will need to improve stormwater systems and also increase areas of filtration in order to reduce impacts from localized flooding. Installing green infrastructure or low impact development improvements will help reduce demand on the existing stormwater system by increasing infiltration on-site. Rain gardens, bioswales and pervious pavement are examples of possible strategies. Upsizing culverts with new rainfall data will also be necessary.

Figure 4.4 Stormwater Design Standards



Source: NOAA TP-40, 1961 and NOAA Atlas Volume 10, 2015

A secondary impact from flooding is septic systems failing their Title V inspections. This is primarily due to heavy precipitation and flooding causing saturation of the drain field and wastewater overflowing septic tanks. An additional concern with flooding events is areas that could be contaminated with toxic materials that could leach into surface or groundwaters.

Previous Occurrences

The major floods recorded in Wales have been the result of rainfall alone or rainfall combined with snowmelt. Previous flooding events include:

- Flooding of Wales Brook in 2005 caused over a foot of flooding in the nearby Fire Station.
- Residual flooding from Hurricane Katrina in 2005 caused too much water and resulted in many nearby waterways being flooded.
- Hurricane Bob in 1991 and Tropical Storm Irene in 2011 caused the washing out of several catch basins throughout town.
- A number of the town's 95 culverts are washed out on a regular basis.

Probability of Future Events

Based upon previous data, there is a "high" chance (between 40 percent and 70 percent in any given year) of flash flooding or general flooding occurring in Wales. Flooding frequencies for the various floodplains in Wales are defined by FEMA as the following:

- 10-year floodplain – 10 percent chance of flooding in any given year
- 25-year floodplain – 2.5 percent chance of flooding in any given year
- 100-year floodplain – 1 percent chance of flooding in any given year
- 500-year floodplain – 0.2 percent chance of flooding in any given year

Over time, this probability will likely increase due to the impacts of climate change. Resilientma.org projects that Wales will see an eight percent increase in total annual precipitation by the year 2050, and an almost 10% increase in the 99th percentile storm rainfall, meaning 24-hour periods in which the depth of rainfall exceeds 99% of all 24-hour periods of rainfall during an average year. With increases in precipitation, there will likely be greater impacts from flooding in Wales. Future floodplains may be larger than the currently FEMA modeled floodplains, and the Town will need to consider these changes in regulations and permitting of new development.

Vulnerability Assessment

Built Environment Impact

The Town faces a “limited” impact from flooding, with up to 10 percent of property damaged in the affected area. The floodplain lands surrounding Lake George and Delphi Brook have been developed as seasonal residences with approximately 20 homes located in the area that could flood. In total, there are 109 structures in the 100-year floodplain areas of Wales that are at risk from flooding. Some of these may be outbuildings or barns.

To approximate the potential impact to property and people that could be affected by this hazard, the total assessed value of all structures in the 100-year floodplain was used, \$24,636,900. If there was 20% damage to all of these structures, that would result in \$4,927,380 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Population Impacts

The most vulnerable groups in Wales may be more seriously impacted by flooding, including seniors, disabled, and low-income individuals. These residents may be unable to physically or financially prepare for or respond to hazard events, and require assistance. The Town will need to ensure that the vulnerable individuals in Wales have information about flooding, can adequately prepare, and can be reached after a flooding event in the event that evacuation is necessary.

Impacts from Changes in Land Use/Development

There has been very limited residential and commercial development in Wales, and that trend is not likely to change substantially in the next five years. Thus, impacts from flooding due to changes in land use and development are not significant. However, it will be important over time to ensure through Town regulations that any new development has adequate drainage and adheres to flood mitigation techniques.

Vulnerability

Based on the above analysis, Wales has a hazard index rating of “2 – high risk” from flooding.

Compliance with National Flood Insurance Program

Wales is a participating member of the National Flood Insurance Program, and had the following NFIP policy and claim statistics and information as of October 2024:

Table 4.5: NFIP policy information and claim statistics for Wales

NFIP Topic	Sources of Information	Comments
Number of NFIP policies in the community and total coverage.	FEMA NFIP Services	As of October 2024, a total of 4 NFIP policies are in force for a total of \$776,000 worth of insurance coverage.
History of claims and insurance payments.	FEMA NFIP Services	No NFIP claims have been paid. There are no repetitive loss properties.
Format and location of FIRMS	Community	Hard copies of FIRMS are on file with the Town Clerk at Town Hall.
Date the community entered the NFIP and date of most recent FIRMS	FEMA NFIP Services	Wales entered the NFIP on 11/19/76. FIRMS have been effective since 1981 with the current map in effect since June 7, 2023.
Number of structures exposed to flood risk within the community	GIS Analysis	There are an estimated 109 structures within the SFHA and thus exposed to flood risk. Some of these may be garages, barns or other outbuildings.
Areas of flood risk with limited NFIP policy coverage	GIS Analysis, FPA	There is not address-specific data available from FEMA, but it is likely that property owners in the SFHA are underinsured, based on the number of properties in flood zones and the fact that there are only 8 current NFIP policies.
NFIP Administration in the community	Community	The Town complies with the NFIP by enforcing floodplain regulations, maintaining current floodplain maps, and providing information to property owners and developers about floodplain regulations and building requirements. The designated Floodplain Administrator in Wales is the Building Inspector. Floodplain regulations are administered through

NFIP Topic	Sources of Information	Comments
		the enforcement of the Town's zoning bylaws, by the Planning Board, the Conservation Commission and the Building Inspector.
NFIP compliance	Community, FEMA NFIP program	The Town is in good standing with the NFIP, and there are no outstanding compliance issues. The Town will maintain compliance with the NFIP throughout the next 5-year hazard mitigation planning cycle by monitoring its Floodplain Zone and ensuring that this zoning district accurately reflects the 100-year floodplain and FEMA Flood Insurance Rate Map.
Adoption of NFIP minimum floodplain management criteria via local regulation.	Community	Zoning Bylaw Sections 3.0 – 3.0.4.8 (Floodplain District)
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	Community	Zoning Bylaw Section 3.0.3.2 The Floodplain District is established as an overlay district. The district includes all special flood hazard areas within the Town of Wales designated as Zone A or AE on the Hampden County Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency (FEMA) for the administration of the National Flood Insurance Program.
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	Community	The Building Inspector is the designated Floodplain Administrator in Wales.
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Community	Floodplain regulations are administered through the enforcement of the Town's zoning bylaws, by the Planning Board, the Conservation

NFIP Topic	Sources of Information	Comments
		Commission, and the Building Inspector.
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Community	The Town implements the SI/SD provisions of its floodplain management regulations as required per the NFIP (CFR Title 44, Parts 59 - 65) and Massachusetts State Building Code (780 CMR). The Town will also coordinate with State Flood Hazard Management Program staff to assure that proper practices are followed and that a post-disaster plan will be in place to implement all SI/SD provisions.

Severe Snowstorms / Ice Storms

Hazard Description

Severe winter storms can pose a significant risk to property and human life. Snow is characterized as frozen precipitation in the form of six-sided ice crystal. In order for snow to occur, temperatures in the atmosphere (from ground level to cloud level) must be at or below freezing. The strongest type of severe snowstorm is a blizzard. Blizzards are characterized by frequent wind gusts above 35 miles per hour, limited to no visibility due to falling snow and extreme cold that lasts longer than three hours.

Ice storms are liquid rain that falls and freezes upon contact with cold objects. There must be an ice build-up of greater than ¼ inch for it to be considered an ice storm. When more than a ½ inch of ice build-up is forecasted a winter storm warning can be triggered.

The rain, freezing rain, ice, snow, cold temperatures and wind associated with these storms can cause the following hazards:

- 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.

Location

The entire town of Wales is susceptible to severe snowstorms. Because these storms occur regionally, they impact the entire town. The town has particular problems with snow and ice removal on its gravel roads. Based on this assessment, the location of occurrence from snow storms and ice storms in Wales is “large,” with over 50 percent of the town affected.

The town has had ice problems on the following roadways:

- Mt. Hitchcock Road
- Monson Road (at intersection with McBride)
- McBride Road
- Haynes Hill Road near ice house
- Hollow Road (due to steep grade and north-facing orientation)
- Stafford - Holland Road

The following areas have been identified by the Core Team as areas where snow drifts form during winter storm events:

- Areas near Mt. Hitchcock Road
- Route 19 adjacent to Lake George Dam

- Roads off of Union Road near Lake George

Extent

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, 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.

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

Source: <http://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis>

Previous Occurrences

Wales generally experiences at least one or two severe winter storms each year with varying degrees of severity. Severe winter storms typically occur during January and February; however, they can occur from late September through late May.

Based on data available from the National Oceanic and Atmospheric Administration, there are 47 winter storms since 1958 that have registered on the NESIS scale. Of these, there are 14 winter storms in the Pioneer Valley between 2010 and 2021 that registered on the NESIS scale and resulted in snowfalls of at least 10 inches. These storms are listed in the table on the next page, in order of their NESIS severity. While the NESIS data does not extend later than 2022, a snowstorm on January 6, 2024 occurred that would register on the NESIS scale, with Wales receiving approximately 13 inches of snow.

Table 4.6: Winter Storms registering on the NESIS scale in the Pioneer Valley

Winter Storms Producing Over 10 inches of Snow in the Pioneer Valley, 2010 -2022			
Date	NESIS Value	NASIS Category	NESIS Classification
12/16/2022	8.52	4	Crippling
2/23/2010	5.46	3	Major
1/29/2015	5.42	3	Major
1/9/2011	5.31	3	Major
2/11/2014	5.28	3	Major
3/12/2017	5.03	3	Major
1/31/2021	4.93	3	Major
2/7/2013	4.35	3	Major
3/5/2018	3.45	2	Significant
3/4/2013	3.05	2	Significant
1/25/2015	2.62	2	Significant
3/11/2018	3.16	2	Significant
10/29/2011	1.75	1	Notable
1/3/2018	1.65	1	Notable
2/8/2015	1.32	1	Notable

Source: <http://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis>

While NESIS provides a guide to the historical snowstorms that have affected Wales' region, there are wide variations that can occur locally. This is a result of Wales altitude and the variations in snowfall that can occur based on even a one or two degree temperature difference from lower, surrounding areas.

For example, the storm on February 7, 2013, was locally very severe, with over 36 inches of snowfall in Wales. A similarly large storm occurred a month later, on March 4, 2013. In addition, the October snow

fall of 2011 caused over 15 inches of snow, and many downed trees and branches due to the fact that leaves had not yet fallen.

Probability of Future Events

Based upon the availability of records for Hampden County, the likelihood that a severe snow or ice storm will affect Wales is “high” (between 40 and 70 percent in any given year). Research on climate change indicates that there is great potential for stronger, more frequent storms as the global temperature increases. While there may be lower annual snowfall amounts as more precipitation falls as rain or sleet, the snowstorms that do occur may be more severe. There is also the likelihood that the occurrence of ice storms and sleet will increase.

Vulnerability Assessment

Built Environment Impacts

The town faces a “limited” impact from snowstorms, with up to 10 percent of property damaged in the affected area. The weight from multiple snowfall events can test the load ratings of building roofs and potentially cause significant damage. Multiple freeze-thaw cycles can also create large amounts of ice and make for even heavier roof loads. Tree limbs can fall and cause damage to utility lines and power outages, as well as possibly damage buildings and vehicles.

To approximate the potential impact to property and people that could be affected by this hazard, the total assessed value of all structures in town, \$189,187,300, is used. An estimated 20 percent of damage could occur to 10 percent of structures, resulting in a total of \$3,783,746 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Population Impacts

Traffic accidents associated with severe snow and ice storms are one of the main impacts that can affect all Wales residents, as well as blocked roadways and power outages. As with all hazards, vulnerable populations in Wales are more likely to be impacted by severe winter storms. These individuals may be physically or financially less able to both prepare for and respond to hazard impacts such as power outages, poor roads, lack of public transportation, heavy snow or ice loads damaging buildings, an inability to clear snow, and extreme cold, among others. It is important for Emergency Management, the Council on Aging, and other Town departments to have strategies in place to provide assistance to vulnerable individuals impacted by severe snow and ice storms.

Changes in Land Use/Development

The limited amount of new residential and commercial development in Wales since the last plan is not likely to impact the Town’s vulnerability to severe snow and ice storms.

Hazard Risk Index Rating

Based on the above assessment, Wales has a hazard index rating of “2 - high risk” from snowstorms and ice storms.

Hurricanes and Tropical Storms

Hazard 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.

Location

Because of the hazard's regional nature, all of Wales is at risk from hurricanes, meaning the location of occurrence is "large," or more than 50 percent of land area affected. Ridgetops are more susceptible to wind damage.

Extent

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

Table 4.7: Saffir-Simpson Hurricane Wind Scale

Hurricane Damage Classifications			
Storm Category	Damage Level	Description of Damages	Wind Speed (MPH)
1	MINIMAL	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage. An example of a Category 1 hurricane is Hurricane Dolly (2008).	74-95
	Very dangerous winds will produce some damage		
2	MODERATE	Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings. An example of a Category 2 hurricane is Hurricane Francis in 2004.	96-110
	Extremely dangerous winds will cause extensive damage		
3	EXTENSIVE	Some structural damage to small residences and utility buildings, with a minor amount of curtain wall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland. An example of a Category 3 hurricane is Hurricane Ivan (2004).	111-129
	Devastating damage will occur		
4	EXTREME	More extensive curtain wall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland. An example of a Category 4 hurricane is Hurricane Charley (2004).	130-156
	Catastrophic damage will occur		
5	CATASTROPHIC	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. An example of a Category 5 hurricane is Hurricane Andrew (1992).	157+
	Catastrophic damage will occur		

Source: National Hurricane Center, 2024

Previous Occurrences

Hurricanes that have affected Wales are shown in the following table.

Table 4.8: Major Hurricanes Affecting the Pioneer Valley

Major Hurricanes Affecting Wales and the Pioneer Valley		
Hurricane/Storm Name	Year	Saffir/Simpson Category (when reached MA)
Great Hurricane of 1938	1938	3
Great Atlantic Hurricane	1944	1
Carol	1954	3
Edna	1954	1
Diane	1955	Tropical Storm
Donna	1960	Unclear, 1 or 2
Groundhog Day Gale	1976	Not Applicable
Gloria	1985	1
Bob	1991	2
Floyd	1999	Tropical Storm
Irene	2011	Tropical Storm
Sandy	2012	Super Storm
Isaias	2020	Tropical Storm
Henri	2021	Tropical Storm

Source: NOAA

Of these storms, the heaviest damages to the town were incurred from the heavy rainfall and flooding during Hurricane Bob and Tropical Storm Irene. Hurricane Sandy, Isaias and Henri did not cause significant damage locally.

Probability of Future Events

Wales's location in western Massachusetts reduces the risk of extremely high winds that are associated with hurricanes, although it can experience some high wind events. Based upon past occurrences, it is reasonable to say that there is a "low" probability of hurricanes or tropical storms in Wales, or between a 1 and 10 percent chance, in any given year. Climate change is projected to result in more severe

weather, including increased occurrence of hurricanes and tropical storms. Because of this, the occurrence of hurricanes will increase in the future.

Vulnerability Assessment

Built Environment Impacts

The Town faces a “limited” impact from hurricanes, with up to 10% of property damaged in the affected area.

To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, \$184,187,300, is used. Wind damage of 5 percent to 10 percent of structures damaged could result in an estimated \$920,937 worth of damage. Estimated flood damage to 10 percent of the structures with 20 percent damage to each structure could result in \$3,783,746 of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Population Impacts

Damage to homes and property and power outages are impacts from high wind events that could affect all Wales residents. Flooding from excessive rainfall with hurricanes would impact Wales residents as well. As with all hazards, underserved and vulnerable populations in Wales are more likely to be impacted by damages from wind and flooding. These individuals may be physically or financially less able to both prepare for and respond to this hazard. It is important for Emergency Management, the DPW, the Council on Aging, and other Town departments to have strategies in place to provide assistance to vulnerable individuals impacted by hurricanes and tropical storms.

Changes in Land Use/Development

The limited amount of new residential and commercial development is not likely to impact the Town’s vulnerability to hurricanes and tropical storms.

Hazard Risk Index Rating

Based on the above analysis, Wales has a hazard index rating of “3 – medium risk” from hurricanes and tropical storms.

Severe Thunderstorms / Wind / Tornadoes

Hazard Description

A thunderstorm is a storm with lightning and thunder produced by a cumulonimbus cloud, usually producing gusty winds, heavy rain, and sometimes hail. Effective January 5, 2010, the NWS modified the hail size criterion to classify a thunderstorm as "severe" when it produces damaging wind gusts in excess of 58 mph (50 knots), hail that is 1 inch in diameter or larger (quarter size), or a tornado (NWS, 2013).

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

Tornadoes are swirling columns of air that typically form in the spring and summer during severe thunderstorm events. In a relatively short period of time and with little or no advance warning, a tornado can attain rotational wind speeds in excess of 250 miles per hour and can cause severe devastation along a path that ranges from a few dozen yards to over a mile in width. The path of a tornado may be hard to predict because they can stall or change direction abruptly. Within Massachusetts, tornadoes have occurred most frequently in Worcester County and in communities west of Worcester, including towns in eastern Hampshire County. High wind speeds, hail, and debris generated by tornadoes can result in loss of life, downed trees and power lines, and damage to structures and other personal property.

