Medford HMP

CITY OF MEDFORD HAZARD MITIGATION PLAN
2025 UPDATE

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2025 Hazard Mitigation Plan Update - Executive Summary

Overview

What is a Hazard Mitigation Plan and why does Medford need one?

The Medford Hazard Mitigation Plan (HMP) is a five-year roadmap for reducing the impacts of hazards like floods, storms, and extreme weather.

It highlights projects and actions the City can take ahead of time to reduce risks, protect people and property, and limit future damage.

Core Considerations:

- Ensuring all residents have access to communications about preparing and responding to all hazards, regardless of English literacy.
- Protecting and strengthening our infrastructures and natural spaces so that our community is better prepared for natural and manmade hazards.
- Complying with all FEMA requirements

1. **Federal Requirement**

   Required by the Federal Disaster Mitigation Act of 2000

2. **Community Protection**

   Helps minimize loss and damage from natural disasters

3. **FEMA Funding**

   Required to remain eligible for FEMA grants and recovery funding

Map by Linnean Solutions, Medford CAAP, 2022

2025 Hazard Mitigation Plan Update - Executive Summary

Community Voices

Community engagement as part of HMP update

105 Surveys

5 Conversation Groups

Residents emphasized the need for:

1. **Financial support including home improvements to prepare for hazards**
2. **Reliable emergency communication, especially for people with limited English literacy**
3. **Stronger neighborhood support systems for seniors, caregivers, and people with chronic health conditions**
4. **Better coordination between the city and trusted community-based organizations**

Integrating Community voices in the HMP update

Community voices directly influenced the HMP update:

- Lived experiences from residents informed our understanding of hazard risks.
- Helped set the goals and actions Medford will take to reduce these hazard risks.

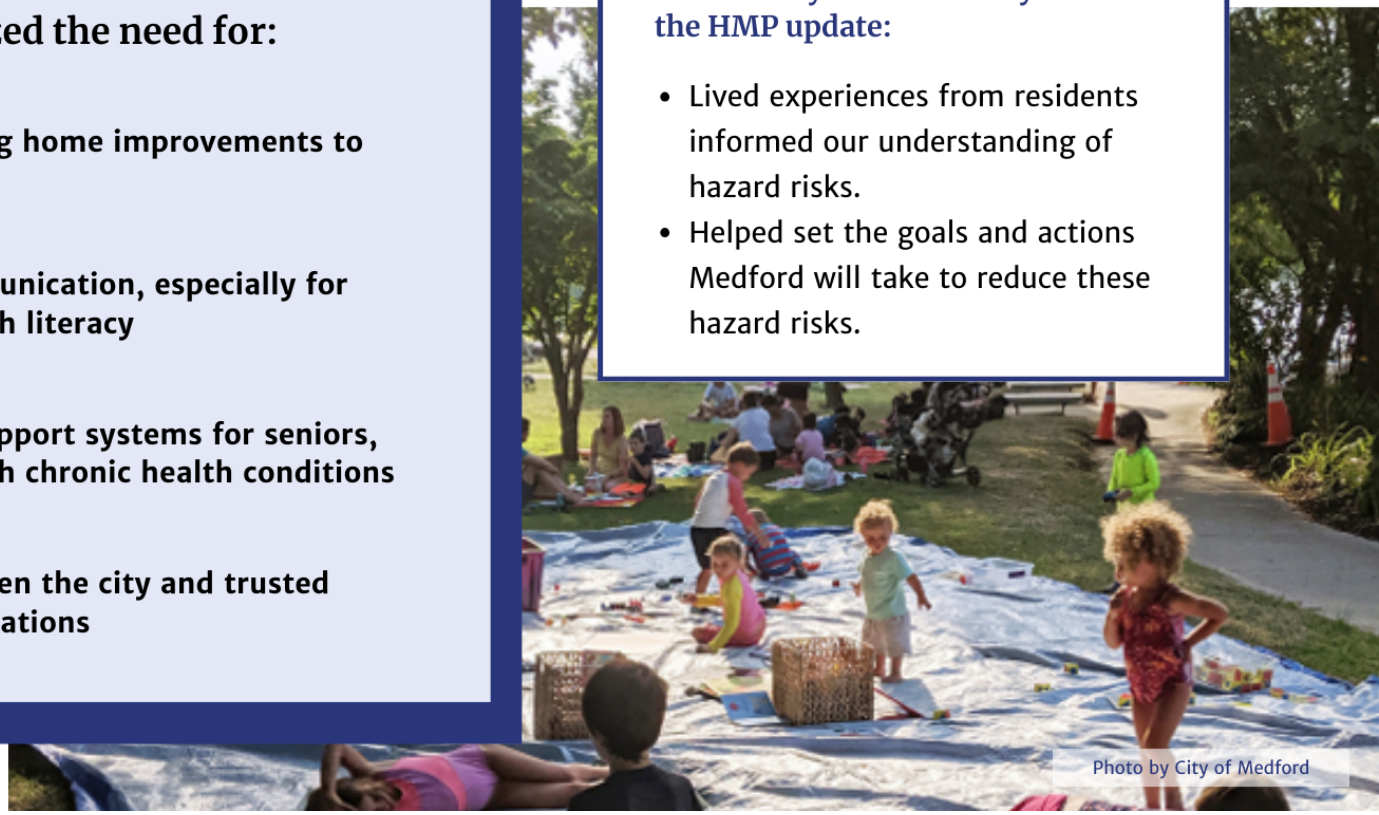


Photo by City of Medford

Hazard Mitigation Plan Update - Executive Summary
Hazard Identification

Flooding Events

Highest Risk

Flooding happens when water covers normally dry land.It can be caused by heavy rain, rising water levels, or dam failure.

Photo by City of Medford

Flooding is among the most frequent hazard in Medford. Each year, residents are likely to experience mild to moderate impacts like power and roadway disruptions.

Since 2004, Medford has had **13 floods**, causing nearly $14 million in damage.

Flooding risk will likely increase as climate change causes heavier rainfall and rising water levels.

Storm Events

Moderate to High Risk

A **storm** is severe weather - such as wind, rain, snow, or ice - that can harm people, damage buildings, and disrupt services like power or transportation.

The most common storms are **winter storms**, which can make travel hazardous on icy roads, down trees, and disrupt power.

When storms **disrupt power**, heatwaves and cold fronts become even more dangerous.

Medford faces multiple types of less common yet devastating **storms**:

- Nor'easters
- Hurricanes and tropical storms
- Tornadoes

Extreme Temperature

Lower Risk

Extreme temperature refers to an area experiencing temperatures much hotter or colder than normal.