Location

As per the Massachusetts Hazard Mitigation Plan, the entire town is at risk of high winds, severe thunderstorms, and tornadoes. The plan also identifies Wales and the surrounding communities as having a high frequency of tornado occurrence within Massachusetts. However, the actual location of occurrence of a thunderstorms, severe wind, or tornado is "small," with less than 10 percent of the town affected.

Extent

An average thunderstorm is 15 miles across and lasts 30 minutes; severe thunderstorms can be much larger and longer. Tornadoes are measured using the enhanced F-Scale. As per the SHMCAP, Massachusetts typically experiences 10 to 30 days per year with severe thunderstorms. Thunderstorms can cause hail, wind, and flooding.

The damages that tornadoes and severe wind can create is shown with the following F-Scale categories and corresponding descriptions of damage:

Table 4.9: Fujita Scale for Tornadoes

Enhanced Fujita Scale Levels and Descriptions of Damage			
EF-Scale Number	Intensity Phrase	3-Second Gust (MPH)	Type of Damage Done
EF0	Gale	5–85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
EF1	Moderate	86–110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF2	Significant	111–135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	Severe	136–165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF4	Devastating	166–200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.

Previous Occurrences

Because thunderstorms and wind affect the town regularly on an annual basis, there are not significant records available for these events. However, according to the NOAA storm events database, since 2016, when the last HMP was completed, there have been 127 events of severe thunderstorms and wind in Hampden County that recorded winds over 50 miles per hour.²

²https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Thunderstorm+Wind&beginDate_mm=10&beginDate_dd=01&beginDate_yyyy=2016&endDate_mm=12&endDate_dd=31&endDate_yyyy=2024&c

Tornadoes typically occur 1- 3 times per year somewhere in southern New England. Most occur in the late afternoon and evening hours, when the heating is the greatest. The most common months are June, July, and August, but the Great Barrington, MA tornado (1995) occurred in May and the Windsor Locks, CT tornado (1979) occurred in October.

Within Massachusetts, tornadoes have occurred most frequently in Worcester County and in communities west of Worcester. In June 2011, a tornado ranked F3 (Severe Damage) on the Fujita Scale of Tornado Intensity, blew through the towns of West Springfield, Westfield, Springfield, Monson, Wilbraham, Brimfield, Sturbridge, and Southbridge. The tornado and related storm killed 3 people and resulted in hundreds of injuries across the state. Wales was not affected.

Probability of Future Events

One measure of tornado activity is the tornado index value. It is calculated based on historical tornado events data using USA.com algorithms. It is an indicator of the tornado level in a region. A higher tornado index value means a higher chance of tornado events. Data was used for Hampden County to determine the Tornado Index Value as shown in the table below.

Tornado Index for Hampden County	
Hampden County	138.23
Massachusetts	87.60
United States	136.45

<http://www.usa.com/hampden-county-ma-natural-disasters-extremes.htm>

Based upon the available historical record, as well as Wales's location in a high-density cluster of state-wide tornado activity, it is reasonable to estimate that there is a "low" probability of tornado occurrence (1 to 10 percent chance in any given year). There is a "moderate" probability (10 percent to 40 percent chance in any given year) of a severe thunderstorm or winds affecting the town.

Vulnerability Assessment

Built Environment Impact

Overall, the Town faces a "limited" impact from severe thunderstorms, winds, or tornadoes with up to 10 percent or more of the town affected. The potential for locally catastrophic damage is a factor in any severe weather event. In Wales, a tornado that hit residential areas would leave much more damage than a tornado with a travel path that ran along the town's forested areas, where little settlement has occurred. Most buildings in town have not been built to Zone 1, Design Wind Speed

ounty=HAMPDEN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=25%2CMASSACHUSETTS

Codes. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975, with most of the town's housing built before this date.

To approximate the potential impact to property and people that could be affected by severe thunderstorms, tornado, or wind, the total value of all property in town, \$184,187,300 is used. For a tornado, an estimated 100 percent of damage could occur to 1 percent of structures, resulting in a total of \$1,841,873 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate. For a severe thunderstorm or wind, an estimated 20 percent of damage could occur to 10 percent of structures, resulting in a total of \$3,783,746 worth of damage.

Population Impacts

Damage to homes and property and power outages are impacts from high wind events that could affect all Wales residents. Flooding from excessive rainfall with severe thunderstorms would impact residents as well. As with all hazards, vulnerable populations in Wales are more likely to be impacted by damages from wind and flooding. These individuals may be physically or financially less able to both prepare for and respond to this hazard. It is important for Emergency Management, the DPW, the Council on Aging, and other Town departments to have strategies in place to provide assistance to vulnerable individuals impacted by severe thunderstorms, high wind events, or a tornado or microburst.

Changes in Land Use/Development Impacts

The limited amount of new residential and commercial development is not likely to impact the Town's vulnerability to severe thunderstorms, high wind events, tornadoes and microbursts.

Hazard Risk Index Rating

Based on the above assessment, Wales has a hazard index rating of "2 – high risk" from severe thunderstorms and winds, and a "4 – low risk" from tornadoes.

Wildfire / Brushfire

Hazard Description

Wildland fires 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. Both wildland fires and brushfires can consume homes, other buildings and/or agricultural resources. Typical causes of brushfires and wildfires are lightning strikes, human carelessness, and arson.

FEMA has classifications for 3 different classes of wildland fires:

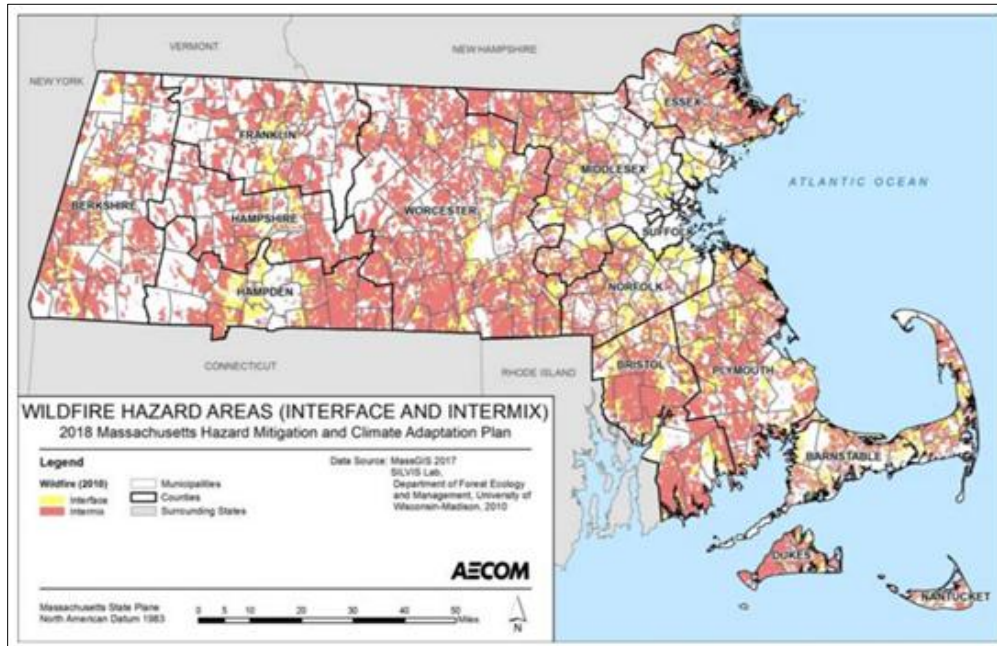
- Surface fires are the most common type of wildland fire and burn slowly along the floor of a forest, killing or damaging trees.
- Ground fires burn on or below the forest floor and are usually started by lightning
- Crown fires move quickly by jumping along the tops of trees. A crown fire may spread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

The wildfire season in Massachusetts usually begins in late March and typically culminates in early June, corresponding with the driest live fuel moisture periods of the year. April is historically the month in which wildfire danger is the highest. However, wildfires can occur every month of the year. Drought, snowpack, and local weather conditions can expand the length of the fire season. In 2024, the months of October and November saw unprecedented numbers of wildfires in Massachusetts, primarily due to drought. The early and late shoulders of the fire season usually are associated with human-caused fires.

Location

Figure 3.3 below shows wildland-urban interface and hazard areas in the state. Hampden County has approximately 273,000 acres of forested land, which accounts for 67 percent of total land area. In Wales, approximately 85 percent of the land is forested, and is therefore at risk of fire. A large wildfire could damage almost all of the town's land mass in a short period of time. However, Massachusetts receives more than 40 inches of rain per year and much of the landscape is fragmented, and together these two traits make wildfires relatively uncommon in Massachusetts. Nevertheless, in drought conditions, a brushfire or wildfire would be a matter of concern. There are forested areas near almost all residential and commercial development Wales, making the entire town susceptible to wildfire and brushfire. Thus, the location of occurrence for this hazard is "large," or affecting more than 50 percent of the town.

Figure 4.5: Wildland-Urban Interface and Hazard Areas in Massachusetts



Extent

Wildfires and brushfires can cause widespread damage to the areas that they affect. They can spread very rapidly, depending on local wind speeds and be very difficult to get under control. Fires can last for several hours up to several days.

As mentioned above, approximately 85% of land in Wales is undeveloped forest land and there are approximately 8,704 acres of forested area in the town that are at risk of a wildfire or brushfire. Some of this land area is scattered throughout the community, with development intermixed. Therefore, while the risk of fire is relatively low, in drought conditions a brushfire or wildfire would be a serious matter of concern. As noted in the next section, there have not been any major wildfires recorded in Wales. The overall extent of wildfires is shown in Table 4.9 below.

Table 4.10: Extent of Wildfires

Rating	Basic Description	Detailed Description
CLASS 1: Low Danger (L) Color Code: Green	Fires not easily started	Fuels do not ignite readily from small firebrands. Fires in open or cured grassland may burn freely a few hours after rain, but wood fires spread slowly by creeping or smoldering and burn in irregular fingers. There is little danger of spotting.
CLASS 2: Moderate Danger (M) Color Code: Blue	Fires start easily and spread at a moderate rate	Fires can start from most accidental causes. Fires in open cured grassland will burn briskly and spread rapidly on windy days. Woods fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel – especially draped fuel -- may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
CLASS 3: High Danger (H) Color Code: Yellow	Fires start easily and spread at a rapid rate	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High intensity burning may develop on slopes or in concentrations of fine fuel. Fires may become serious and their control difficult, unless they are hit hard and fast while small.
CLASS 4: Very High Danger (VH) Color Code: Orange	Fires start very easily and spread at a very fast rate	Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics - such as long-distance spotting - and fire whirlwinds, when they burn into heavier fuels. Direct attack at the head of such fires is rarely possible after they have been burning more than a few minutes.
CLASS 5: Extreme (E) Color Code: Red	Fire situation is explosive and can result in extensive property damage	Fires under extreme conditions start quickly, spread furiously and burn intensely. All fires are potentially serious. Development into high-intensity burning will usually be faster and occur from smaller fires than in the Very High Danger class (4). Direct attack is rarely possible and may be dangerous, except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions, the only effective and safe control action is on the flanks, until the weather changes or the fuel supply lessens.

Previous Occurrences

During the past 100 years, there have not been many wildfires occurring in the Pioneer Valley. However, over 10 significant wildfires have occurred during the past 25 years, as shown in the list below:

- 2000 – South Hadley, 310 acres burned over 14 days in the Litihia Springs Watershed
- 2001 – Ware, 400 acres burned
- 2010 – Russell, 320 acres burned on Mt. Tekoa
- 2012 – Eastern Hampden County, dry conditions and wind gusts created a brush fire in Brimfield, and burned 50 acres
- 2012 - Brimfield, 52 acres burned in Brimfield State Forest, as a result of the large number of dead trees and brush produced by the 2011 tornado
- 2016 – Montgomery, 60 acres burned on Mt. Tekoa
- 2019 - Russell and Montgomery, 200 acres burned on Mt. Tekoa
- 2024 - Monson, 45 acres burned
 - Northampton, 55 acres burned in Fitzgerald Lake Conservation Area
 - Chicopee, 8.5 acres burned along westbound land of I-90
 - Montgomery, 85 acres burned near the Westfield Reservoir
 - Great Barrington, 1,700 acres burned in the area of East Mountain

Probability of Future Events

In accordance with the SHMCAP, the Wales Core Team found it is difficult to predict the likelihood of wildfires in a probabilistic manner because the number of variables involved. However, given the occurrences of previous wildfires and their proximity to the town, the likelihood of a future wildfire or brushfire is determined to "low," or between a 1 to 10 percent change in any given year.

Climate scenarios project summer temperature increases between 2°C and 5°C and precipitation decreases of up to 15 percent. Such conditions would exacerbate summer drought and further promote high-elevation wildfires, releasing stores of carbon and further contributing to the buildup of greenhouse gases. Forest response to increased atmospheric carbon dioxide—the so-called “fertilization effect”—could also contribute to more tree growth and thus more fuel for fires, but the effects of carbon dioxide on mature forests are still largely unknown.

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.

Vulnerability Assessment

Built Environment Impact

The town faces a potentially “critical” impact from wildfire or brushfire, with up to 25 percent of property in the affected area damaged or destroyed.

To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, \$184,187,300, is used. An estimated 100 percent of damage would occur to 25 percent of structures, resulting in a total of \$46,046,825 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

Population Impacts

Damage to homes and property are impacts from wildfires that could affect Wales residents, particularly the small percentage that live in the wildland-urban interface area. Additionally, all Wales residents could be impacted by smoke from wildfires in the Town or in the region. As Hampden County residents learned in 2022 and 2023, it is possible to be significantly impacted by poor air quality from wildfires from as far away as western Canada. Vulnerable populations in Wales, such as the elderly, small children, outdoor laborers, and anyone with respiratory issues or compromised immune systems are more likely to be impacted by smoke from wildfires. It is important for Emergency Management, the Board of Health, the Council on Aging, and other Town departments to have strategies in place to provide assistance to vulnerable individuals impacted by wildfires and poor air quality events due to wildfire smoke.

Land Use/Development Impacts

The limited amount of new residential and commercial development in Wales will not have a significant impact on the Town's vulnerability to wildfire. This is particularly true as development in the wildland-urban interface would be most vulnerable, and very limited development has occurred in these areas.

Hazard Risk Index Rating

Based on the above assessment, Wales has a hazard risk index of "2 - high risk" from wildfires or brushfire.

Earthquakes

Hazard Description

An earthquake is a sudden, rapid shaking of the ground that is caused by the breaking and shifting of rock beneath the Earth's surface. Earthquakes can occur suddenly, without warning, at any time of the year. New England experiences an average of 30 to 40 earthquakes each year although most are not noticed by people.³ Ground shaking from earthquakes can rupture gas mains and disrupt other utility service, damage buildings, bridges and roads, and trigger other hazardous events such as avalanches, flash floods, dam failure, and fires. Un-reinforced masonry buildings, buildings with foundations that rest on filled land or unconsolidated, unstable soil, and mobile homes not tied to their foundations are at risk during an earthquake.⁴

Location

Because of the regional nature of the hazard, the entire town is equally susceptible to earthquakes and the location of occurrence is "large," with over 50 percent of land affected.

Extent

The magnitude of an earthquake is measured using the Richter Scale, which measures the energy of an earthquake by determining the size of the greatest vibrations recorded on the seismogram. On this scale, one step up in magnitude (from 5.0 to 6.0, for example) increases the energy more than 30 times. The intensity of an earthquake is measured using the Modified Mercalli Scale. This scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature, and man-made structures on a scale of I through XII, with I denoting a weak earthquake and XII denoting a earthquake that causes almost complete destruction.

³ Northeast States Emergency Consortium Web site: www.nesec.org/hazards/earthquakes.cfm.

⁴ Federal Emergency Management Agency Web site: www.fema.gov/hazards/earthquakes/quake.shtm.

Table 4.11: Modified Mercalli Intensity Scale for Earthquakes

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

Source: US Federal Emergency Management Agency

Table 4.12: Richter Scale for Earthquakes

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

Previous Occurrences

The most recent earthquakes to affect Wales are shown in the table below.

Table 4.13: Largest earthquakes affecting Wales

Largest Earthquakes Affecting Wales, 1924 – 2014		
Location	Date	Magnitude
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8

Largest Earthquakes Affecting Wales, 1924 – 2014		
West of Laconia, NH	Jan. 19, 1982	4.5
Plattsburg, NY	April 20, 2002	5.1
Bar Harbor, NH	October 3, 2006	4.2
Hollis Center, ME	October 16, 2012	4.6
Tewksbury, NJ	April 5, 2024	4.8
York, ME	January 27, 2025	3.8

Source: Northeast States Emergency Consortium website, www.nesec.org/hazards/earthquakes.cfm

Probability of Future Events

One measure of earthquake activity is the Earthquake Index Value. It is calculated based on historical earthquake events data using USA.com algorithms. It is an indicator of the earthquake activity level in a region. A higher earthquake index value means a higher chance of earthquake events. Data was used for Hampden County to determine the Earthquake Index Value as shown in the table below.

Earthquake Index for Hampden County	
Hampden County	0.24
Massachusetts	0.70
United States	1.81

Based upon existing records, there is a "very low" likelihood of earthquakes in Wales, with less than a 1 percent chance of an earthquake occurring in any given year.

Vulnerability Assessment

Built Environment Impact

Massachusetts introduced earthquake design requirements into their building code in 1975 and improved building code for seismic reasons in the 1980s. However, these specifications apply only to new buildings or to extensively-modified existing buildings. Buildings, bridges, water supply lines, electrical power lines and facilities built before the 1980s may not have been designed to withstand the forces of an earthquake. The seismic standards have also been upgraded with the 1997 revision of the State Building Code.

The town faces a potentially “critical” impact from earthquakes, with up to 25 percent of Wales affected. To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, \$201,133,900 is used. An estimated 50 percent of damage could occur to 25 percent of structures, resulting in a total of \$23,023,413 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

In addition, the Tennessee Pipeline, which travels through Wales, has a pump station located near the center of town. While unlikely, it is possible the pipeline ruptured or pump station damaged during an earthquake, result in the release of large amounts of natural gas that would pose a large fire hazard.

Population Impacts

Damage to homes and property are the primary impacts from earthquakes that could affect Wales residents. As with all hazards, vulnerable populations are more likely to be impacted by damages from earthquakes. These individuals may be physically or financially less able to both prepare for and respond to this hazard. It is important for Emergency Management, the Board of Health, the Council on Aging, and other Town departments to have processes in place to provide assistance to vulnerable individuals who could be in need in the event of an earthquake.

Land Use/Development Impacts

The limited amount of new residential and commercial development in Wales will not have a significant impact on the Town’s vulnerability to earthquakes.

Hazard Risk Index Rating

Based on the above analysis, Wales has a hazard index rating of “4 – low risk” from earthquakes.

Dam Failure

Hazard 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 breaches 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. Dams are constructed with safety features known as “spillways.” Spillways are put in place on dams as a safety measure in the event of the reservoir filling too quickly. Spillway overflow events, often referred to as “design failures,” result in increased discharges downstream and increased flooding potential.

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 State of Massachusetts to dam owners, including the responsibility to conduct dam inspections.

Dam safety regulations enacted in 2005 transferred significant responsibilities for dams from the State of Massachusetts to dam owners. The financial burden associated with these responsibilities can vary greatly, depending on the number of dams for which an owner is responsible, and the dam’s condition and hazard index rating. A hazard index rating (see description of this rating in “Extent” section below) brings with it different requirements related to frequency of inspections by engineers and the need for development of emergency action plans. With these inspections, a dam determined to be in poor or unsafe condition can involve very costly repairs.

In January 2013, the Governor signed into law additional provisions to promote greater dam safety by:

1. extending the requirement of emergency action plans to significant hazard dams (in addition to high hazard dams);
2. strengthening the authority of the Office of Dam Safety by increasing fines for noncompliance; and

3. establishing the Dam and Sea Wall Repair and Removal Fund, an annual grant and loan program available to dam owners.

Location

The Office of Dam Safety at the Department of Conservation and Recreation identifies 11 dams in Wales. The location of occurrence for dam failure is considered to be "medium," with 10 to 50 percent of the Town affected. The dams in Wales, along with their owners, hazard potential, condition and purpose are listed in Table 4.14 below.

Table 4.14: Dams in Wales

Dams in Wales					
Dam Name	Hazard Level	Primary Owner	Condition	Most Recent Formal Phase I Inspection	Purpose
Lake George Dam	Significant	Town of Wales	Fair	12/05/23	Recreation
Shawville Dam	Significant	Town of Wales	Satisfactory	06/20/17	Recreation
Squires Dam	Significant	Town of Wales	Fair	06/20/17	Recreation
Norcross Pond #1 Dam	Low	Norcross Wildlife Foundation	Fair	08/02/19	Recreation
Norcross Pond #2 Dam	Low	Norcross Wildlife Foundation	Poor	08/02/19	Recreation
Norcross Pond #3 Dam	Low	Norcross Wildlife Foundation	Poor	08/02/19	Recreation
Vinica Pond Dam	Low	Norcross Wildlife Foundation	Poor	08/02/19	Recreation

Source: Office of Dam Safety, 2024

Extent

Often dam breaches lead to catastrophic consequences as the water ultimately rushes in a torrent downstream flooding an area engineers refer to as an "inundation area." The number of casualties and

the amount of property damage will depend upon the timing of the warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

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

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

Previous Occurrences

To date, there have been no dam failures in Wales.

Probability of Future Events

As Wales's dams age, and if maintenance is deferred, the likelihood of a dam failure will increase, but, currently the frequency of dam failures is "very low," with a less than 1 percent chance of a dam failing in any given year.

As described in the SMHCAP, dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hydrograph changes, it is conceivable that the dam can lose some or all of its designed margin of safety, also known as freeboard. If freeboard is reduced, dam operators may be forced to release increased volumes earlier in a storm cycle in order to maintain the required margins of safety. Such early releases of increased volumes can increase flood potential downstream.

With the more frequent extreme precipitation events and larger storm events in the northeastern United States due to climate change, dams will be tested and the likelihood of dam failure may increase. The extreme storm flows produced by Tropical Storm Irene in 2011, for example, led to the failure of at least two dams in the Pioneer Valley region. An unnamed private dam in Blandford failed, sending a surge of water downstream to inundate and damage nearby roads. At the Granville Reservoir Dam owned by the Town of Westfield, the spillway failed when waters overwhelmed and then undermined the structure. Since then, the Town of Westfield has had to spend \$3 million in repairs and improvements to the dam and spillway.

There are plans to remove all of the dams at Norcross Wildlife Sanctuary, which will reduce some flooding risk to the Town. While many of those dams are in poor condition, they are also low hazard, meaning there would not be substantial damage if they failed.

Vulnerability Assessment

Built Environment Impact

The town faces a potentially “critical” impact from the failure of dam, with up to 25 percent of property damaged or destroyed within the affected area. To approximate the potential impact to property and people that could be affected by this hazard, the total value of all property in town, \$184,187,300, is used. An estimated 50 percent of damage would occur to 25 percent of structures, resulting in a total of \$23,023,413 worth of damage. The cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included in this estimate.

The Town's Core Team estimates that a failure of the Shawville Dam would result in complete destruction of the Town's Fire Department and Route 19. However, the dam was rebuilt in 2004 and is very unlikely to fail.

Population Impacts

Flood damage to property from a dam failure is the primary impact that could affect Wales residents, however as mentioned above, there are a very limited number of properties that could be affected by a dam failure. As with all hazards, more vulnerable residents would be most impacted by a dam failure. The Town should ensure that the vulnerable individuals in Wales who could be impacted by dam failures have access to assistance in the unlikely event that it would be needed.

Land Use/Development Impacts

The limited amount of new residential and commercial development in Wales will not have a significant impact on the Town's vulnerability to dam failure.

Hazard Risk Index Rating

Based on this analysis, Wales has a hazard index rating of “4 – low risk” from dam failure.

Drought

Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector. Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of the direct impacts of drought. Of course, these impacts can have far-reaching effects throughout the region and even the country.

Location

Because of this hazard's regional nature, a drought would impact the entire town, and the location of occurrence is "large," with over 50 percent of total land affected.

Extent

The severity of a drought would determine the scale of the event and would vary among town residents depending on whether the residents' water supply is derived from a private well or the public water system. In Wales, all residents are on private wells. Those residents with shallow wells can be at risk of well failure during droughts.

The U.S. Drought Monitor also records information on historical drought occurrence. Unfortunately, data could only be found at the state level. The U.S. Drought Monitor categorizes drought on a D0-D4 scale as shown below.

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

Source: US Drought Monitor, <http://droughtmonitor.unl.edu/classify.htm>

Previous Occurrences

Wales has had limited experience with severe drought conditions in the past, although this is changing as drought conditions related to climate change become more frequent. Massachusetts has suffered significant droughts several times in the last century, with four major droughts within the last 10 years (2016-2017, 2020, 2022, and 2024). Other major droughts occurred in 1929-1932, 1939-1944, 1961-1969, and 1980-1983. While these droughts affected Wales as well, they were more impactful in other areas of the state and in communities with less reliable water supplies. The following table indicates previous occurrences of drought since 2000, based on the US Drought Monitor:

Table 4.15: Drought Classifications in Massachusetts 2000-2022

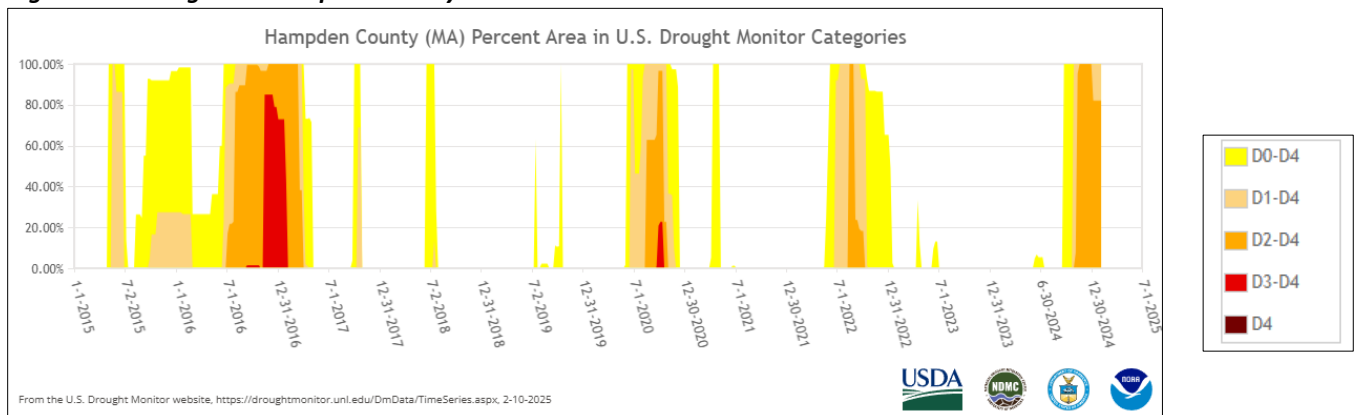
Annual Drought Classification Status in Massachusetts	
Year	Maximum Severity
2000	No drought
2001	D2 conditions in 21% of state
2002	D2 conditions in 99% of state
2003	No drought
2004	D0 conditions in 44% of state
2005	D1 conditions in 7% of state
2006	D0 conditions in 98% of state
2007	D1 conditions in 71% of state
2008	D0 conditions in 57% of state
2009	D0 conditions in 44% of state
2010	D1 conditions in 27% of state
2011	D0 conditions in 0.01% of state
2012	D2 conditions in 51% of state
2013	D1 conditions in 60% of state
2014	D1 conditions in 26% of state

Annual Drought Classification Status in Massachusetts	
2015	D1 conditions in 72% of state
2016	D3 conditions in 52% of state
2017	D3 conditions in 9% of state
2018	D1 conditions in 36% of state
2019	D0 conditions in 85% of state
2020	D3 conditions in 37% of state
2021	D1 conditions in 2.5% of state
2022	D3 conditions in 39% of state
2023	D0 conditions in 54% of state
2024	D3 conditions in 26.5% of state

Source: US Drought Monitor

Figure 4.6 below shows the incidences of drought specifically in Hampden County from 2015 – 2024. As can be seen on this graph, the drought in 2016-2017 was the most extreme and significant for the county. The droughts in 2020, 2022 and 2024 were significant as well, falling into the severe category in 2022 and 2024, and a short period of extreme drought in 2020. Wales has not been significantly impacted by these droughts, although there have been some shallow well failures reported.

Figure 4.6: Droughts in Hampden County 2015 - 2024



Probability of Future Events

Based on previous occurrences, the HMP committee suggested that the probability of drought occurring within the next year is “low,” (1 to 10 percent in any given year). Projecting out beyond the 5-year span of this HMP, the probability of drought increases. According to Resilientma.org, there could be up to 2 more consecutive dry days per year by the middle of the century in the lower Connecticut River watershed. However, many factors, such as water supply sources, population, economic factors, and infrastructure, may affect the severity and length of a drought event.

Vulnerability Assessment

Built Environment Impacts

Due to the water richness of western Massachusetts, Wales is unlikely to be adversely affected by anything other than a major, extended drought. While such a drought would require water saving measures to be implemented, there would be no foreseeable damage to structures or loss of life resulting from the hazard. Because of this, the impact of a drought to Wales is considered "minor." The primary impact would be low water levels in shallow wells, which has occurred in limited instances in Wales. There have not been any situations where deep wells have failed during droughts.

Population Impacts

All residents in Wales use private wells for drinking water. The main impact of a drought would be for residents who have shallow wells. They may have to conserve water, and in the most severe drought, they may need to drill a new, deeper well. There is a very small amount of agriculture in Wales, which could also be impacted by severe droughts.

Land Use/Development Impacts

The limited amount of new residential and commercial development will not have a significant impact on the Town’s vulnerability to drought. Any new wells dug for new residential development will be deep enough to avoid issues during droughts. There has not been any new commercial development in Wales since the last plan.

Hazard Risk Index Rating

Based on the above assessment, Wales has a hazard index rating of “5 – very low risk” from drought.

Extreme Temperatures

Hazard Description

Massachusetts has four clearly defined seasons. Extreme temperatures are considered outliers, or temperatures that fall outside the typical range for each season. Extreme temperatures can last from an afternoon to three days or more. Day and nighttime temperature fluctuations also factor into the overall effects of temperature. For example, when the temperature does not cool off at night during an extreme heat wave, the risk of heat related illnesses is intensified.

Extreme Cold

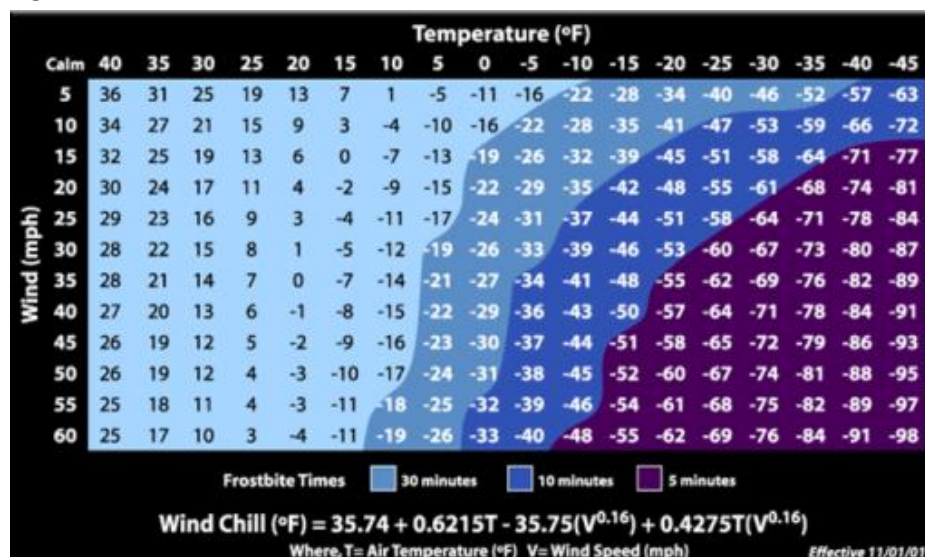
Extreme cold does not have a threshold temperature, but rather is defined as prolonged periods of excessively cold weather. This may vary by region based on average temperatures in the region. In Massachusetts, where temperatures regularly go below freezing during winter months, the community is often used to these temperatures. However, this does not lessen the risk. Extremely cold temperatures can create dangerous conditions for homeless populations, stranded travelers, and residents without sufficient insulation or heat in their homes. The homeless, the elderly, and people with disabilities are often most vulnerable. In Wales, 16% of the population is over 65 years old. Cold weather events can also have significant health impacts such as frostbite and hypothermia. Furthermore, power outages during cold weather may result in inappropriate use of combustion heaters, cooking appliances, and generators in poorly ventilated areas, which can lead to increased risk of carbon monoxide poisoning. During extreme cold, pipes may freeze and burst in many buildings with unreinforced masonry.

Extent

Extremely cold temperatures are measured using the Wind Chill Temperature Index provided by the National Weather Service (NWS). The updated index was implemented in 2001 and helps explain the impact of cold temperatures on unexposed skin. Figure 3.5 below provides more information. According to NOAA's National Centers for Environmental Information Storm Events Database records data for extreme cold events, between 2000 and September 2020, Massachusetts experienced 20 extreme cold and wind chill events. None of these events were reported for Hampden County, however.⁵

⁵https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Extreme+Cold%2FWind+Chill&beginDate_mm=11&beginDate_dd=01&beginDate_yyyy=1999&endDate_mm=11&endDate_dd=30&endDate_yyyy=2021&county=ALL&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitButton=Search&statefips=25%2CMASSACHUSETTS

Figure 4.7: Extreme Cold and Wind Chill Index



Extreme Heat

Extreme heat is when the maximum temperature reaches above 90°F during the day. Projected heat days and heat waves can have an increased impact in areas with a greater amount of impervious surface, such as buildings, roads, parking lots, and driveways. These can become “heat islands” as dark asphalt and roofs store the heat from the sun. Impacts from heat stress can exacerbate pre-existing respiratory and cardiovascular conditions.