Medford experiences summer **heatwaves** and winter **cold fronts**, both of which can threaten health and safety.

Extreme heat and **cold** can threaten health, especially for older adults, young children, unhoused people, and those without proper heating or cooling.

Extreme temperatures are expected to become more frequent as climate change continues.

Geological Hazards

Lower Risk

Geological hazards include **brush fires**, **droughts**, **earthquakes**, and **landslides**.

Although uncommon in Medford, they can still cut power, disrupt transportation, and harm the environment and wildlife.

Medford's most common geological hazard is **drought**, which can strain water supplies, harm the environment, and raise the risk of brush fires.

Photo by Troy Sankey

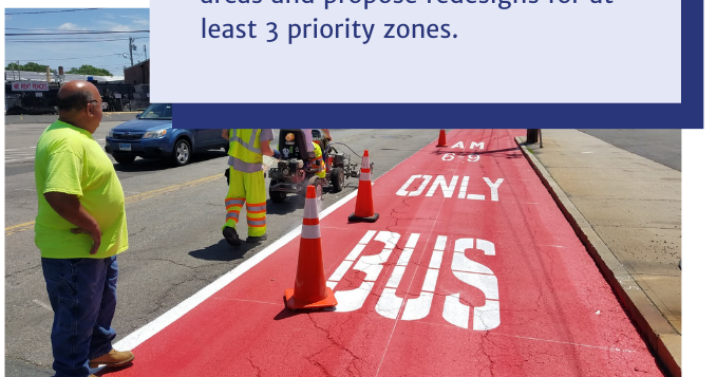
Mitigation Goals and Actions

Strengthen and Protect Infrastructure

Protect public structures and infrastructure while boosting the **climate resilience** of city buildings and grounds.

Example Activities

- Apply for funding for shovel-ready drainage improvements at Main Street and Mystic Avenue.
- Complete Meetinghouse Brook drainage improvements.
- Coordinate with utility providers for tree trimming to reduce power outage risks.
- Collaborate with MA DOT to conduct a traffic safety audit of high-incident areas and propose redesigns for at least 3 priority zones.



Improve Communication Systems

Reduce hazard damage by **improving communication systems**, including support for people with different English literacy levels.

Example Activities

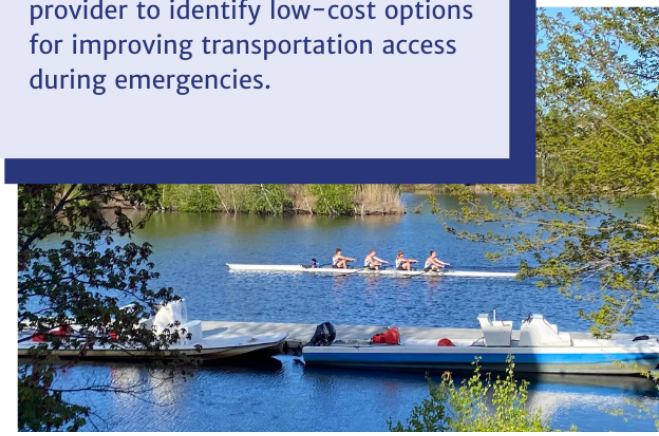
- Create and distribute a multilingual "Emergency Preparedness 101" information sheet with key contacts.
- Translate all public alert system messages into at least 5 languages.
- Promote SeeClickFix platform, with attention to seniors, people with disabilities, young families, and immigrant communities through a multilingual campaign.
- Host at least two virtual emergency preparedness or hazard mitigation workshops annually through 2029

Increase Public Service Capacity

Increase **public service capacity** and support the growth of equitable, hazard-resilient neighborhoods.

Example Activities

- Replace at least 50% of known lead service lines by 2029, prioritizing vulnerable populations for early replacement.
- Pilot an opt-in registration system for facilities serving residents with access or functional needs.
- Hold an internal meeting between city staff and Medford's primary transit provider to identify low-cost options for improving transportation access during emergencies.



Photos by City of Medford

I. Introduction

What is a Hazard Mitigation Plan?

A Hazard Mitigation Plan (HMP) is a strategy that helps communities reduce or prevent the risks and harmful effects of natural disasters, such as floods, hurricanes, and earthquakes.

The planning process includes creating long-term strategies, policies, and programs that aim to:

- Minimize loss of life and injuries
- Protect property
- Reduce other consequences of natural hazards

In emergency management, hazard mitigation focuses on taking protective actions before a disaster happens. Preparedness, on the other hand, is about being ready to respond effectively when a disaster occurs.

FEMA Planning Requirements

The Federal Disaster Mitigation Act, passed in 2000, requires all cities and towns to have a Hazard Mitigation Plan (HMP) to remain eligible for FEMA hazard mitigation grants. Starting November 1, 2004, municipalities without a plan became ineligible for these grants. Communities must update their HMPs every five years. This requirement applies only to hazard mitigation funding and does not affect disaster relief funding after emergencies.

Federal hazard mitigation planning and grant programs are administered by the Federal Emergency Management Agency (FEMA) in collaboration with the states. In Massachusetts, the Massachusetts Emergency Management Agency (MEMA) and the Department of Conservation and Recreation (DCR) manage the program. Massachusetts has encouraged regional planning agencies to prepare plans for groups of municipalities.

The Metropolitan Area Planning Council (MAPC) received a Pre-Disaster Mitigation (PDM) grant from FEMA to help the City of Medford and seven nearby municipalities in the Inner Core region revise their local Hazard Mitigation Plans (HMPs). These plans were first adopted in 2008 as part of the Metro-Boston Multi-Hazard Mitigation Plan. Revising the plans ensures that each municipality meets federal requirements and stays eligible for FEMA funding.