Extent

The NWS issues a Heat Advisory when the Heat Index is forecast to reach 100-104° F for two or more hours (NOAA, n.d.). The NWS issues an Excessive Heat Warning if the Heat Index is forecast to reach 105°+F for two or more hours. The Heat Index chart below indicates the relationship between heat index and relative humidity.

Figure 4.8: Heat Index Chart

Relative Humidity (%)		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
	90	86	91	98	105	113	122	131									
	95	86	93	100	108	117	127										
	100	87	95	103	112	121	132										
Category		Heat Index					Health Hazards										
Extreme Danger		130 °F – Higher					Heat Stroke or Sunstroke is likely with continued exposure.										
Danger		105 °F – 129 °F					Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.										
Extreme Caution		90 °F – 105 °F					Sunstroke, muscle cramps, and/or heat exhaustions possible with prolonged exposure and/or physical activity.										
Caution		80 °F – 90 °F					Fatigue possible with prolonged exposure and/or physical activity.										

Because most heat-related deaths occur during the summer, people should be aware of who is at greatest risk and what actions can be taken to prevent a heat-related illness or death. According to the Centers for Disease Control and Prevention, the populations most vulnerable to extreme heat impacts include the following:

- People over the age of 65
- Children under the age of five
- Individuals with pre-existing medical conditions that impair heat tolerance
- Individuals without proper cooling
- Individuals with respiratory conditions
- Individuals that overexert themselves during extreme heat events

Location

Because of this hazard’s regional nature, extreme temperatures would impact the entire town, resulting in a “large” location of occurrence, or more than 50 percent of total land area affected.

Previous Occurrences

NOAA’s National Centers for Environmental Information Storm Events Database provides data on excessive heat. Between 2000 and 2023, Massachusetts experienced 16 heat or excessive heat days, which did not result in any injury or property damage. Two of these events were reported for Hampden

County, in July 2010 and July 2011.⁶ Extreme temperatures are classified as medium frequency events. As defined by the 2013 State Hazard Mitigation and Climate Adaptation Plan, these events occur from once in 5 years to once in 50 years or have a chance of occurrence of 2% to 20% per year. According to the 2018 Massachusetts State Hazard Mitigation and Climate Adaptation Plan, between four and five heat waves (3 or more consecutive days of 90°+F temperatures) occur annually in Massachusetts.

July is generally the hottest month in Wales, with an average daytime high temperature of approximately 85°F (NEIC, 2021). There has been limited use of cooling centers in Wales by residents during heat waves. While there may not have been a great need for air conditioning in the past, as the occurrence of high heat days over 90° increases, the need for cooling centers for residents without air conditioning will increase, or for whom running air conditioners is cost prohibitive. This will particularly be an issue for vulnerable populations such as seniors, low-income residents, and renters.

Probability of Future Events

The probability of future extreme heat and extreme cold occurring in Wales is considered by the HMP committee to be "moderate," or between 10 and 40 percent in the next year. This plan looks at the probability over the next five years – given the impacts of climate change, the probability of extreme heat occurring will increase over time.

Extreme heat events that can result in illness or loss of life have been relatively rare in Wales, although the probability of such events is increasing due to the impacts of climate change. The average temperature for the Lower Connecticut River watershed is projected to increase by up to 3 - 8°F by 2050, depending on greenhouse gas emissions, and the number of days above 90°F could increase by up to 12 - 41 days.

Vulnerability Assessment

Built Environment Impacts

The impact of extreme heat or cold in Wales is "limited," with no property damage and limited effect on humans. Extreme heat is unlikely to impact physical structures, although it can negatively affect agricultural operations and cause unsafe conditions for those working outside. Extreme cold can cause water pipes to freeze and burst. Increased temperature fluctuations in the winter can cause more freeze-thaw issues with roads and other infrastructure.

Population Impacts

The largest concern in Wales during heat waves is older adults (over 65) that make up 16% of the population and are more likely to have pre-existing health conditions. There are also individuals with medical conditions who are vulnerable to extreme heat, and even young adults and healthy individuals can succumb to heat if they participate in strenuous physical activities during hot weather. Other

⁶https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Excessive+Heat&beginDate_mm=11&beginDate_dd=01&beginDate_yyyy=1999&endDate_mm=11&endDate_dd=30&endDate_yyyy=2021&

vulnerable individuals include those with lower incomes and renters, who are less likely to have air conditioning or may not use it due to the cost. The primary concern during extreme cold events is residents that may also have lost power due to a snow or ice storm, especially vulnerable groups such as older adults. During both extreme heat and cold events, the Town opens cooling/warming centers for any residents who don't have adequate cooling or warmth at home. It is important for Emergency Management, the Board of Health, the Council on Aging, and other Town departments to have processes in place to provide assistance to vulnerable individuals who could need assistance during both extreme heat and extreme cold events.

Land Use/Development Impacts

The limited amount of new residential and commercial development in Wales will not have a significant impact on the Town's vulnerability to extreme heat or cold events.

Hazard Risk Index Rating

Wales's vulnerability from extreme heat and cold is considered to be, "4 - Low Risk."

5: CRITICAL FACILITIES

Facility Classification

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

- Is vital to the hazard response effort
- Maintains an existing level of protection from hazards for community residents and property
- Would create a secondary disaster if a hazard were to impact it

The Critical Facilities List for the Town of Wales has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer. The Core Team has broken up this list of facilities into four categories:

- Facilities needed for emergency response in the event of a hazard event.
- Facilities identified as non-essential and not required in an emergency response event, but which are considered essential for the everyday operation of the Town.
- Facilities or institutions that include special populations which would need additional attention in the event of a hazard event.
- Potential resources to access during a hazard event.

The critical facilities and evacuation routes potentially affected by hazard areas are identified following this list. The Past and Potential Hazards/Critical Facilities Map (Appendix D) also identifies these facilities.

Table 5.1: List of Critical Facilities in Wales

Critical Facilities		
Feature Type	Name	Address (If Known)
Category 1: Emergency Response Services		
Emergency Operations Center – Primary	Fire Department	3 Hegan Street
Emergency Operations Center – Secondary	Town Offices	3 Hollow Road
Fire Station	Fire Department	3 Hegan Street
Police Station	At Town Office Building	3 Hollow Road
Highway Department	At Fire Department	3 Hegan Street
Emergency Fuel	Fire Station/Highway Department (Diesel)	3 Hegan Street
Emergency Electrical Power – Generators	Fire Station	3 Hegan Street
	Town Offices	3 Hollow Road
	Senior Center	85 Old Stafford Road
	Norcross Wildlife Sanctuary	30 Peck Road
Portable Generators	At Town Office	3 Hollow Road
Emergency Shelters	No facility in Town meets criteria for an emergency shelter – can use Brimfield’s shelter at the ES if necessary if theirs is activated.	Brimfield ES – 22 Wales Road
	Senior Center used as a cooling/warming center. Cannot be used for overnight shelter.	85 Old Stafford Road
Water Sources (non-potable)	4,750 gallons of non-potable water	
	Dry hydrants – Shawville, Lake George Dam	
	10,000 gallon cistern	38 Lower Walker

Critical Facilities		
Water Sources (potable)	500-gallon storage tank at Wales Elementary School	41 Main Street
Helicopter Landing Sites	Wales Elementary School	41 Main Street
	Barney Road	
Communications	Telecommunications tower - SBC	22 Holland Road
	Cell Tower	188 Stafford Road
Transfer Station	Located in Wales	60 Hollow Road, Wales
Primary Evacuation Routes	Route 19 (Stafford Road)	
	Secondary – Monson Rd and Union Rd.	
Bridges on Evacuation Routes	Culvert at Lake George – spillway for lake	
Category 2: Non-Emergency Response Facilities		
Problem Culverts	Peck Road near Vinica Brook	42.055837, -72.266307
	Holland Road at Main	42.077380, -72.203949
	Sizer Drive	42.075544, -72.205297
	Monson Road	42.058872, -72.257108
	Stafford Holland Road	42.042554, -72.203387
	Hegan Street	42.075198, -72.207172
Dams	Lake George Dam - significant	Stafford Road
	Shawville Dam - Significant	Main at Dell Hill
	Squires Dam - Significant	Monson and Royce Lane
	DS Maynard Pond Dam – on private property	Maynard Road
	Norcross Pond #1 Dam	
	Norcross Pond #2 Dam	

Critical Facilities		
	Norcross Pond #3 Dam	
	Norcross Pond #4 Dam	
	Trout Pond Dam – Norcross	
	Vinica Pond Dam – Norcross	
	Delphi Brook Dam - Norcross	All of the dams at Norcross will be removed within the next five years.
Category 3: Facilities/Populations to Protect		
Elderly Housing	Brookside Village- approximately 75 units, 55+	Stafford Road
	Silver Meadows apartments, 26 units	Royce Lane
Public Buildings	Public Library	77 Main Street
	Old Town Hall	3 and 5 Main Street
	Town Hall	3 Hollow Road
Schools	Wales Elementary School	41 Main Street
Churches	Wales Baptist Church	28 Main Street
Apartment Complexes	One four family Apartment	Main Street
Employment Centers	Choice Foods	2 Main Street
	Lake George Tavern	2 Main Street
	The Whip	16 Holland Road
	Oak Haven Campground	22 Main Street
	Tetreault & Sons Forestry	85 Haynes Hill Road
	JA Vending	40 Haynes Hill Road
Historic Buildings/Sites	Old Town Hall	3 and 5 Main Street
	Wales Center Area	Main Street from near Union Road to near Church Street

Critical Facilities		
	Wales Cemetery #1	9 Union Road
	Wales Cemetery #2	3 Main Street
	Wales Cemetery #3	15 Laurel Hill Road
	Wales Cemetery #4	Laurel Hill Road
Campgrounds	Oak Haven Campground	22 Main Street
Day Cares		5 Barney Road
		220 Union Road
Category 4: Potential Resources		
Food/Water	Choice Foods	2 Main Street
	Stop and Shop	100 Charlton Rd, Sturbridge
	Big Y Supermarket	1180 Thorndike St., Palmer
	Big Y Supermarket	87 W. Stafford Rd, Stafford CT
	Adams Market	115 Main Street, Monson
	Cumberland Farms	3 Main St, Brimfield
	County Line	341 Sturbridge Rd., Brimfield
Ambulance Service	Action Ambulance Service	34 Wales Road, Brimfield
Hospitals/Medical Supplies	UMass Memorial Health – Harrington Hospital	100 South Street, Southbridge
	Harrington Physician Services	255 E Old Sturbridge Road, Brimfield
	Baystate Wing Hospital	40 Wright Street, Palmer
	Baystate Medical Center	759 Chestnut Street, Springfield
	UMass Memorial	55 Lake Ave, Worcester
Gas/Diesel	Cumberland Farms	3 Main Street, Brimfield
	County Line	341 Sturbridge Rd., Brimfield

Critical Facilities		
	Cumberland Farms	506 Mains Street, Sturbridge
	Sturbridge Gas	173 Main Street, Sturbridge
	Shah Food and Fuel	1239 Park Street, Palmer
Building Materials Suppliers	County Line Hardware	341 Sturbridge Road, Brimfield
Heavy & Small Equipment Suppliers	Hilltop Equipment LLC	15 Five Bridge Road, Brimfield
Gravel Pits	Caron's Family Farm	160 Palmer Road, Brimfield
	Ruport Reality (formerly Palmer Paving)	Washington Road, Brimfield
	Ciesla Brothers	Genieve Lane, Brimfield
	Santo's	Wales Road, Brimfield
	Rolling Hills	Millbrook Road, Brimfield

6: MITIGATION CAPABILITIES AND STRATEGIES

One of the steps of this Hazard Mitigation Plan is to evaluate all the Town's existing policies and practices related to natural hazards and identify potential gaps in protection. After reviewing these policies and the hazard identification and assessment, the Town Core Team developed a set of hazard mitigation strategies it would like to implement.

Wales prioritizes hazard mitigation and emergency preparation and has many hazard mitigation capabilities in place. The Town implements hazard mitigation best practices through land use zoning, subdivision regulations and specific policies and regulations, such as limitations on development in floodplains, tree maintenance, and others. The Town has very committed and dedicated volunteers who serve on Boards and Committees, as well as in other volunteer positions. The Town collaborates closely with surrounding communities and is party to Mutual Aid agreements through the MEMA. Wales is also an active member of the Pioneer Valley Planning Commission (PVPC) and can take advantage of no cost local technical assistance as needed provided by the professional planning staff at the PVPC.

Wales's most obvious hazard mitigation need is for additional state and federal funds to implement prioritized actions. While Wales is a well-managed fiscally sound Town, it is not a wealthy community and with state constraints on municipalities raising their own funds, Wales has very limited financial resources to invest in costly hazard mitigation measures. Wales is, however, committed to locally matching all FEMA and other federal or state grants it receives.

For the extent of this analysis, the Committee reviewed the following Town documents:

- Zoning By-Laws
- Subdivision Rules and Regulations
- Comprehensive Emergency Management Plan
- Town of Wales Master Plan (2020)

Existing Capabilities

The Core Team has identified the following mitigation capabilities that the Town has in place for mitigating hazards. Several of the recommended mitigation measures have multiple benefits because, if implemented, they will mitigate or prevent damages from more than one type of natural hazard. These do not fall under one hazard type, but could be put into place for facilitation of better hazard protection generally. In most cases these capabilities are effective; if they could be improved, this is described in the Effectiveness column.

Table 6.1: Existing Mitigation Capabilities for the Town of Wales

Mitigation Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Flood Plain District	Zoning Bylaws	Overlay district protect areas delineated as part of the 100-year floodplain by regulating uses and special permit requirements (Zoning Bylaw Section III).	Floods	Effective
Buildable lots cannot be located near watercourses	Zoning Bylaws	No parcel is considered a buildable lot unless its upland acreage is at least 90% contiguous of the maximum lot size and shall be land other than any body of water, including watercourses, or any bog, swamp, wet meadow, or marsh as defined in M.G.L. Chapter 131 Section 40.	Floods	Effective
Duplex / multi-family dwellings must minimize use of wetlands	Zoning Bylaws	The development shall be integrated into the existing terrain and surrounding landscape, and shall be designed to protect abutting properties and community amenities. Building sites shall, to the extent possible: (a) minimize use of wetlands, steep slopes, floodplains, and hilltops (Zoning Bylaw 7.5.1.4.a.(1)).	Floods	Effective

Mitigation Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Duplex / multi-family dwellings must not increase stormwater runoff	Zoning Bylaws	Drainage shall be designed so that run-off shall not be increased, groundwater recharge is maximized, and neighboring properties will not be adversely affected (Zoning Bylaw 7.5.4.7).	Floods	Effective
Duplex / multi-family dwellings must have underground utilities	Zoning Bylaws	Electric, telephone, cable TV, and other such utilities shall be underground where physically and environmentally feasible (Zoning Bylaw 7.5.4.8).	Severe thunderstorms / wind / tornadoes / hurricanes / severe snowstorms / ice storms	Effective
Special Permit	Zoning Bylaw	Some uses require special permit approval, and must meet environmental standards, such as not creating increased flood hazards, water pollution, erosion, or sedimentation (Zoning Bylaw, 3.0.6 Uses by Special Permit).	Floods	Effective
Regulation for telecommunications facilities	Zoning Bylaw	Regulates placement, construction, and appearance of telecommunications facilities. Tower height cannot exceed 100 feet (Zoning Bylaw 7.7).	Severe thunderstorms / wind / tornadoes / hurricanes / severe snow storms / ice storms	Effective
Restrictions on earth removal	Zoning Bylaw	Moving soil, sand, or gravel can occur only under special conditions, including planning board approval (Zoning Bylaw, 7.2. Earth Removal).	Floods	Effective

Mitigation Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Restrictions on locations of mobile homes	Zoning Bylaw	No mobile home, manufactured home, trailer, or camper trailer shall hereafter be placed erected, stored, or installed in the Town of Wales, except storage of a camper trailer (Zoning Bylaw, 7.6 Mobile Homes and Manufactured Homes).	Severe thunderstorms / wind / tornadoes / hurricanes /	Effective
Special permit	Zoning Bylaw	Some uses require special permit approval, and must meet environmental standards, such as not creating increased flood hazards, water pollution, erosion, or sedimentation (Zoning Bylaw, 3.0.4.7 Special Permit Criteria and Decision).	Floods	Effective
All subdivisions must comply with requirements of Wetlands Protection Act	Subdivision Regulations	Requires all new development to conform to regulations set forth in MassDEP Wetlands Protection Act (Subdivision Regulations, 5.5.1. Wetlands Protection).	Floods	Effective
All designs for subdivisions must protect existing natural features	Subdivision Regulations	All natural features, such as large trees, watercourses, wetlands, scenic points, historic spots, and similar community assets which will add attractiveness and value to the property shall be preserved (Subdivision Regulations, 6.1.3. Protection of Natural Features).	Floods	Effective
Storm and surface drainage specifications for subdivisions	Subdivision Regulations	Subdivisions must include specific designs for storm and surface drainage, including sizing all detention facilities to the 100-year storm (Subdivision Regulations, 6.2.4. Storm and Surface Drainage).	Floods	Effective

Mitigation Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Natural watercourses cannot be altered or obstructed by subdivisions	Subdivision Regulations	An adequate system of stormwater drainage shall be provided, and no natural watercourse shall be altered or obstructed in such a way as to reduce the natural run-off capacity, unless substitute means of run-off are provided. The Board may require culverts and other stormwater drainage installations where it deems necessary to connect with one or more natural watercourses. All necessary easements for drainage shall be provided, whether on or off the site. (Subdivision Regulations, 6.3. Storm Water Drainage)	Floods	Effective
Responsibility for drainage improvements falls on developers for subdivision projects	Subdivision Regulations	The responsibility for adequate drainage shall rest with the developer. This shall include the risk involved in connecting with existing drainage facilities (if any) provided by the Town. (Subdivision Regulations, 7.3.0 Responsibility)	Floods	Effective
Water supply requirements	Subdivision Regulations	Board of Health Regulations and Department of Environmental Protection Standards for private and public water supplies shall be met or exceeded (Subdivision Regulations, 6.4 Water Supply).	Drought	Effective
Utilities required to be buried in subdivisions	Subdivision Regulations	All lines or wires used for the transmission of electricity or intelligence shall be placed underground within the subdivision in a location approved by the Superintendent of Streets (Subdivision Regulations, 7.5. Utilities Other than Drainage Structures).	Severe thunderstorms / wind / tornadoes / hurricanes / severe snowstorms / ice storms	Effective

Mitigation Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Environmental impact assessment required as part of subdivisions	Subdivision Regulations	Environmental impact of all new developments must be considered as part of subdivision applications, including the impact to groundwater (Subdivision Regulations 8.5. Environmental Impact).	Drought Wildfire / brushfire	Effective
Conformance with State Building Code	State Regulation	Adoption of the Massachusetts State Building Code, which promotes construction of buildings that can withstand hazards to a certain degree.	All hazards	Effective
Wetlands Protection Regulations	State Regulation	Requires all new development to conform to regulations set forth in MassDEP Wetlands Protection Act.	Floods	Effective
Dam inspections	State Regulation	DCR requires property owners to inspect dams based on the hazard rating of the dam (low, medium, high hazard).	Dam failure	Effective, but could be better communication with private dam owners.
Burn permits	Municipal Operations	Residents must obtain burn permits from town and Fire Department is notified of days on which burns will occur.	Wildfire / brushfire	Effective
Fire prevention education	Education and outreach	Elementary school students taught fire prevention and safety techniques. Programs offered at Senior Center on fire safety.	Wildfire / brushfire	Effective

Mitigation Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Participation in the National Flood Insurance Program	Federal regulation	Allows property owners to purchase flood insurance from the government against future losses. There are four active NFIP policies in Wales. Continued compliance with NFIP program by maintaining Floodplain Overlay District and limiting development in 100-year floodplain.	Floods	Effective
Tree trimming	Municipal Operations	Town Tree Warden works with National Grid to identify trees that need to be trimmed to minimize falling tree branches interfering with power lines. The assessment and trimming is currently conducted on a 2-year cycle, which is insufficient.	Severe thunderstorms / wind / tornadoes / hurricanes / severe snowstorms / ice storms	Effective but needs to be completed more frequently.
Regular assessment of culverts and bridges for damage from flooding	Municipal Operations	The Town regularly assesses the condition of its transportation and stormwater infrastructure.	Floods	Mostly effective, but need to do an overall assessment and create a priority replacement list
Drainage improvements to Union Road	Municipal Operations	Drainage improvements to Union Road are currently in process to resolve chronic flooding issues. The cost of these improvements will be approximately \$90,000.	Floods	Effective
Woodland Heights drainage improvements	Municipal Operations	The Town has secured Community Development Block Grant funding for drainage improvements in the Woodland Heights area. The cost of these improvements will be approximately \$600,000.	Floods	Effective

Mitigation Capability	Action Type	Description	Hazards Mitigated	Effectiveness
Reverse 911 system	Municipal Operations	Reverse 911 system, known as Code Red, is currently linked to New Braintree, MA emergency dispatch.	All hazards	Effective, but should increase enrollment.
Beaver management strategy	Municipal operations	Town DPW monitors waterways and culverts for impediments from beavers and hires private company to remove beaver dams when necessary.	Floods	Effective
Wildfire Prevention	Municipal Operations	State and local conservation land cleared annually to eliminate fuel source for potential wildfire	Wildfire / brushfire	Effective

Existing Resources

In addition to the existing mitigation strategies listed above, the Town currently has the following resources available for hazard mitigation, in the form of administrative and funding capabilities:

- The Town has a Capital Improvement Plan to oversee the overall budget for capital expenditures of general Town funds. The CIP is reviewed annually by the Town. The review involves evaluating proposals for the construction of municipal buildings and the acquisition of land or personal property. The review also includes feedback from the Town's Fire Chief, Police Chief, Emergency Management Director, and DPW Director to assess what, if any, capital improvements should be conducted to reduce the Town's vulnerability from hazards.
- The Town receives Massachusetts Chapter 90 funding, which provides financing to implement drainage improvements for any identified drainage issues on roads. The funds are provided by the State Transportation Bond authorizes funding for capital improvement projects such as highway construction, and preservation and improvement projects that extend the life of existing capital facilities.
- Staff from the Town's various departments - including Fire, Police, DPW, Board of Health, Planning, etc. - regularly collaborate and share information. For example, the Police Department alerts the Department of Public Works to any issues with flooding or road conditions they find during regular patrolling. The current staffing is considered adequate to enforce regulations and staff is trained on hazards and mitigation.
- The Town requires new construction to meet State Building Code and requires an inspection from the Town Building Inspector.
- Properties that are financed through Federally backed loans and located within the FIRM-designated Special Flood Hazard Area (100-year floodplain) are required to purchase flood insurance. The Town enforces this requirement through the Building Inspector.
- The Town's Firemen and Police are available for conducting outreach and education on fire prevention and safety to local schools, to reduce the risk of fire in Town.
- The Town uses taxes collected from residents to fund Town staff involved in mitigation strategies, including fire and police. Funding is also used to make improvements to road infrastructure.
- The Town's Planning Board reviews all new development or changes to existing development, as per the Town's zoning bylaw. This ensures that new development conforms to the mitigation strategies included in the zoning bylaw, as listed above.
- The Town's Core Team will convene regular meetings to update this plan, as per the schedule indicated in Section 7 of this plan.

Status of Previous Mitigation Strategies

The following table lists the mitigation strategies developed for the 2016 Hazard Mitigation Plan. The status column indicates whether the strategies were completed, are in process, or were never implemented. The table also indicates whether strategies not completed will be included in the update or deleted, and the reason for deletion.

Table 6.2: Status of Previous Mitigation Strategies

Status of Previous Mitigation Strategies									
Action Name	Action Type	Description	Hazards Mitigated	Agency	Priority	Cost	Funding Source	Timeframe	Status
Install Emergency Generators	Structure and Infrastructure Projects	Secure funding and install emergency generator at Wales Senior Center.	All Hazards	Board of Selectmen (BOS), DPW, Council on Aging	High	Medium	HMPG	5 years	Completed
Install Detention Basins	Structure and Infrastructure Projects	Install new detention basins in locations that flood. Grant application submitted to fund installation.	Flooding	BOS, DPW	High	High	HMPG	2 years	Completed
Replace Under-Performing Culverts	Structure and Infrastructure Projects	Address approximately 30 underperforming culverts that are scheduled to be repaired or replaced.	Flooding	DPW, Fire Department, Police Department	High	Medium	DPW / MassWorks / HMPG	4 years	Mostly completed – 2/3 have been repaired or replaced. Carry over – need

Status of Previous Mitigation Strategies									
									additional funding to complete
Monson Road improvements	Structure and Infrastructure Projects	Implement funding for Monson Road drainage and paving improvements.	Flooding	DPW	High	Medium	HMPG	2 years	In progress
Extreme Cold Weather Education	Education and Outreach	Educate property owners in how to protect plumbing, including letting the faucet drip during extreme cold weather. Materials will be included at Senior Center and published in Town newsletter.	Severe snowstorms / ice storms	Fire Department, Police Department, DPW, Council on Aging	Medium	Low	DPW, Council on Aging	2 years	Done as part of fire safety education. Keep in as ongoing
Tree pruning	Municipal operations	Inspect and prune trees annually, to reduce risk of fallen branches felling power lines, as a collaboration between Tree Warden and National Grid.	Severe thunderstorms / wind / tornadoes / hurricanes / severe snowstorms / ice storms	Tree Warden, DPW, Fire Department	Medium	Low	Town	2 years	Completed, keep in as ongoing

Status of Previous Mitigation Strategies

Flood Risk Education	Education and Outreach	Appoint emergency services member to conduct outreach to homeowners to educate them about flood risks and encourage purchasing of flood insurance. Materials will be included at Senior Center and published in Town newsletter.	Flooding	Fire Department, Police Department, DPW, Council on Aging	Medium	Low	Police / Fire Department	2 years	Not completed due to lack of staff capacity. Carry over.
Monitor at-risk culverts	Municipal operations	Annually inspect at-risk culverts that could be impacted during flooding.	Flooding	DPW, Fire Department, Police Department, Planning Board, BOS	Medium	Low	DPW	1 year	Completed, keep in as ongoing
Outreach to vulnerable populations about shelter	Education and Outreach	Conduct outreach to senior citizens and other vulnerable populations about Senior Center being an accessible emergency shelter with heating.	All hazards	Council on Aging	Medium	Low	Council on Aging	2 years	Completed, keep in as ongoing
CEM Plan Update	Local planning and regulation	Update CEM Plan as per the State of Massachusetts	All hazards	BOS, DPW, Fire Department,	Medium	Low	Town	2 years	Completed, keep in as ongoing

Status of Previous Mitigation Strategies

		requirement that plan is revised every 5 years.		Police Department					every 5 years.
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Prioritized Implementation Plan

Several of the action items identified in the previous version of this plan are currently ongoing, either because they require more time to secure funding, or their construction process is ongoing. The Core Team also identified several new strategies that are currently being pursued or will be pursued. These new strategies were developed because of committee discussions, public input, and changes in the Town mitigation priorities. Changes in priorities reflect experiences with hazards since the last update and the hazard identification and risk assessment in this plan, and changes in priorities at the state level.

Strategy Prioritization Methodology

The Core Team reviewed and prioritized a list of new mitigation strategies using the following criteria:

Application to multiple hazards

Strategies are given a higher priority if they assist in the mitigation of several natural hazards.

Time required for completion

Projects that are faster to implement, either due to the nature of the permitting process or other regulatory procedures, or because of the time it takes to secure funding, are given higher priority.

Estimated benefit

Strategies which would provide the highest degree of reduction in loss of property and life are given a higher priority. This estimate is based on the Hazard Identification and Analysis Chapter, particularly regarding how much of each hazard's impact would be mitigated.

Cost effectiveness

To maximize the effect of mitigation efforts using limited funds, priority is given to low-cost strategies. For example, regular tree maintenance is a relatively low-cost operational strategy that can significantly reduce the length of time of power outages during a winter storm. Strategies that have identified potential funding streams, such as the Hazard Mitigation Grant Program, are also given higher priority.

The following categories are used to define the priority of each mitigation strategy:

- **Low** – Strategies that would not have a significant benefit to property or people, address only one or two hazards, or would require funding and time resources that are impractical
- **Medium** – Strategies that would have some benefit to people and property and are somewhat cost effective at reducing damage to property and people
- **High** – Strategies that provide mitigation of several hazards and have a large benefit that warrants their cost and time to complete

Cost Estimates

Each of the following implementation strategies is provided with a cost estimate. Projects that already have secured funding are noted as such. Where precise financial estimates are not currently available, categories were used with the following assigned dollar ranges:

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

Cost estimates consider the following resources:

- Town staff time for grant application and administration
- Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town)
- Town staff time for construction, maintenance, and operation activities

Project Timeline

Each strategy is provided with an estimated length of time it will take for implementation. Where funding has been secured for the project, a specific future date is provided for when completion will occur. However, some projects do not currently have funding and thus it is difficult to know exactly when they will be completed. For these projects, an estimate is provided for the time it will take to complete the project once funding becomes available.

Table 6.3: Priority Mitigation Strategies to Implement

Priority Mitigation Strategies to Implement								
Action Name	Action Type	Description	Hazards Mitigated	Agency	Priority	Cost	Funding Source	Timeframe
Obtain generator for Elementary School	Structure and infrastructure projects	Obtain funding for a generator for the Elementary School so that it can be used as an Emergency Shelter, and the water can be used as emergency water supply.	All hazards	Emergency Management , School Committee	High	High	BRIC, HMGP	2027
Feasibility study for new Public Safety Complex	Structure and infrastructure projects	Seek funding for a feasibility Study for new Public Safety Complex to be used as Emergency Operations Center and shelter and implement once funded.	All hazards	EMD, Police, Fire	High	High	BRIC, HMGP, MVP, DHCD	2026 - 2029
Replace Under-Performing Culverts	Structure and Infrastructure Projects	Map and prioritize culverts and obtain funding to address underperforming culverts that are scheduled to be repaired or replaced.	Flooding	DPW, Fire Department, Police Department	High	Medium	DPW Budget, DER, MVP, HMPG, MassWorks	2025 - 2029
Monson Road improvements	Infrastructure Projects	Implement Monson Road drainage and paving improvements.	Flooding	DPW	High	High	Federal Highway funds	2025- 2027

Priority Mitigation Strategies to Implement								
Tree Maintenance	Municipal operations	Inspect and prune trees annually, to reduce risk of fallen branches felling power lines, as a collaboration between Tree Warden and National Grid.	Severe thunderstorms / wind / tornadoes / hurricanes / severe snow and ice storms	Tree Warden, DPW, Fire Department, National Grid	High	Medium	DPW budget, National Grid	2025 and ongoing
Extreme Cold Weather Education	Education and Outreach	Educate property owners about how to protect plumbing, including letting the faucet drip during extreme cold weather. Informational materials will be provided at Senior Center and published in Town newsletter.	Severe snow and ice storms, Extreme cold	Fire Department, Police Department, DPW, Council on Aging	Medium	Low	DPW Budget, Council on Aging	2025 and ongoing
Flood Risk Education	Education and Outreach	Educate about flood risks and provide information about purchasing flood insurance. Informational materials will be included at Senior Center and published in Town newsletter.	Flooding	Con Comm, Building Inspector	Medium	Low	Con Comm and Building Department budgets, MVP	2025 and ongoing

Priority Mitigation Strategies to Implement								
Monitor at-risk culverts	Municipal operations	Annually inspect at-risk culverts that could be impacted during flooding.	Flooding	DPW	Medium	Med	DPW Budget	2025 and ongoing
Outreach to vulnerable populations about shelter	Education and Outreach	Conduct outreach to senior citizens and other vulnerable populations about Senior Center being an accessible cooling/warming center.	Extreme temperatures, Severe snow and ice storms, Severe thunderstorms and wind.	Council on Aging	Medium	Low	Council on Aging budget, MVP 2.0	2025 and ongoing
Comprehensive Emergency Management Plan Update	Local planning and regulation	Update Comprehensive Emergency Management (CEM) Plan as per the State of Massachusetts requirement that plan is revised every 5 years.	All hazards	Board of Selectmen, DPW, Fire Department, Police Department	Medium	Low	Emergency Management budget	Ongoing – update every five years.
Education about water conservation during droughts	Education and outreach	Education and outreach to inform residents about water conservation measures when droughts are at a certain level.	Drought	Board of Health, EMD	Medium	Low	Emergency Management and Board of Health budgets	2026 and ongoing
Update database of home-bound residents	Municipal operations	Update database for disabled and home-bound residents and seek funding to increase implementation of the Knox Box program.	All hazards	Fire Department, COA	Medium	Low	FireGrantsHelp.com, FEMA AFGP, CDBG	2025 and ongoing

Priority Mitigation Strategies to Implement								
Increase CodeRed enrollment	Education and outreach	Conduct outreach to increase enrollment in Code Red.	All hazards	Town Clerk	Medium	Low	Town Clerk budget	2025 and ongoing
Conduct public water feasibility study.	Assessment	Conduct a public water feasibility study at Needham Park.	Drought, Severe snow and ice storms, Severe thunderstorms and wind.	Board of Health	Medium	Medium	Health Department Budget, MVP	2026
Maintain and improve fire road access	Municipal operations	Maintain and improve access of fire roads in Town, including working with DCR on this at Brimfield State Forest.	Wildfire	Fire Department, DCR	Low	Low	Fire Department budget, DCR	2025 and ongoing
Educate about and enforce codes for earthquake resistance	Code enforcement	Building Commissioner educates builders and enforces codes to ensure buildings are using earthquake resistant building techniques.	Earthquakes	Building Commissioner	Low	Low	Building Department budget	2026 and ongoing

Strategies Identified at the Community Resilience Building Workshop

The following are the strategies developed during the Community Resilience Building workshop, held on April 27, 2024 as part of the Municipal Vulnerability Preparedness planning grant process. Some of these strategies were incorporated into Table 6.3, Mitigation Strategies to Implement, above. Other strategies were incorporated into the OSRP that was updated concurrently with this plan. Those strategies less relevant to the Hazard Mitigation part of the plan are listed here but not in Table 6.3. The strategies are grouped by Infrastructure, Environmental, or Societal categories, and each strategy was assigned a priority level of High, Medium, or Low.