To address hazards that affect multiple communities, participating municipalities had the chance to meet with neighboring communities during plan development. A public, regional meeting of the Metro-Boston Multi-Hazard Community Planning Team was held on April 13, 2012. The meeting:

- Reintroduced communities to the hazard mitigation planning process
- Gave participants a chance to discuss regional challenges, such as flooding and power outages

Previous Federal Disaster Declarations

Based on the Stafford Act, there are two types of disaster declarations that authorize the President to provide federal disaster assistance: emergency declarations and major disaster declarations. Major disasters can be declared by the President for any natural event that is determined to have caused "damage of such severity that it is beyond the combined capabilities of State and local governments to respond".[1] Major disaster declarations provide a wide range of federal assistance for individuals and for public infrastructure, and are eligible for FEMA's Hazard Mitigation Assistance, which provides funding for long-term solutions that reduce the impact of disasters. In contrast, when emergency declarations occur, federal assistance is given to supplement state or local efforts in providing emergency services and disaster relief. The scope of emergency declarations is limited in comparison to major disaster declarations; total amount of financial assistance may not typically exceed $5 million, and the Hazard Mitigation Grant Program is not available for emergency declarations.[2]

In the last 20 years (2004-early 2025), 16 federal Emergency Declarations and 18 Major Disaster Declarations occurred in Massachusetts. Of the Major Disaster Declarations, 4 events received Hazard Mitigation Assistance from FEMA via the Hazard Mitigation Grant Program (HMGP). Additionally, of the 18 Major Disaster events, 12 impacted Middlesex County. The total FEMA Hazard Mitigation Grant Program value that Massachusetts counties received was $10,477,585. Across the 18 Major Disaster Declarations, the total FEMA individual and household assistance value was $170,492,139, and the FEMA public assistance grants value for both emergency and permanent work amounted to **$3,489,263,225**.

The following table shows every FEMA Federal Major Disaster Declarations in Massachusetts in the last 20 years. Appendix A additionally shows a breakdown of assistance values for each disaster.

1 https://www.doi.gov/sites/doi.gov/files/uploads/Stafford_Act_pdf.pdf

2 https://www.fema.gov/grants/mitigation/learn/hazard-mitigation

TABLE 1.1: FEMA FEDERAL MAJOR DISASTER DECLARATIONS IN MASSACHUSETTS, 2004-2024

DISASTER NAME (FEMA INCIDENT CODE)	INCIDENT PERIOD	DISASTER DECLARATION DATE	TYPE OF FEDERAL ASSISTANCE PROVIDED (FEMA)	DECLARED COUNTIES
Massachusetts Severe Storms and Flooding (DR-4780-MA)	Sep 11, 2023 - Sep 13, 2023	5/15/2024	Individual Assistance	Worcester, Bristol
Massachusetts Severe Winter Storm and Snowstorm (DR-4651-MA)	Jan 28, 2022 - Jan 29, 2022	4/18/2022	Public Assistance (Emergency and Permanent Work), Hazard Mitigation Assistance	Suffolk, Norfolk, Plymouth, Bristol
Massachusetts Covid-19 Pandemic (DR-4496-MA)*	Jan 20, 2020 - May 11, 2023	3/27/2020	Individual Assistance, Public Assistance (Emergency Work), Hazard Mitigation Assistance	Statewide
Massachusetts Severe Winter Storm and Snowstorm (DR-4379-MA)*	March 13, 2018 - March 14, 2018	7/19/2018	Public Assistance (Emergency and Permanent Work), Hazard Mitigation Assistance	Essex, Middlesex, Worcester, Suffolk, Norfolk
Massachusetts Severe Winter Storm and Flooding (DR-4372-MA)*	March 2, 2018 - March 3, 2018	6/25/2018	Public Assistance (Emergency and Permanent Work), Hazard Mitigation Assistance	Essex, Middlesex, Worcester, Suffolk, Norfolk, Bristol, Plymouth, Barnstable, Dukes, Nantucket
Massachusetts Severe Winter Storm, Snowstorm, and Flooding (DR-4214-MA)*	January 26, 2015 - January 28, 2015	4/13/2015	Public Assistance (Emergency Work)	Worcester, Essex, Middlesex, Suffolk, Norfolk, Plymouth, Bristol, Barnstable, Dukes, Nantucket

Massachusetts Severe Winter Storm, Snowstorm, and Flooding (DR-4110-MA)*	February 8, 2013 - February 9, 2013	4/19/2013	Public Assistance (Emergency and Permanent Work)	Statewide
Massachusetts Hurricane Sandy (DR-4097-MA)	October 27, 2012 - November 8, 2012	12/19/2012	Public Assistance (Emergency and Permanent Work)	Suffolk, Plymouth, Bristol, Barnstable, Dukes, Nantucket
Massachusetts Severe Storm and Snowstorm (DR-4051-MA)*	October 29, 2011 - October 30, 2011	1/6/2012	Public Assistance (Emergency and Permanent Work)	Berkshire, Franklin, Hampshire, Hampden, Worcester, Middlesex
Massachusetts Tropical Storm Irene (DR-4028-MA)	Aug 27, 2011 - Aug 29, 2011	9/3/2011	Individual Assistance, Public Assistance (Emergency Work)	Berkshire, Franklin, Hampshire, Hampden, Suffolk, Norfolk, Bristol, Plymouth, Barnstable, Dukes
Massachusetts Severe Storms and Tornadoes (DR-1994-MA)	June 1, 2011	6/15/2011	Individual Assistance, Public Assistance (Emergency and Permanent Work)	Hampden, Worcester
Massachusetts Severe Winter Storm and Snowstorm (DR-1959-MA)*	January 11, 2011 - January 12, 2011	3/7/2011	Public Assistance (Emergency Work)	Berkshire, Hampshire, Hampden, Essex, Middlesex, Suffolk, Norfolk
Massachusetts Severe Storm and Flooding (DR-1895-MA)*	March 12, 2010 - April 26, 2010	3/29/2010	Individual Assistance, Public Assistance (Emergency and Permanent Work)	Worcester, Essex, Middlesex, Suffolk, Norfolk, Plymouth, Bristol
Massachusetts Severe Winter Storm and Flooding (DR-1813-MA)*	December 11, 2008 - December 18, 2008	1/5/2009	Public Assistance (Emergency and Permanent Work)	Berkshire, Essex, Franklin, Hampden, Hampshire, Middlesex, Worcester

Massachusetts Severe Storms and Inland and Coastal Flooding (DR-1701-MA)	April 15, 2007 - April 25, 2007	5/16/2007	Public Assistance (Emergency and Permanent Work)	Berkshire, Franklin, Hampshire, Hampden, Essex, Plymouth, Barnstable, Dukes
Massachusetts Severe Storms and Flooding (DR-1642-MA)*	May 12, 2006 - May 23, 2006	5/25/2006	Individual Assistance, Public Assistance (Emergency and Permanent Work)	Essex, Middlesex, Suffolk
Massachusetts Severe Storms and Flooding (DR-1614-MA)*	October 7, 2005 - October 16, 2005	11/10/2005	Individual Assistance, Public Assistance (Emergency and Permanent Work)	Berkshire, Bristol, Franklin, Hampden, Hampshire, Middlesex, Norfolk, Plymouth, Worcester
Massachusetts Flooding (DR-1512-MA)*	April 1, 2004 - April 30, 2004	4/21/2004	Individual Assistance	Worcester, Essex, Middlesex, Suffolk, Norfolk

* Incidents declared in Middlesex County

Other FEMA–Funded Mitigation Projects in Medford

In the past 20 years, Medford has secured funding from FEMA for three other mitigation projects. These projects received an approximate total of $1.26M, with FEMA covering approximately $976,099 and the city contributing approximately $293,804. A summary of these projects is provided below in Table 1.2.

TABLE 1.2: SUMMARY OF FEMA MITIGATION PROJECTS IN MEDFORD (2004–2024)

YEAR	PROJECT TITLE (FUNDING SOURCE)	SCOPE OF WORK	TOTAL COST	FEDERAL FUNDING	LOCAL FUNDING
2012	Wright's Pond Dam Improvements	Construct secondary outlet and emergency riprap lined spillway; modify existing outlet; install culvert and pipe	$718,350	$535,850	$182,500
2018	Snowstorm Assistance	Implement emergency protective measures, clear snow and ice from public streets and critical infrastructure, including mobilization of city equipment, personnel, and contractors.	$397,256.36	$299,977.96	$97,278.40
2020	Assistance to Firefighters Grants	This grant was to purchase new extrication equipment for our ladder trucks. The equipment at the time was 21 years old. The equipment that was purchased and are still in use today are two battery hydraulic cutters, two battery hydraulic cutters, two battery hydraulic rams, two 4 bank battery chargers, 2 110 volt power supply adapters.	$77,500	$70,454.55	$7,045.45
2022	Assistance to Firefighters Grants	To purchase and new SCBA compressor unit (Bauer Incus 4s). This new compressor replaced our existing unit from 1999.	$76,800	$69,818.18	$6,981.82

Community Profile

The City of Medford is a suburban area situated along the Mystic River, roughly 5 miles north and west of Boston, Massachusetts. Covering an area of 8.29 square miles, Medford is bordered by Winchester and Stoneham to the north, Malden and Everett to the east, Somerville to the south, and Arlington to the west. Interstate 93 goes through the city from north to south, while State Routes 28 and 38 also run in the same direction. State Routes 16 and 60 extend from east to west. The southeastern part of the city features a stop on the MBTA Wellington Orange Subway line, and the northwest section includes the West Medford stop on the MBTA Lowell Commuter Rail Line. In December of 2022, the Medford/Tufts station opened as part of the Green Line Extension (GLX), an initiative that added two northern branches to the Green Subway line.[3]

Medford was founded in 1630 and incorporated as a city in 1892. The city's colonial success was built on its role as a tidewater seaport, with industries such as shipbuilding and distilling. Shipbuilding, in particular, utilized lumber from the Fells, while other early industries included brickmaking and quarrying Medford granite. Additionally, Tufts University was founded in 1852, contributing to the city's industrial growth. Driven by this growth, Medford experienced rapid expansion, doubling in population every 20 years between 1870 and 1910. Following World War I, suburban neighborhoods began to develop quickly, contributing to the city's dense growth.

The total population of contemporary Medford is 59,659 people, and the median age in Medford city is 34.7 (which is 5.6 years younger than the median age in the state).[4] Nearly 20% of the population is aged 60 years or older.[5] In the city, there are 25,770 total housing units, 58% of which are in buildings that were built prior to 1939.[6] [7]

3 https://www.mbta.com/projects/green-line-extension-glx

4 https://data.census.gov/profile/Medford_city,_Massachusetts?g=160XX00US2539835

5 https://mahealthyagingcollaborative.org/wp-content/themes/mhac/pdf/community_profiles/MA_Towncode176_Medford.pdf

6 https://data.census.gov/profile/Medford_city,_Massachusetts?g=160XX00US2539835

7 http://www.housing.ma/medford/report#:~:text=In%20Medford%2C%2058%25%20of%20housing,%2C%20compared%20to%2058%25%20statewide.

Considerations for Social Equity, Ecology, and Climate

Social Equity Considerations

Considerations for social equity in Medford must address the intersection of race/ethnicity, nationality, and language, all of which influence individuals' experiences and access to resources. Although the majority (71.1%) of the Medford community identifies as non-Hispanic White, a notable portion (21.9%) of residents were born outside of the U.S.[8] In the public school system, 26.8% of students do not speak English as a first language and 10.4% have limited English proficiency.

Additionally, it is important to consider the experiences of individuals with disabilities, who face unique barriers to accessing services and opportunities. In Massachusetts, nearly 12% of residents live with a disability, and a significant portion of these individuals experience poverty and exclusion from essential services.[9]

The historical legacies of colonialism, white supremacy, and discrimination, which continue to shape systemic inequities across the globe, are mirrored in the U.S. and Massachusetts, where marginalized communities often face barriers in access to health, education, and employment, further compounding their vulnerability to social and environmental hazards.

8 https://www.tuftsmedicine.org/sites/default/files/2023-12/2022-CHNA-report-2-7-2023.pdf

9 https://www.mass.gov/doc/massachusetts-and-us-disability-facts-statistics-2020/download#:~:text=In%202019%2C%20there%20were%206%2C821%2C140,a%20prevalence%20rate%20of%2011.5%25.

Considerations for Social Equity, Ecology, and Climate

Ecology Considerations

Medford's geography and history intertwine to shape its current environmental landscape. Medford is intersected by two rivers: the Mystic River, flowing from the Mystic Lakes along the southern part of the city, and the Malden River, which forms its eastern boundary. Medford lies entirely within the Mystic River Watershed, a sub-watershed of the Boston Harbor Watershed, and is situated within the Boston Basin ecoregion. At the first classification level, Medford is situated in the Eastern Temperate Forests; at the second level, it falls within the Mississippi Alluvial and Southeast Coastal Plains; and at the third level, it is part of a northeastern coastal zone.[10] The Boston Basin is a geologically unique area that includes many of the municipalities of "Greater Boston", surrounded by the Northern Boundary fault line.[11] This basin, formed by sedimentary rocks such as argillite and conglomerate, has been more eroded than the surrounding metamorphic bedrock. Its landscape features flat plains at the center, surrounded by rolling hills, and opens to the Atlantic Ocean with bays, islands, and estuaries along the coast. Despite widespread urban development, remnants of oak-white pine forests, shrubland, and salt marshes can still be found along the coastline.[12]