Table 6.4: Resilience Strategies Identified at the CRB Workshop

Infrastructure Strategies	
Strategy	Priority
Assess the Elementary School for emergency shelter and emergency services staging (including PWS well and water supply).	H
Develop an action plan for alternate location for Fire and Highway Department due to possible inaccessibility from flooding.	H
Explore new Public Safety Complex to be used as an emergency shelter and an Emergency Operations Command post (with public water supply), including looking at Old Town Hall for this purpose.	H
Explore installation of sewer around lake George and encourage the BOH to provide education about septic maintenance and care.	H
Map and assess culverts, create a prioritization program and implement repairs and replacements.	H
Improve the Transfer Station facility, including removing invasives and adding a take or leave it shed.	H
Work with the state to improve roads. Implement a pavement management plan and Complete Streets program that encourages walking and biking.	H
Assess wetland flood storage and develop an Aquatic Invasives Species Management Plan for Lake George.	H
Conduct a Townwide Green Infrastructure Study and develop a stormwater bylaw.	H

Conduct a public water supply feasibility study at Needham Park, including Zones I and II delineations.	H
Conduct a feasibility study on use, lifespan, condition of town buildings.	M
Conduct structural assessments of the town's bridges.	M
Develop a tree management plan and work with National Grid to focus on areas that experience frequent outages.	M
Find locations for additional cell towers.	M
Plan for road crossing integrity for Tennessee Gas Pipeline in event of any incidents	L
Plan for alternate road crossings for causeway on Lake George.	L

Environmental Strategies	
Strategy	Priority
Work with property owners on strategies for protecting forests, Trees and open space and educate about residents about the MassWoods and Chapter Lands programs.	H
Control runoff of fertilizer into Lake George; Implement aquatic invasives management (explore 604b grant for a watershed plan to combat invasives); Work with the Conservation Commission to establish a new protocol for drawdown considering current freezing patterns.	H
Protect waterways from road salt and development. Identify areas to install cold water BMPs to promote infiltration of stormwater runoff; Explore stocking of trout.	H
Implement habitat protection actions from OSRP and educate the public about the importance of land protection for wildlife.	H
Explore dark sky compliance, including bylaws and consider downward-facing streetlights.	H
Improve and maintain access of fire roads in forested areas, including Brimfield State Forest (work with DCR).	H
Conduct outreach to encourage farmers to consider the APR program. Explore starting an Agricultural Commission and a CSA for the food pantry.	H
Educate residents about invasive species and develop a townwide invasive species management plan that promotes active maintenance.	H
Conduct a dam removal study for Shawville Pond and all the Dams at Norcross.	M
Address erosion at Union Beach and management of wild geese; Enforce beach regulations.	M
Conduct a beaver assessment with field studies and recommended management approaches, and work with private landowners on beaver management strategies.	L

Societal Strategies	
Strategy	Priority
Develop a database for disabled and home-bound residents and provide support for the Knox Box program.	H
Explore dementia-friendly communities and support aging in place.	H
Expand Senior Housing options, provide information to senior housing residents on Mass Save programs for energy efficiency improvements.	H
Consider more use of the school for evening community events; Increase volunteer capacity for recreation committees and activities.	H
Improve maintenance at the library and expand programming.	H
Identify ways to increase broadband and cell coverage/connectivity, explore municipal supply.	M
Conduct outreach to increase enrollment in Code Red.	M
Conduct a flood damage study specifically for evacuation routes (RT-19, Monson Road & Stafford Road).	M
Explore strategies to support local businesses.	M
Explore more options for screening and testing for vector-borne diseases; increase education and outreach, and local options for control.	M
Increase support for food pantry, coordinate with tri-town farmers for donations and explore a CSA.	L
Increase outreach about the existing community garden at the Wales Baptist Church to promote use. Coordinate with the church to expand the garden if membership expands.	L
Conduct a tri-town staffing study; explore regionalization and shared positions.	L
Expand the Veteran's District by inviting other towns to join.	L
Seek funding for better facilities/equipment to increase use of Cable Access and Web-Based Informational Platforms; Explore collaboration with Tantasqua.	L
Seek funding for beautification and apply for 48 State Tour for remediating stones. Provide education and outreach about green burials at Cemetery #4.	L

Work with the WRTA to increase services and explore ride sharing programs.	L
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7: PLAN REVIEW, EVALUATION, IMPLEMENTATION, AND ADOPTION

Upon completion of the draft Hazard Mitigation Plan, a public meeting was held on March 8, 2025 to present and request comments from town officials and residents. The Hazard Mitigation Plan was then submitted to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency for their review. Upon receiving conditional approval of the plan by FEMA, the plan was presented to the Town's Board of Selectmen and adopted.

Plan Implementation

The implementation of this plan begins upon its formal adoption by the Town Board of Selectmen and approval by MEMA and FEMA. Those Town departments and boards responsible for ensuring the development of policies, bylaw revisions, and programs as described in this plan will be notified of their responsibilities immediately following approval. The Town's Core Team will oversee the implementation of the plan.

Incorporation with Other Planning Documents

During yearly update meetings for the Hazard Mitigation Plan, the Core Team will review whether any of the plans or documents listed below are in the process of being updated or revised. If so, the Core Team will provide the Hazard Mitigation Plan to relevant Town staff and brief them on the contents of the Plan, and work with them on incorporating the data and actions from the plan into their planning efforts. The Core Team will also review the following current Town programs and policies to ensure that they are consistent with the mitigation strategies described in this plan.

- Wales Comprehensive Emergency Management Plan
- Wales Zoning Bylaw and Subdivision Regulations
- Wales Open Space and Recreation Plan
- Wales Comprehensive Master Plan

After this plan has been approved by both FEMA and the local government, links to the plan will be emailed to all Town staff, boards, and committees, with a reminder to review the plan periodically and work to incorporate its contents, especially the action plan, into other planning processes and documents.

Plan Monitoring, Evaluation and Maintenance

The Town's Emergency Management Director will call meetings of all responsible parties to review plan progress yearly at a minimum and as needed, based on occurrence of hazard events. The public will be notified of these meetings in advance through a posting of the agenda

at Town Hall and on the Town website. Responsible parties identified for specific mitigation actions will be asked to submit their reports in advance of the meeting.

Meetings will involve evaluation and assessment of the plan, regarding its effectiveness at achieving the plan's goals and stated purpose. The following questions will serve as the criteria that is used to evaluate the plan:

Plan Mission and Goal

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

Hazard Identification and Risk Assessment

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

Existing Mitigation Strategies

- Are the current strategies effectively mitigating the effect of any recent hazard events?
- Has there been any damage to property since the plan was last reviewed?
- How could the existing mitigation strategies be improved upon to reduce the impact from recent occurrences of hazards? If there are improvements, these should be incorporated into the plan.

Proposed Mitigation Strategies

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

Review of the Plan and Integration with Other Planning Documents

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

Following these discussions, it is anticipated that the committee may decide to reassign the roles and responsibilities for implementing mitigation strategies to different town departments and/or revise the goals and objectives contained in the plan. The committee will review and update the Hazard Mitigation Plan every five years. The process to update the plan will begin the year before it is due to expire. At that point, the Emergency Management Director and the HMP Committee may decide to undertake the plan update themselves or to hire a consultant to assist with the process. They will familiarize themselves with current hazard mitigation planning guidelines and begin the process of applying for funding from FEMA for the update.

Public participation will be a critical component of the Hazard Mitigation Plan maintenance process. The Core Team will hold all meetings in accordance with Massachusetts open meeting laws and the public invited to attend. The public will be notified of any changes to the Plan via the meeting notices board at Town Hall, and copies of the revised Plan will be made available to the public at Town Hall and via a link on the Town website.

8: APPENDICES

Appendix A – Technical Resources

1) Agencies

Massachusetts Emergency Management Agency (MEMA).....	508/820-2000
Hazard Mitigation Section	617/626-1356
Federal Emergency Management Agency (FEMA)	617/223-4175
MA Regional Planning Commissions:	
Berkshire Regional Planning Commission (BRPC).....	413/442-1521
Cape Cod Commission (CCC).....	508/362-3828
Central Massachusetts Regional Planning Commission (CMRPC).....	508/693-3453
Franklin Regional Council of Governments (FRCOG).....	413/774-3167
Martha’s Vineyard Commission (MVC).....	508/693-3453
Merrimack Valley Planning Commission (MVPC).....	978/374-0519
Metropolitan Area Planning Council (MAPC).....	617/451-2770
Montachusett Regional Planning Commission (MRPC).....	978/345-7376
Nantucket Planning and Economic Development Commission (NP&EDC).....	508/228-7236
Northern Middlesex Council of Governments (NMCOG).....	978/454-8021
Old Colony Planning Council (OCPC).....	508/583-1833
Pioneer Valley Planning Commission (PVPC).....	413/781-6045
Southeastern Regional Planning and Economic Development District (SRPED).....	508/823-1803
MA Board of Building Regulations & Standards (BBRS).....	617/227-1754
MA Coastal Zone Management (CZM).....	617/626-1200
DCR Water Supply Protection.....	617/626-1379
DCR Waterways.....	617/626-1371
DCR Office of Dam Safety.....	508/792-7716
DFW Riverways.....	617/626-1540
MA Dept. of Housing & Community Development.....	617/573-1100
Woods Hole Oceanographic Institute.....	508/457-2180
UMass-Amherst Cooperative Extension.....	413/545-4800
National Fire Protection Association (NFPA).....	617/770-3000
MA Board of Library Commissioners.....	617/725-1860
MA Highway Dept, District 2.....	413/582-0599
MA Division of Marine Fisheries.....	617/626-1520
MA Division of Capital & Asset Management (DCAM).....	617/727-4050
University of Massachusetts/Amherst.....	413/545-0111
Natural Resources Conservation Services (NRCS).....	413/253-4350
MA Historical Commission.....	617/727-8470
U.S. Army Corps of Engineers.....	978/318-8502
Northeast States Emergency Consortium, Inc. (NESEC).....	781/224-9876
National Oceanic and Atmospheric Administration: National Weather Service.....	508/824-5116
US Department of the Interior: US Fish and Wildlife Service	413/253-8200
US Geological Survey.....	508/490-5000

2) Mitigation Funding Resources

The identification of funding sources is the initial step in seeking funds and may vary depending on numerous factors. These factors include, but are not limited to, if a mitigation measure is conceptual or has been studied, evaluated, or designed. In most cases, the measure will require a combination of funding sources. The funding sources identified are not a guarantee that a specific project will be eligible for, or receive, funding. Upon adoption of this plan, the local representatives responsible for implementation should begin to explore potential funding sources in more detail.

Traditional funding sources within the Town of Wales, such as funding from the operating and capital budgets, may be able to cover some of the costs associated with the action items detailed in Table 5.4. State revolving funds and other no- or low-interest loans may also be of interest. There is a great variety of funding available for Massachusetts municipalities, both through the state and federal governments. A full list of funding opportunities can be found on the [Community Grant Finder webpage](#). The Community Grant finder provides a streamlined interface where municipalities can easily learn about grant opportunities. Specific funding options related to action items developed by Wales are listed in the table below.

Category	Agency/Grant	Description	Limitations & Stipulations
Community Development	MassWorks Infrastructure Program	Provides grants to communities to help them prepare for success and contribute to the long-term strength and sustainability of the Commonwealth.	None
Dam Repair and Removal	Dam and Seawall Program, EOEEA	Provides funding for repair or removal of dams	None
Dam Removal	Division of Ecological Restoration (DER)	Provides funding to remove dams and restore river processes.	Must provide a high enough ecological benefit
Drinking Water Supply Protection	Drinking Water Supply Protection (DWSP) Grant Program, MassDEP	Financial assistance for the purchase of land for protection of existing DEP-approved public drinking water supplies; protection of planned future public drinking water supplies; or groundwater recharge	For public water systems and municipal water departments
Emergency Management and Planning	Flood Mitigation Assistance Grant Program (FMA)	Implement cost-effective measures that reduce or eliminate the long-term risk of flood damage.	For buildings and other structures insured under the NFIP

Category	Agency/Grant	Description	Limitations & Stipulations
Emergency Management and Planning	Hazard Mitigation Grant Program (HMGP)	Provides funding after a disaster to significantly reduce or permanently eliminate future risk to lives and property from natural hazards.	Requires a Cost-Benefit Analysis
Emergency Management and Planning	Building Resilient Infrastructure & Communities (BRIC)	Provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event, with a focus on infrastructure projects and “community lifelines.” Replaced FEMA’s Pre-Disaster Mitigation (PDM) Program.	Required a Cost-Benefit Analysis
Emergency Management and Planning	MEMA Citizen Corps Program (CCP) Grant	Supports local Community Emergency Response Teams (CERT) and Volunteers in Police Service (VIPS) in preparing for all-hazards. Can be used for planning activities, equipment, training, and exercises.	None
Energy	Department of Energy Resources (DOER)	The DOER provides grant funding for clean energy-related programs.	None
Energy	Green Communities Designation and Grant Program	Provides a road map along with financial and technical support to municipalities that pledge to cut municipal energy and meet other criteria.	Towns must be designated Green Communities in order to apply for funding.
Environment	Community Forest Grant Program	Funding to establish community forests.	None
Environment, Flood Mitigation	Culvert Replacement Municipal Assistance Grant Program	Grant to replace undersized, perched, and/or degraded culverts located in an area of high ecological value.	Culvert replacements must meet Massachusetts Stream Crossing Standards to the maximum extent feasible.
Environment	US Forest Service Community Forest Grant Program	Funding to acquire private forest land threatened by conversion and establish community forests.	None
Environment	Conservation Assistance Grant Program	Provides funding for property appraisals, OSRPs, other land conservation planning.	Towns with 6,000 residents or fewer
Environment	604b Grant Program	Water quality assessment and management planning.	None

Category	Agency/Grant	Description	Limitations & Stipulations
Environment	Land Use Planning Grants	Support effort to plan, regulate, and act to conserve and develop land consistent with the Massachusetts' Sustainable Development Principles.	None
Environment	LAND Grant Program (Division of Conservation Services)	Helps cities and towns acquire land for conservation and passive recreation.	Municipality must have an approved OSRP
Environment	Federal Land & Water Conservation Fund (DCS)	Funding for the acquisition, development, and renovation of parks, trails, and conservation areas.	Municipality must have an approved OSRP
Environment	MassTrails Program	Trail protection, construction, and stewardship projects.	None
Environment	MVP Program	Provides support to implement climate change resiliency priority projects.	None
Environment	Natural Resource Damages Program	Funding for restoration projects. Funding comes from settlements, so it does not follow a set schedule.	None
Public Safety	Emergency Management Performance Grant (EMPG)	Reimbursable grant program to assist local emergency management departments to build and maintain an all-hazards emergency preparedness system.	Reimbursable
Public Safety	Public Assistance Program	The state reimburses governments and other applicants for disaster related costs.	75% reimbursable
Public Works & Transportation	Chapter 90 Program	Reimbursable grants on approved projects.	None
Public Works & Transportation	Community Transit Grant Program	Funding to meet the transportation and mobility needs of seniors and people with disabilities.	Depends on project type
Public Works & Transportation	Municipal Small Bridge Program	Funding for small bridge replacement, preservation, and rehab projects.	Bridges with spans between 10 ft and 20 ft
Transportation	Transportation Alternatives (TA)	Funding for smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.	None

List of Acronyms

FEMA	Federal Emergency Management Agency
MEMA	Massachusetts Emergency Management Agency
PVPC	Pioneer Valley Planning Commission
EPA	Environmental Protection Agency
DEP	Massachusetts' Department of Environmental Protection
NWS	National Weather Service
HMGP	Hazard Mitigation Grant Program
FMA	Flood Mitigation Assistance Program
SFHA	Special Flood Hazard Area
CIS	Community Information System
DCR	Massachusetts Department of Conservation and Recreation
ODS	Office of Dam Safety
FERC	Federal Energy Regulatory Commission
TRI	Toxics Release Inventory
FIRM	Flood Insurance Rate Map
NFIP	National Flood Insurance Program
CRS	Community Rating System
BOS	Board of Selectmen
DPW	Department of Public Works
LEPC	Local Emergency Planning Committee
EMD	Emergency Management Director
Con Com	Conservation Commission
Ag Com	Agricultural Commission
EOC	Emergency Operations Center
CEM Plan	Comprehensive Emergency Management Plan
EMA	Emergency Management Agency
HAZMAT	Hazardous Materials

Appendix B – Documentation of the Planning Process

Wales Municipal Vulnerability Preparedness & Hazard Mitigation Plan Update

Kick-off Meeting Agenda

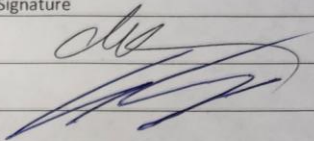
Wales Senior Center

1/9/2024

1. Introductions
2. MVP planning process and HMP update process
 - a. Planning process and requirements
 - b. Project timeline
 - c. Request extension from EEA
3. PVPC Data Needs
 - a. Past plans, studies, or reports from the town
 - b. Previous occurrences/impacts of hazards in Wales
 - c. Progress on previous action items
4. CRB Workshop logistics and stakeholder attendance
 - a. Workshop format and schedule/date(s)/time(s)/location – Norcross is available
Saturday 4/13 & 4/27
 - b. Create stakeholder/participant list
5. Next steps
 - a. Core team meetings for HMP update and workshop preparation
 - b. Outreach for workshop

Wales MVP-HMP Core Team
Kickoff Meeting

Wales Senior Center
January 9, 2024

Name	Signature
Chris Ryan DPW	
John Croke	
Thomas Faval	
John Grasso	

Wales Municipal Vulnerability Preparedness & Hazard Mitigation Plan Update

Meeting #2 Agenda

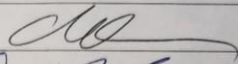
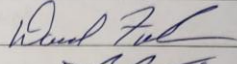
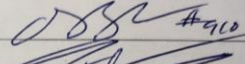
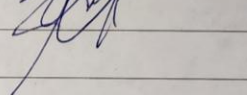
Wales Town Hall

2/27/2024

1. Review list of critical facilities and make any necessary changes.
2. Review all natural hazards impacting the Town, and update the problem locations and previous occurrences.
3. If time, update the Hazard Risk Analysis Table (p. 14)
4. Go over next steps and information needed

Wales MVP-HMP Core Team
Meeting #2

Wales Town Hall
February 27, 2024

Name	Signature
Chris Ryan DPW	
David Foote BOH	
DARIO CANACHO WPD	
John Coke	
John Grasso	

Wales Municipal Vulnerability Preparedness & Hazard Mitigation Plan Update

Meeting #3 Agenda

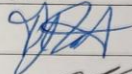
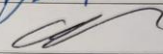
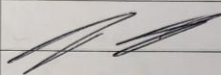
Wales Town Hall

3/12/2024

1. Review and update the Town's existing mitigation capabilities and resources. (pp 51 – 58 in the 2015 plan)
2. Identify areas where mitigation capabilities could be improved.
3. Review status of previous mitigation strategies and determine which to keep in plan update. (pp 61 – 62 in 2015 plan)
4. Go over next steps and future meetings/workshops.