Urbanization in the Boston Basin has led to the urban heat island effect, which keeps the region consistently warm. This results in a frost-free growing season of 210-220 days and greater sunshine compared to other parts of the area.[13] The region's biome is classified as a temperate deciduous forest, with broadleaf trees like oak, maple, beech, hickory, and chestnut. The shaded forest floor is home to plants such as mountain laurel, azaleas, and mosses, although industrialization in the Boston Harbor region has disrupted these natural species. Today, much of the Boston Basin's original forest has been replaced by urban development, though remnants of oak-hickory and white pine-oak forests persist. The coastal areas continue to support maritime shrubland, with species like huckleberry, northern bayberry, and eastern redcedar. Coastal dunes and salt marshes, though increasingly impacted by urbanization, still feature plant species like American beachgrass and seaside goldenrod. However, the Boston Harbor islands are predominantly dominated by introduced species, a result of urban development and the spread of landscaping plants. Forest cover remains most abundant in the lower-density suburban areas on the periphery of the region.[14]

10 https://www.epa.gov/eco-research/ecoregions-north-america

11 https://www.nps.gov/media/photo/view.htm?id=6CC0DC3A-3668-4963-B09C-F9D4751F8E02

12 https://grownativemass.org/Our-Commonwealth/ecoregions

13 https://bplant.org/region/803#:~:text=The%20topography%20is%20flatter%20towards,rolling%20hills%20around%20the%20periphery.

14 https://bplant.org/region/803#:~:text=The%20topography%20is%20flatter%20towards,rolling%20hills%20around%20the%20periphery.

ECOLOGY CONSIDERATIONS CONTINUED

The legacy of colonization is evident in the ongoing environmental challenges facing the Boston Basin. Researchers from Imperial College London found that soil erosion in the region peaked between the late 1800s and early 1900s due to colonial practices, accelerating what would have naturally taken millennia. Intensive agriculture and deforestation caused soil erosion, which not only decreased agricultural productivity but also led to ecological collapse and, in some cases, desertification. The sedimentation of waterways further harmed habitats and caused damage to roads and buildings through mudslides. These environmental consequences, rooted in colonial practices, continue to affect the landscape of Medford and its surrounding areas today.[15]

Although Medford is less susceptible to coastal flooding compared to other parts of Greater Boston, its proximity to the Mystic River makes it particularly vulnerable to inland flooding. The increased precipitation in the Greater Boston area, as noted by the National Oceanic and Atmospheric Administration (NOAA), has exacerbated flood risks. Significant flooding events, such as those in 2005 and 2010, have caused widespread damage. While the city does not face direct risk from the levees in South Boston, it remains vulnerable to stormwater runoff and the challenges of managing the increasing flow of water, especially in areas like South Medford and Wellington. To address these concerns, Medford has invested in brownfield remediation, with ongoing projects in West Medford Parking Lot and Riverbend Park, as part of its broader strategy to reduce environmental hazards.[16]

In line with its commitment to ecological and environmental resilience, Medford has made significant strides in enhancing green spaces and sustainability. Data from the Trust for Public Land shows that 100% of Medford residents live within a ten-minute walk of a park.[17] The city also maintains over 118 acres of land through the Medford Parks Division, which includes the Middlesex Fells Reservation. Medford has also held Tree City USA status for 24 consecutive years, meeting essential urban forestry requirements such as tree care, public hearings for tree removal, and Arbor Day celebrations. In 2009, Medford invested in the Northwind 100 Wind Turbine, which provides 10% of the McGlynn School's energy needs while reducing greenhouse gas emissions by 133 tons annually. This investment highlights Medford's commitment to reducing its carbon footprint and promoting renewable energy.[18]

15 https://www.imperial.ac.uk/news/163074/true-impact-settlers-erosion-rates-north/#:~:text=The%20researchers%20compared%20their%20results,to%20occur%20under%20natural%20rates.

16 https://medfordenergy.org/gogreen/go-green-residential/stormwater-management/

17 https://medfordenergy.org/gogreen/go-green-residential/park-developments-3/

18 https://medfordenergy.org/gogreen/medford-wind-turbine/

ECOLOGY CONSIDERATIONS CONTINUED

Lastly, Medford's current Municipal Vulnerability Preparedness (MVP) Grant and Medford Connects Initiative, plans to build physical resilience hubs which will serve as green infrastructure, with several projected ecological and environmental co-benefits:

Promotes Biodiversity: Resilience Hubs stand to benefit from a biodiverse public outdoor space, which would create a natural gathering space for educational programs, community gatherings, cooling, and other opportunities.

Restores/remediates project site: With stormwater management already a concern in the Medford area, green stormwater management can be incorporated into resilient infrastructure design of Resilience Hubs.

Improves Water Quality and/or Increases Groundwater Recharge: Resilience Hubs can incorporate rain gardens and bioswales in the surrounding landscape to capture stormwater and improve water quality.

Improves Air Quality: To improve air quality and mitigate urban heat islands, Resilience Hubs can integrate tree canopy and green roofs.

Climate Mitigation (carbon sequestration, site-scale improvements for cooling, reduced energy use): With resilient power systems, Resilience Hubs can reduce energy use and utility costs by offsetting both the amount of electricity purchased from the grid and by leveraging rebates and incentives, which translate into community energy costs savings.

Public Health Promotion (reducing risks to health and well-being posed by climate hazards, recreational or other active lifestyle opportunity, quality of life improvements): Resilience Hubs serve as enhanced community centers to residents with emphasis on supporting community adaptive capacity to climate change. As such, Resilience Hubs can equitably provide various resilient programming, which offers additional recreational opportunities and quality of life improvements

Other: By supporting community adaptive capacity to climate change, Resilience Hubs also serve to educate and inform residents on ways to prepare for climate events and encourage residents to utilize nature-based solutions to protect their surrounding environment.

Considerations for Social Equity, Ecology, and Climate

Climate Considerations

Medford has been proactive in addressing climate change and its impacts. In 2001, the city became the first in Massachusetts to publish a Climate Action Plan (CAP), setting the stage for future climate resilience efforts. This was followed by a 2021 retrospective of the original CAP and the release of a new Climate Action and Adaptation Plan (CAAP) in 2022. The CAAP focused on key areas such as building and energy, ecosystems and the natural environment, public health, and transportation, integrating climate change considerations by tackling greenhouse gas emissions and resilience strategies.

Recognizing the critical need for climate adaptation, Medford's approach has expanded to include social resilience efforts through initiatives like Medford Connects, which launched in 2020. This program examines various social resilience themes, including the vulnerability of families, youth, older residents, immigrants, and individuals with limited language access. It also addresses issues of financial and food security, reflecting the city's commitment to creating a more inclusive response to climate challenges.

The broader climate trends across the northeastern United States, including Medford, have shown rising average temperatures over recent decades, mirroring global warming patterns. These changes have brought about significant droughts in 2016 and 2020, which put additional strain on water resources.[19] More recently, in 2024, the majority of Massachusetts — including the Medford area — was placed under Level 3 Critical Drought conditions, prompting local water conservation measures and raising concerns about wildfire risk. While Medford's urban and suburban setting is not typically prone to wildfires, the risk in the city remains concentrated around residential and commercial buildings.

Inland flooding, particularly from the Mystic River, poses Medford's largest climate hazard. Precipitation levels in the Greater Boston area have steadily increased over the past two decades, as reported by the National Oceanic and Atmospheric Administration (NOAA) and other meteorological sources. Medford has experienced significant flooding, particularly following heavy rainfall, storms, hurricanes, and nor'easters. Notable events, such as the floods in 2005 and 2010, caused extensive damage across various parts of the city.

Climate change's impact also extends to food security, as it can disrupt both growing conditions and supply chains. This can exacerbate food insecurity, especially among marginalized communities, making it harder to access nutritious food. In Medford, 21% of the population faces food insecurity, with 9% of residents relying on SNAP benefits. Moreover, 39% of students in the Medford Public School District (approximately 4,176 students) are enrolled in free or reduced lunch programs. These statistics highlight how

19 https://www.mass.gov/news/major-drought-declared-across-massachusetts

CLIMATE CONSIDERATIONS CONTINUED

climate-induced challenges like food insecurity disproportionately affect lower-income communities, many of whom are also immigrants or people of color. These communities may also face compounded difficulties with water access and affordability, amplifying existing inequalities.

Despite the growing risks posed by climate change, including increased flooding, droughts, and food insecurity, Medford's ongoing efforts to build resilient infrastructure and promote equity will be crucial in navigating the challenges ahead.

II. Strategy & Planning Process

Schedule of Activities

1. Convening a Hazard Mitigation Planning Committee

The first step was to convene a Hazard Mitigation Planning Committee, which was divided into three sub-committees, each playing a critical role in shaping a plan that is responsive to the needs of Medford's diverse community.

The sub-committees had their kick-off meeting in November 2024, marking the official start of the planning process.

2. Identifying and Assessing Local Hazards and Community Assets

The next step involved identifying and assessing local hazards and community assets. The process began by reviewing the city's updated Comprehensive Emergency Management Plan (CEMP), which included a current list of critical facilities, providing a foundation for the hazard and asset assessment. A public meeting was held in January 2025 at the Medford Public Library to present the community engagement plan and capture feedback on the approach, which marked the beginning of the public participation process.

A more involved public participation process, running from February to June 2025, helped capture residents' experiences with and perspectives on local hazards and identification of community assets and resources.

3. Conducting a Hazard Risk Assessment

The Hazard Risk Assessment was conducted using HAZUS, a tool to estimate potential losses from hazards, throughout the Summer of 2025. This analysis provided valuable insights into the most pressing risks facing Medford.

4. Assessing Local Capacity to Implement Mitigation Measures

The next step was to assess Medford's capacity to implement mitigation measures. In the spring and summer of 2025, interviews were conducted with key city department leaders to gather insights on local capabilities and resources.

5. Updating and Identifying Mitigation Goals and Actions

Based on community engagement findings and interviews with city department leaders, the Hazard Mitigation Plan's mitigation goals and actions were updated between February and August 2025. Another public meeting was held in June 2025 to gather additional comments and feedback on these high-level goals and draft actions.

6. Developing Implementation and Evaluation Steps

The final step involved developing updated implementation and evaluation steps. These implementation and evaluation steps were developed in Summer 2025 along with the Emergency Manager.

Hazard Mitigation Planning Committee

The Medford Hazard Mitigation Planning Committee met quarterly, working together to update Medford's Hazard Mitigation Plan through thoughtful and strategic planning that prioritizes the safety, resilience, and well-being of the community.

This committee was divided into three distinct subcommittees as described below, each playing a critical role in shaping a plan that is responsive to the needs of Medford's diverse community.

Emergency Management Subcommittee: Composed of city officials and municipal professionals with expertise in emergency response planning, infrastructure, and risk management.

Breanna Lungo-Koehn, Mayor, City of Medford

MaryAnn O'Connor, Health Director/Emergency Manager, City of Medford

Jack Buckley, Chief of Police, City of Medford

Tim McGivern, Commissioner, Department of Public Works (DPW), City of Medford

Scott Vanderwalle, Building Commissioner, City of Medford

Owen Wartella, City Engineer, City of Medford

Alicia Hunt, Director of Planning, Development, and Sustainability (PDS), City of Medford

Frances Nwajei, Director of Diversity, Equity, and Inclusion (DEI), City of Medford

Steve Smirti, Director of Communications, City of Medford

Dr. Marice Edouard-Vincent, Superintendent of Medford Public Schools, City of Medford

Dr. Peter Cushing, Assistant Superintendent of Medford Public Schools, City of Medford

Catherine Dhingra, Manager of the Office of Prevention and Outreach (OPO), City of Medford

Brenda Pike, Climate Planner, City of Medford

In addition to the committee's internal coordination, the Emergency Manager met regularly with the city's Emergency Management Team and with Emergency Managers from neighboring communities, as well as with the Metropolitan Area Planning Council (MAPC). This collaboration helped align Medford's hazard mitigation efforts with regional priorities and fostered cross-jurisdictional coordination.

HAZARD MITIGATION PLANNING COMMITTEE CONTINUED

Social Resilience Subcommittee: Composed of Community-Based Organizations (CBOs) serving Medford and neighboring towns, as well as stakeholders focused on social support networks and climate resilience, ensuring equity and support for vulnerable populations in Medford and the surrounding region.

Alexis Sarpong, Program Manager, Health Improvement Team, Cambridge Health Alliance

Jennifer McNabb, Director of Management, Medford Housing Authority

Rocco DiRico, Associate Vice President, Tufts University Government & Community Relations

Rebecca Ping, Director, Tufts University Emergency Management

Richard Perito, Assistant Director, Tufts University Emergency Management

Andre Watson, Assistant Director, Tufts University Emergency Management

Eileen Dern, MelroseWakefield Healthcare

Debbie Amaral, Director, Mystic Valley YMCA

Marie Cassidy, Director, Medford Family Network

Carolyne Guffey, Director, Walnut Street Center

Nicholas Karinge, Member, Commission for Persons with Disabilities

Frances Nwajei, Chair, Human Rights Commission; /Director, Medford Health Matters

Community Engagement Subcommittee: Composed of the Medford Connects Community Engagement Team, this group ensured that community voices were included in the planning process.