Wales MVP-HMP Core Team
Meeting #3

Wales Senior Center
March 12, 2024

Name	Signature
Thomas Ford	
Chris Ryan	
John Goble	

Wales Municipal Vulnerability Preparedness & Hazard Mitigation Plan Update

Meeting #4 Agenda

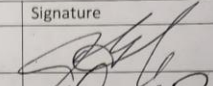
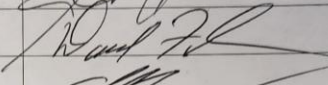
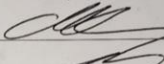
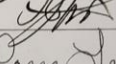
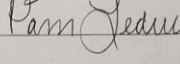
Wales Town Hall

1/27/2025

1. Review status of previous mitigation strategies and determine which to keep in plan update. (pp 61 – 62 in 2015 plan)
2. Select actions from the CRB workshop to include in the HMP Action Plan
3. Determine responsible party, timeframe, and cost for each action.
4. Go over next steps

Wales MVP-HMP Core Team
Meeting #4

Wales Senior Center
January 27, 2025

Name	Signature
John Grasso	
David Fort	
Chris Ryan	
John Croke	
Thomas Fard	
Pam Leduc	

Documentation of Public Meetings

Publicity for Public Meeting #1:

MEDIA RELEASE

CONTACT: Mimi Kaplan, PVPC Senior Planner, (413) 285-1188 or mkaplan@pvpc.org

FOR IMMEDIATE RELEASE

May 7, 2024

Town of Wales to hold Public Engagement Event for Hazard Mitigation Plan Update

Wales residents, businesses, and surrounding community members are invited to learn about and provide input on the Town's Hazard Mitigation and Municipal Vulnerability Preparedness (MVP) Plan on Monday, June 17, 2024 at 6 pm at the Wales Town Hall, 3 Hollow Road, Wales MA

The Public Forum will include an overview of the Hazard Mitigation Plan, the risks from natural hazards and climate change impacts in Wales, and previous mitigation actions. The Forum is an opportunity for you to share your opinions and participate in the mitigation planning process. Municipal officials and PVPC staff will be available to answer questions about the project. All members of the public, representatives from surrounding communities and other interested parties are welcome and encouraged to attend.

The purpose of the Hazard Mitigation and Municipal Vulnerability Preparedness Plan is to assess Wales's vulnerabilities from natural hazard and climate change risks, and to identify actions to reduce the risks. A mitigation action is any action that reduces or eliminates the risk to human life and property from natural hazards.

The plan is being updated by the Town with assistance from the Pioneer Valley Planning Commission and is funded by the Massachusetts Office of Energy and Environmental Affairs (EEA).

Upon completion, the plan will be submitted to EEA and to the Massachusetts and Federal Emergency Management Agencies (MEMA and FEMA) for review and approval. A FEMA approved plan makes the community eligible for federal and state mitigation grant funding, and MVP certification makes the Town eligible to apply for MVP action grants from EEA.

For more information, please contact PVPC's Mimi Kaplan at mkaplan@pvpc.org or (413) 285-1188.

Presentation for Public Meeting #1:

Town of Wales Hazard
Mitigation/Municipal
Vulnerability
Preparedness Plan
Public Meeting

Monday, June 17th
at 6 pm

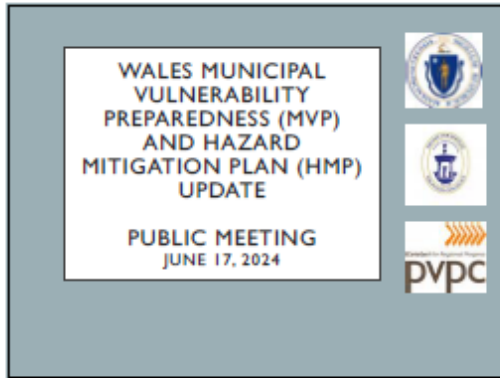
Wales Town Hall
3 Hollow Road, Wales



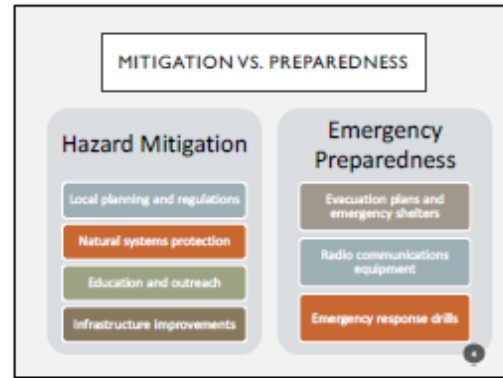
Photo credit: National Grid

Learn about Natural Hazards and Climate
Change Impacts affecting Wales, the Hazard
Mitigation Plan and Planning Process, ask
questions or provide comments.

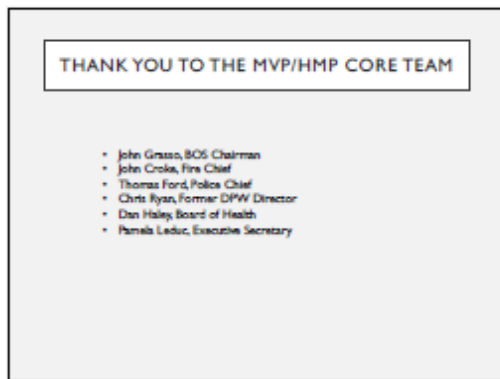
Public Meeting #1 Presentation:



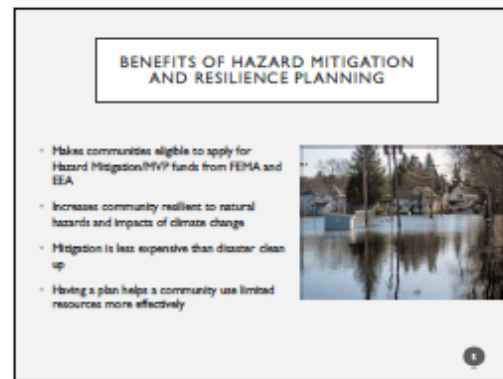
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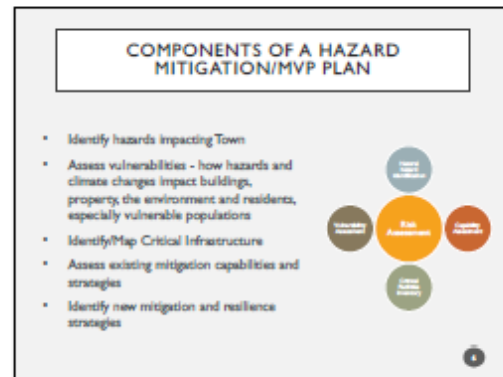
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6

MVP/HMP UPDATE TIMELINE

- 4-5 Core Team Meetings
- Community Resilience Building Workshop (4/27/24)
- First Public Meeting (6/12/24)
- Completion of Draft Plan
- Second Public Meeting/Listening Session
- Submit Plan to MDMA and FEMA/revise as needed
- FEMA Approval
- BOS adopts
- Town eligible to apply for funds from FEMA and EEA



7

EXAMPLES OF HIGH PRIORITY MITIGATION ACTIONS

- Assess culverts, create prioritization plan and implement repairs and replacements.
- Work with state to improve roads; implement pavement management plan; Encourage more walking and biking.
- Develop action plan for alternative location for PSC due to possible inaccessibility from flooding; Explore new PSC to be used as shelter and EOC, with public water supply (assess Old Town Hall for use as PSC).
- Assess plan for emergency shelter and emergency services staging at Elementary School, investigate well and water supply.
- Assess all public water supplies and feasibility of adding Newdham Park and campground; Map hazards in Zones I and II.
- Put together a database of homebound and disabled residents; explore implementing a knobbox program.

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WALES HAZARD RISK ANALYSIS

Type of Hazard	Scale/Size of Event/Incident	Probability of Future Events	Impact	Hazard Risk Index Rating
Flooding	Small	High	Limited	A - High Risk
Severe Thunderstorms / Ice Storms	Large	High	Limited	B - High Risk
Wildfires / Drought	Large	Low	Critical	C - High Risk
Severe Thunderstorms / Hail / Tornadoes	Medium-Large	Severe Thunderstorms and wind moderate Hail/tornadoes low	Limited	Severe Thunderstorms and WIND 2+ = High risk Tornadoes 4+ = Low risk
Hurricanes	Large	Low	Limited	D - Medium Risk
Earthquakes	Large	Very Low	Critical	E - Low Risk
Sea Level Rise	Medium	Very Low	Critical	F - Medium
Drought	Large	Low	Minor	G - Very Low Risk
Extreme Temperatures	Large	Low-Moderate	Minor	H - Low Risk

8

PUBLIC COMMENT PERIOD

- Questions or comments about natural hazards/climate change impacts in Wales, or the hazard mitigation plan!

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EXAMPLES OF EXISTING MITIGATION CAPABILITIES

- Zoning Bylaws, Building Codes
- Existing plans: CEH; OSRP; Master Plan
- NFIP enrollment (currently 4 policies in force)
- Burn Permit Requirement
- Cooling/Heating Center
- Tree Management
- Fire Safety Education for children and seniors
- Emergency Communication - CodeRed

9

THANK YOU!

PLEASE CONTACT ME IF YOU HAVE ANY ADDITIONAL COMMENTS OR QUESTIONS

Mimi Kaplan
Pioneer Valley Planning Commission
mkaplan@pvpc.org
413-285-1188

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Publicity for Public Meeting #2/Listening Session:

MEDIA RELEASE

FOR IMMEDIATE RELEASE

February 20, 2025

Contact: Kate Norton, publicaffairs@pvpc.org, 617-838-6083

Town of Wales to hold Public Engagement Event for

Open Space and Recreation Plan and Hazard Mitigation Plan Update

Wales - Wales residents, businesses, and surrounding community members are invited to learn about and provide input on the Town's Open Space and Recreation Plan (OSRP) and Hazard Mitigation Plan (HMP) on Saturday, March 8 from 10 am – 12 pm at the Wales Elementary School Cafeteria, 41 Main Street, Wales MA (registration begins at 9:30 am). Breakfast from Cedar Street Café will be served and childcare will be provided.

The Public Forum will include presentations of the draft HMP and the draft OSRP, and breakout groups to discuss the action plans. The Forum is an opportunity for Town residents to share their opinions and participate in the planning process. Municipal officials and PVPC staff will be available to answer questions about the project. All members of the public are welcome and encouraged to attend.

The OSRP and HMP are funded by the Municipal Vulnerability Preparedness (MVP) Program through the MA Office of Energy and Environmental Affairs (EEA). The purpose of the HMP is to assess Wales's vulnerabilities from natural hazards and climate change risks, and to identify mitigation actions to reduce the risks. The OSRP provides an inventory of the Town's environmental, recreational and historic resources, and includes an action plan to improve conservation and recreation in the Town over the next seven years.

The plans are being updated by the Town with assistance from the Pioneer Valley Planning Commission.

Upon completion, the plan will be submitted to EEA, the MA Division of Conservation Services (DCS), and the Massachusetts and Federal Emergency Management Agencies (MEMA and FEMA) for review and approval. A FEMA approved plan makes the community eligible to apply for federal mitigation grant funding, MVP certification makes the Town eligible to apply for MVP action grants from EEA, and approval from DCS allows the Town to apply for grants through that agency. The draft plans are available on the [Town of Wales homepage](#).

For more information or if you plan bring children, please contact PVPC's Angela Panaccione at apanaccione@pvpc.org or (413) 781-6045.

We got your input!
Now its time to provide feedback on
Wales Open Space & Recreation Plan
and Hazard Mitigation Plan

March 8, 2024 from 10 am – 12 pm
Wales Elementary School Cafeteria



We will present the draft plans for public review then have breakout groups discuss gaps we should address.

The draft plans are available at:



Breakfast will be served and activities for children will be provided!



Please RSVP to apanaccione@pvpc.org if you intend to bring your children so we can plan to have enough activities for them!!!

Wales MVP-HMP-OSRP Public Forum

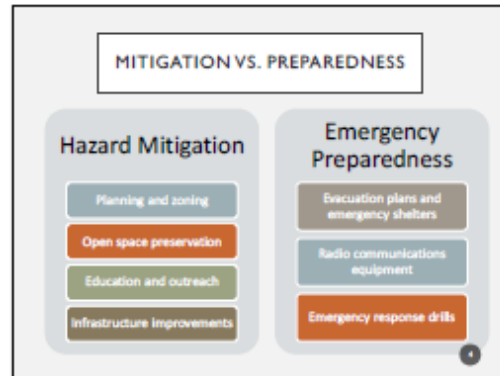
Wales Elementary School
March 8, 2025

Name and Position/Affiliation	Signature
Jennifer Borthwell / ConCom	Jennifer Borthwell
Carolyn Boehne / SelCom + Libray	Carolyn Boehne
CAROL Nissenbaum	Carol Nissenbaum
SANDY Selachotka	Sandy Selachotka
Robyn Chrabaszcz BOS	Robyn Chrabaszcz
Ann Chrabaszcz	Ann Chrabaszcz
Bill Luchon / Parks commision	Bill Luchon
JoAnn Luchon	JoAnn Luchon
Natalie Thomas	Natalie Thomas
Michael + Diana Mackiewicz	Michael + Diana Mackiewicz
Stacia Caplanon	Stacia Caplanon
Pamela Leduc / Executive Secretary	Pamela Leduc
Jessica Miller	Jessica Miller
Adam Brassard	Adam Brassard
Pete Higgins REC REP	Pete Higgins
Clifford Gregory	Clifford Gregory
Danella LaFlore PB / MPIC	Danella LaFlore
Ed Hood - Norcross	Ed Hood

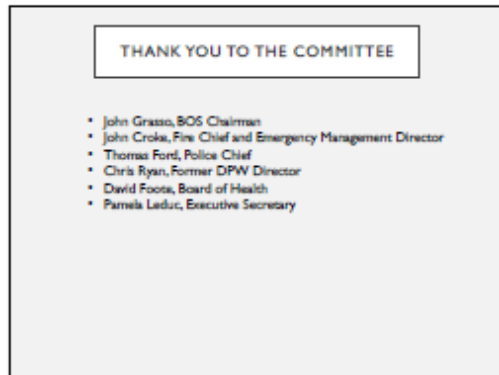
Public Meeting #2 Presentation:



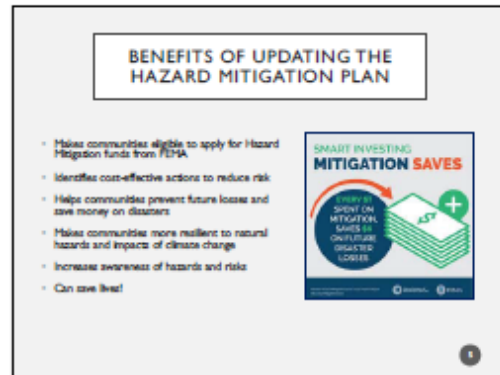
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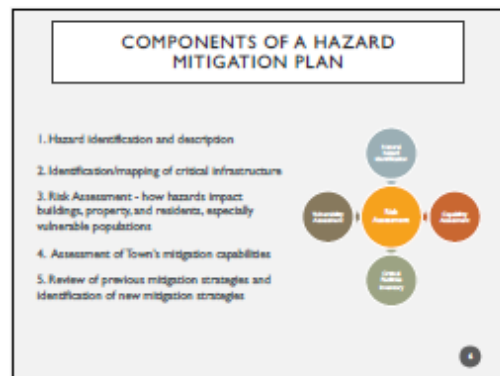
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HMP/MVP UPDATE STEPS