Natasha Barthe, Haitian-Creole Community Liaison

Darline Raymond, Haitian-Creole Community Liaison

Marileia Barroso, Brazilian-Portuguese Community Liaison

Jennifer Alvarez, Spanish Community Liaison

Stacey Moore, African American Community Liaison

Samira Hayek, Arabic Community Liaison

Samia Bennett, Families and Youth Connector

Lizette Carteiro, Climate Equity Connector

Charbel Hayek, Financial Security Connector

Barakatullo Ashurov, Immigrant Support and ESOL Connector

Libby Lazar, Food Systems Connector

June Mackenzie, Older Adult and Disabilities Connector

Public Involvement

The community engagement process for Medford's Hazard Mitigation Plan update utilized a mixed-methods approach, combining a community-wide survey and conversation groups to gather diverse input from Medford residents.

Community Surveys

The survey focused on residents' experiences with flooding, extreme weather, as well as demographic and socioeconomic factors affecting preparedness such as access to emergency communication channels, and was distributed in multiple languages to ensure broad participation.

Design and Structure

A survey was distributed to community members to gather data on experiences and perceptions of environmental hazards (e.g. flooding and winter storms), as well as social factors that affect emergency preparedness. The survey consisted of questions across three main sections: 1) Flooding; 2) Cold Weather and Winter Storms; and 3) Social Determinants of Hazard Mitigation and Emergency Response.

Distribution and Compensation

To ensure broad representation, the survey was available in both online and paper formats, enabling participation from community members with varying levels of access to and familiarity with technology. The survey was promoted through various channels, including the Community Engagement Subcommittee (Medford Connects Community Engagement Team). In partnership with the Medford Connects Community Engagement Team, the online survey was transferred into four of Medford's priority languages (Arabic, Haitian Creole, Spanish, and Brazilian Portuguese) to accommodate diverse linguistic backgrounds. Additionally, survey respondents were offered a $15 gift card as a token of appreciation for their time and insights.

Data Collection and Analysis

During March–May 2025, 105 responses were gathered and analyzed. Findings are presented as overall themes, reflecting both the quantitative and qualitative insights.

PUBLIC INVOLVEMENT CONTINUED

Conversation Groups

Conversation groups, organized with local community-based organizations, provided a platform for participants to share personal experiences and discuss local hazards, resources, and vulnerabilities from various perspectives. These efforts identified key areas for improvement in communication, community support, and infrastructure, ultimately shaping the plan to address residents' most pressing concerns.

Design and Structure

A series of conversation groups were organized in partnership with community-based organizations and provided participants with space to share their personal experiences, concerns, and strengths regarding local hazards, vulnerabilities, and mitigation.

Partnering Organizations

These conversation groups were hosted in collaboration with a diverse set of community-based organizations, each bringing unique knowledge and community connections to the process. The organizations involved included the following:

- Walnut Street Center, Inc.: a nonprofit, human service agency located in Somerville, Arlington and Cambridge, MA that provides residential, day and individual/family support services to over 200 adults with developmental disabilities.
- Medford Housing Authority: a government administration agency that offers a number of affordable rental housing options for families.
- Medford Senior Center: a non-profit organization/community center that provides programs and services for individuals aged 50 and older.
- West Medford Community Center: a non-profit organization that serves as the civic and social center of the vibrant, historically-Black West Medford.
- Mothers Out Front: a movement of mothers and others committed to ensuring a livable climate for all children.
- Medford Family Network: a no cost parenting education and family support organization.

PUBLIC INVOLVEMENT CONTINUED

Compensation

Each focus group participant was compensated with a $50 payment. Additionally, food was provided at each in-person session, ensuring a welcoming and comfortable environment for all participants. These efforts helped ensure that participants were able to focus on the conversation and feel valued for their contributions to the community engagement process.

Data Collection and Analysis

Representatives from the partner organizations guided the discussions, which were co-facilitated by ACBC Consulting's Community Engagement Specialist. Together, they encouraged participants to share personal stories, discuss perceived gaps in local preparedness efforts, and suggest potential improvements to existing mitigation strategies. Conversations were recorded, transcribed, and thematically coded to identify common trends and concerns.

Public Meetings and Public Comment

Public Meetings During Planning Period

Two public meetings were held throughout the planning period, the first to kick off the planning process and request feedback from the community on the planning approach and the second, mid-way through the planning process to share community engagement input and solicit input on the mitigation goals and actions.

A public meeting was held in January 2025 at the Medford Public Library to present the community engagement plan and capture feedback on the approach.
Another public meeting was held in June 2025 virtually on Zoom to share findings of community engagement activities and to gather additional comments and feedback on the Hazard Mitigation Plan Update's drafted mitigation goals and actions.

Public Comment and Final Public Meeting

A draft of the updated Hazard Mitigation Plan was circulated for public comment in October 2025. A third and final public meeting was held in November 2025 to capture final comments and feedback on the plan.

Community Voices

Medford residents shared their experiences and concerns through surveys and community conversations. Their input highlighted real challenges, from flooding and winter storms to transportation, communication, and support networks.

Residents emphasized the need for:

- Financial help and home improvements to prepare for hazards
- Reliable emergency communication, especially in multiple languages
- Stronger neighborhood support systems for seniors, caregivers, and people with chronic health conditions
- Better coordination between the city and trusted community organizations

This feedback directly shaped the updated Hazard Mitigation Plan, ensuring it reflects the needs, priorities, and lived experiences of Medford's diverse community. Below are the specific findings from the community through the survey and conversation groups.

COMMUNITY VOICES CONTINUED

Voices from the Survey

The survey results show where Medford is not fully ready for flooding, extreme weather, transportation problems, communication issues, and gaps in support networks.

Flooding

Many residents have experienced flooding that caused property damage and financial losses. People said they are often unaware of flood zones and lack flood insurance. They identified financial help, home improvements, and emergency supplies as the most important resources for better flood preparedness.

Extreme cold and winter storms

Extreme cold and winter storms are an ongoing concern. Some residents have prepared by insulating pipes and stocking supplies, but many lack backup heating systems. This leaves them at risk during power outages. People again pointed to financial help and home improvements as the most important needs for winter storms.