- 5 Committee Meetings (approx. 1 per month) and CRB workshop in April 2024
- First Public Meeting – June 17, 2024
- HWPC Completed Draft Plan
- Second Public Meeting
- Submit Plan to EDA, MDMA and FEMA, revise as needed
- FEMA Approval and MVP Designation
- BOS adopts plan
- Town eligible to apply for funds from FEMA and EDA (MVP Action Grants)



7

MOST URGENT IMPACTS OF CLIMATE CHANGE FOR THE CONNECTICUT RIVER VALLEY



10

NATURAL HAZARD RISK ANALYSIS

Type of Hazard	Location of Occurrence	Probability of Future Events	Impact	Level of Risk to the Rating
Flooding	Small	High	Lowest	2 - High risk
Severe Droughts / Ice Storms	Large	High	Limited	2 - High risk
Wildfire / Blizzards	Large	Low	Critical	2 - High risk
Severe Thunderstorms / Winds / Tornadoes	Small	Severe Thunderstorms and wind: Moderate Tornadoes: Low	Limited	Severe Thunderstorms and wind: 2 - High risk Tornadoes: 4 - Low risk
Heatwaves	Large	Low	Limited	3 - Moderate Risk
Earthquakes	Large	Very low	Critical	4 - Low risk
Dam failures	Medium	Very low	Critical	4 - Low risk
Drought	Large	Low	Minor	5 - Very Low risk
Extreme Temperatures	Large	Moderate	Minor	5 - Low risk

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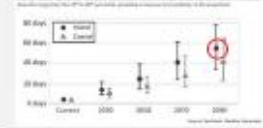
MITIGATION CAPABILITIES

- Floodplain District
- Regulations on telecommunication facility height, earth removal, underground utility lines, among others.
- Subdivision requirements for storm and surface drainage
- Four active NHP policies
- Burn permit regulations
- Town receives inspection reports and EA's for high and significant hazard dams
- Culvert assessments and replacements
- Generators at many critical facilities
- Tree maintenance by Tree Warden, DPW and Utility

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IMPACTS OF CLIMATE CHANGE

Impact is change in the number of days for year that HWPC temperature is above 60°F



2000 2050

NEAR TERM
This summer mean temperature could increase by 3.4°F from the historical period (1980-2015), increasing urban heat stress and reducing heat crop yields.

2000 2050
The 1 percent annual chance river flood could be three times more likely to occur, increasing commercial flow and before an ice flood risk.

2000 2050
There would be 45 heat days below freezing, reducing the chance of ice overwintering and reducing winter recreation opportunities.

2000 2050
Annual chance daily rain fall event (0.8 to 1 inch) could occur four times more frequently.

NA Climate Change Assessment, 2022

9

VULNERABILITIES TO ADDRESS

- No emergency shelter in Town.
- Additional funding needed for culvert replacements
- Emergency communications don't reach all residents – some are not signed up for CodeRed.
- Older and disabled residents are vulnerable to extreme heat as well as extreme cold when there is a power outage.
- Power outages from strong winds and snow/ice storms.
- Risk of wildfire from large forested areas in Birminghams Forest.

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HIGH PRIORITY MITIGATION STRATEGIES									
Priority Mitigation Strategies to Implement									
Action Item	Action Type	Description	Responsible Mitigator	Agency	Priority	Cost	Funding Source	Timeline	
Obtain generator for elementary school	Structure and infrastructure projects	Obtain funding for a generator for the elementary school so that it can be used as an emergency shelter and the water can be used as emergency water supply.	WVHHS	Emergency Management / School Committee	High	High	WVHHS / MSOE	2022	
Feasibility study for new fire station	Structure and infrastructure projects	Feasibility study for a new fire station. Public safety is a top priority for the town and a new fire station is needed to serve the growing population.	WVHHS	EMS, Public, Fire	High	High	WVHHS / MSOE / MSOE	2022-2025	
Asbestos Underwater Culture	Structure and infrastructure projects	Asbestos Underwater Culture. Asbestos is a known carcinogen and is found in many buildings. It is important to identify and remove asbestos from buildings to protect public health.	Flooding	WVHHS, Fire Department, Public Department	High	Medium	WVHHS / MSOE / MSOE	2022-2025	
Watershed Management	Infrastructure projects	Watershed Management. Watershed management is the process of managing the land and water resources in a watershed to protect public health and the environment.	Flooding	WVHHS	High	High	Federal Highway funds	2022-2027	

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PUBLIC COMMENT PERIOD

- What are your thoughts about natural hazard and climate change vulnerabilities in South Hadley?
- Suggestions for additional mitigation actions?
- Other questions or comments?

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MEDIUM PRIORITY MITIGATION STRATEGIES									
Priority Mitigation Strategies to Implement									
Action Item	Action Type	Description	Responsible Mitigator	Agency	Priority	Cost	Funding Source	Timeline	
Education and Outreach	Education and Outreach	Education and Outreach. Education and outreach is the process of providing information to the public about natural hazards and climate change vulnerabilities.	WVHHS	Fire Department, Public Department, EMS, Council on Aging	Medium	Low	WVHHS / MSOE / MSOE	2022 and ongoing	
Fire prevention	Fire prevention	Fire prevention. Fire prevention is the process of reducing the risk of fire by identifying and eliminating potential fire hazards.	WVHHS	Fire Department	Medium	Medium	WVHHS / MSOE / MSOE	2022 and ongoing	
Food Risk Education	Education and Outreach	Food Risk Education. Food risk education is the process of providing information to the public about food safety and food security.	Flooding	WVHHS, Fire Department	Medium	Low	WVHHS / MSOE / MSOE	2022 and ongoing	
Monitor at all schools	Fire prevention	Monitor at all schools. Monitor at all schools is the process of monitoring for fire hazards in all schools.	Flooding	WVHHS	Medium	High	WVHHS / MSOE / MSOE	2022 and ongoing	

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THANK YOU!

CONTACT INFORMATION:
MIMI KAPLAN
PIONEER VALLEY PLANNING COMMISSION
MKAPLAN@PVPC.ORG
413-285-1188

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MEDIUM PRIORITY MITIGATION STRATEGIES									
Priority Mitigation Strategies to Implement									
Action Item	Action Type	Description	Responsible Mitigator	Agency	Priority	Cost	Funding Source	Timeline	
Outreach to vulnerable populations about disaster	Education and Outreach	Outreach to vulnerable populations about disaster. Outreach to vulnerable populations about disaster is the process of providing information to vulnerable populations about natural hazards and climate change vulnerabilities.	WVHHS	Council on Aging	Medium	Low	Council on Aging / MSOE / MSOE	2022 and ongoing	
CEM Plan Update	Local planning and regulation	CEM Plan Update. CEM Plan Update is the process of updating the Comprehensive Emergency Management Plan.	WVHHS	Board of Selectmen, EMS, Fire Department, Public Department	Medium	Low	Emergency Management / MSOE / MSOE	Shaping-up emergency resources.	
Education about water conservation during drought	Education and Outreach	Education about water conservation during drought. Education about water conservation during drought is the process of providing information to the public about water conservation during drought.	Drought	Board of Selectmen, EMS	Medium	Low	Emergency Management / MSOE / MSOE	2022 and ongoing	
Seismic retrofits of town hall residents	Fire prevention	Seismic retrofits of town hall residents. Seismic retrofits of town hall residents is the process of retrofitting town hall residents for seismic safety.	WVHHS	Fire Department, EMS	Medium	Low	Fire Department / MSOE / MSOE	2022 and ongoing	

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Wales MVP Community Resilience Building Workshop

DATE: Saturday April 27, 2024
TIME: 8:30a.m. – 4:30p.m.
PLACE: Norcross Wildlife Sanctuary, 30 Peck Road, Wales MA

AGENDA

8:30 a.m. **Registration and orientation** (make name tags, review maps, eat, etc.)

9:00 a.m. – 10:30 a.m. **Introductions/Goal of MVP program for Commonwealth and Wales**

Presentation: MVP, Climate Resources, and Priority Hazards

10:30 a.m. – 10:40 a.m. **Break**

10:40 a.m. – 12:30 p.m. **Morning Small Team Workshop**

- Identify Community Vulnerabilities and Strengths
- Identify and Prioritize Community Actions

12:30 p.m. – 1:15 p.m. **Lunch**

1:15 p.m. – 2:45 p.m. **Afternoon Small Team Workshop**

- Identify and Prioritize Community Actions (continued)
- Identify Priority and Urgency
- Report Outs

2:45 p.m. – 2:55 p.m. **Break**

2:55 p.m. – 4:00 p.m. **Large Group Vote on Top Priorities**

Implementation Design and Final Report Outs

4:00 p.m. – 4:30 p.m. **Wrap-up and Next Steps — Public Listening Session**

Town of Wales MVP/HMP

Community Resilience Building Workshop
Saturday April 27, 2024 8:30am-4:30pm

Sign In Sheet

	Name	Email	Affiliation
1	Joe Trollo	hiltonhead118@charter.net	Lake ASS
2	Julie McLean	11777x56@yoloo.com	Lake George
3	Ann Chrabasz	chrabasz@gmail.com	COA
4	Robyn Chrabasz	robyn.chr@gmail.com	Historical Com / Master Plan
5	Leis Phunney	leisphunney@gmail.com	Town Clerk / Assessors
6	Bill Matchett	WSM1681@Aol.com	Selectman
7	Rebecca	TREASURE + TOWN OF WALES	Treasurer

	Name	Email	Affiliation
8	Darleen Gilley	DarleenGilley@icloud.com	Senior Center
9	Thomas Ford	TFord@TownofWales.net	Police Dept.
10	Chris Ryan	ROAD-com @ townofwales.net	Highway Dept.
11	Jen Bothwell	J3NBOTH@GMAIL.COM	Conservation Com
12	Jeff Hastings	jhastings126@gmail.com	Wales Fire Dept
13	Mike Volunzola	Selectman Volunzola@TownofWales.net	BOS
14	Pam Leduc	select@townofwales.net	Executive Secretary / Town Accountant
15	JoAnne Higgins	Wales Parks Com joanne.peters.kiggins@gmail.com	Wales Parks Commission
16	Peter R. Higgins	"	WALLES REC
17	Danelle Lafluer	danelle.lafluer@gmail.com	Planning Board M/L
18	Ed Page	edpage.police@townofwales.net	Police Dept

	Name	Email	Affiliation
19	Carolyn Boehme	Captain Delilah music @ yahoo.com	L. Hwy, Schl Cam
20	David Fote	dav.fote1@charters.net	Wales Board of Health
21			
22			
23			
24			
25			
26			
27			
28			

CRB Workshop Matrixes:

Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.org

H-M-L priority for action over the Short or Long term (and Ongoing)

V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Flooding

High Wind Events

Extreme Temps and Weather

Invasive Species

Priority

Time

Features

Location

Ownership

V or S

Environmental Assets

Community Actions

Forests, Trees, Open Space			S	Implement actions in OSRP; Work with property owners on strategies for protection and educate about MassWoods and Chapter land programs.	H	
Lake George			S/V	Control runoff from fertilizer use; Implement AIS management; Explore alternatives to drawdown	H	
Streams and Brooks			S/V	Protect from road salt and from devleopment. Identify areas to install cold water BMPs to promote infiltration of stormwater runoff; Explore stocking of trout.	H	
Shawville Pond			S/V	Conduct dam removal study.	M	
Wildlife			S/V	Educate public about protection; implement habitat protection actions from OSRP	H/M	
Dark Skies			S/V	Explore dark sky compliance, including bylaws. Consider downward-facing streetlights.	H	
Fire/Cart Roads and Trails			S/V	Maintain access and protect from unauthorized use. Improve maintainance and access for fire trucks.	H	
Union and Sichols Beaches			S/V	Address erosion at Union Beach and management of wild geese. Enforce beach regulations.	M	
Needham Park			S/V	Conduct a public water supply feasibility study, including Zones I and II	H	
Farms/Agriculture			S/V	Conduct outreach to encourage farmers to consider APR. Explore starting an Ag Commission and CSA for food pantry.	H	
Beavers			S/V	Conduct a beaver assessment with field studies and recommended management approaches. Work with private landowners on beaver management strategies.	L	
Invasive Plants and Insects, including AIS			V	Educate about invasive species, partner with Norcross; Develop townwide inv. Species plan; Explore 604b grant for watershed plan to combat invasives in Lake George.	H	
Brimfield State Forest			S/V	Work with DCR and State Forest to improve maintenance and access of fire roads.	H	

Community Resilience Building Risk Matrix

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H-M-L priority for action over the Short or Long term (and Ongoing)

V = Vulnerability S = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Flooding

High Wind Events

Extreme Temps/Weather

Invasive Species

Priority

Time

Features

Location

Ownership

V or S

Infrastructure Assets

Community Actions

Elementary School Building			S/V	Planning and assessment for emergency shelter and emergency services staging; Investigate well and water supply	H	
Senior Center/Town Buildings			S/V	Has generator and public water supply, houses food pantry. Feasibility study on use, lifespan, condition of town buildings.	M	
Public Water Supplies			S/V	Assessment of all public water supplies. Build capacity - add Needham Park, campground; map hazards in zones I and II	H	
Tennessee Gas Pipeline			S/V	Plan for road crossing integrity in event of any incidents.	L	
Causeway			V	Plan for alternate road crossings and integrity.	L	
Highway and Fire Department			S/V	Develop action plan for alternate location due to possible inaccessibility from flooding. Explore new PSC to be used as shelter, EOC, with public water supply.	H	
Dams - Route 19 and Library and Lake George			S/V	Assess for public safety and environmental impact. Study removal of Shawville Dam and river restoration.	M	
Old Town Hall			S/V	Evaluate as a resiliency hub and PSC. Protect historic resources.	H	
Sewer/Septic			S/V	Explore installation of sewer around lake George. Encourage BOH to provide education about septic.	H	
Culverts			V	Map and assess culverts, create prioritization program and implement repairs and replacements.	H	
Bridges			V	Conduct structural assessments	M	
Transfer Station			S/V	Remove invasives; improve the facilities; add a take it or leave it shed.	H	
Roads			S/V	Work with state to improve roads and develop local feasible solutions. Implement pavement management plan and complete streets. Encourage walking and biking.	H	
Power lines, cable internet			V	Develop a tree management plan. Work with Ngrid to focus on areas that experience frequent outages. Underground power lines for new developments.	M	
Cell Towers			S/V	Find town sites for additional towers	M	
Stormwater			V	Conduct a townwide GI study. Assess wetland flood storage. Develop a stormwater bylaw. Invasives SOP for Lake George.	H	
Campground			S/V	Investigate use of campground for showers for emergency shelter (school).	Remove?	

Community Resilience Building Risk Matrix



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				Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)				Priority	Time
				Flooding	High Wind Events	Extreme Temps and Weather	Invasive Species	H - M - L	Short Long Ongoing
Features	Location	Ownership	V or S						
Societal Assets				Community Actions					
Senior and Disabled Populations			V/S	Develop a database for disabled and home-bound residents; Explore dementia-friendly communities, Knox box program; Support aging in place;				H	
Senior Center			S/V	Promote Senior Center programs more; Explore multi-generational programming, becoming a community center; improve maintenance of building				H	
Senior Housing			S/V	Expand Senior Housing- more needed. Utilize CDBGs for aging in place improvements. Provide information on MassSave to senior housing residents for energy efficiency improvements.				H	
Food Pantry	Senior Center	Tri-town CBO	S	Increase support, outreach for donations. Coordinate with tri-town farmers for donations, explore a CSA.				L	
Wales Baptist Church (Farmers Market, Community Garden)			S	Increase outreach about community garden to increase use. Coordinate with church to expand the garden if membership expands.				L	
Elementary School and Old Home Day			S	Consider more use of school for community events in evenings. Increase volunteer capacity for rec. committees and activities.				H	
Municipal Staff and Resources (Limited)			V/S	Conduct a tri-town staffing study. Explore regionalization and shared positions.				L	
Veteran's District			S	Expand the district by inviting other towns to join.				L	
Cable Access and Web-based informational platforms			S	Maintain level of services. Seek funding for better facilities/equipment to increase use. Explore collaboration with Tantasqua.				L	
Telecom Connectivity			V	Identify ways to increase broadband and cell coverage/connectivity, explore municipal supply.				M	
Code Red			S	Conduct outreach to increase enrollment.				M	
Cemeteries			S/V	Seek funding for beautification. Apply for 48 State Tour for remediating stones. Provide education and outreach about green burials.				L	
Transportation			V	Work with WRTA to increase services. Explore ride sharing programs.				L	
Evacuation Routes			V	Conduct flood damage study specifically for evacuation routes.				M	
Businesses			S/V	Explore strategies to support local businesses.				M	
Library			S	Improve maintenance; Expand programming.				H	
Vector Borne Diseases			V	Explore more options for screening and testing; Increase local options for control; Increase education and outreach.				M	