Transportation

Transportation was another concern, especially the reliability of public transit during severe weather. Many residents depend on buses, trains, or ride shares, but these often break down during emergencies. Language barriers also prevent some non-English-speaking residents from getting emergency information.

Community Support Networks

Many residents are connected to community support networks, but gaps remain for people with health problems or caregiving responsibilities. Residents said it is crucial to strengthen support systems, such as neighborhood groups and mutual aid networks. They also called for better emergency communication, multilingual services, and financial help to prepare for and recover from disasters.

Addressing these challenges through targeted programs, infrastructure improvements, and strengthened community ties will better prepare Medford for future hazards.

COMMUNITY VOICES CONTINUED

Voices from Conversation Groups

The conversation groups, held at community gathering points across Medford, focused on resilience, communication, infrastructure needs, and community resources.

Community Resilience

Participants said climate resilience means how both individuals and communities adapt during crises. They emphasized neighbor-to-neighbor support, such as shoveling snow for seniors or checking in during storms. Many worried that people have been helping each other less since the pandemic and stressed the need for clear, effective communication during emergencies.

Community Resources

Participants named several trusted community resources, including the Medford Family Network, West Medford Community Center, Medford Public Library, and local churches. These places provide support during crises. Small local businesses and Tufts University were also important to the community. Many suggested improving communication through local systems, such as block parties, neighborhood email lists, and bulletin boards, to make information easier to access—especially for residents who do not speak English.

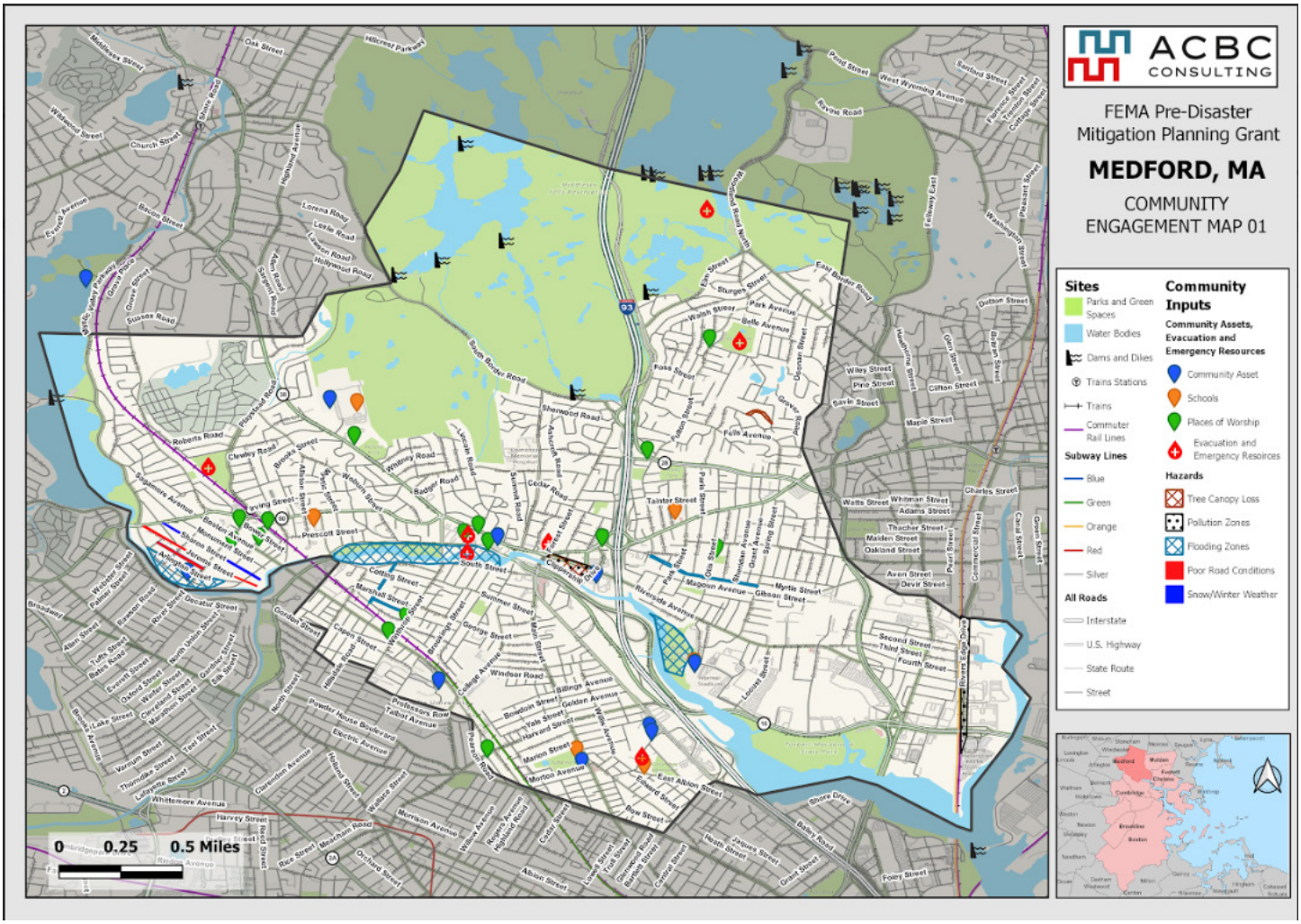
Infrastructure Resilience

Participants discussed ecological and infrastructure concerns, including the need to manage stormwater, protect tree cover, and reduce flooding. They also raised worries about emergency planning, especially for people with mobility issues or medical conditions. Participants suggested that city departments work more closely with community organizations to improve coordination.

Equitable Preparedness

Participants highlighted the need for inclusive programs, better outreach, and stronger partnerships between the city and local organizations, especially to support vulnerable populations. They recommended more localized emergency plans, improved communication systems, and fair access to resources to help Medford better prepare for and respond to disasters.

MAP 2.1 COMMUNITY OVERVIEW MAP



How Community Voices Were Integrated Into the HMP

Feedback from Medford residents, gathered through surveys and conversation groups, was used to shape the updated Hazard Mitigation Plan. The survey data helped identify overall trends and specific concerns across the city. Input from conversation groups added context, showing the lived experiences of residents and the challenges they face during floods, storms, and other emergencies.

By combining these two sources of community input, the plan reflects both broad priorities and individual needs. This ensures that the updated Hazard Mitigation Plan addresses the most pressing issues for Medford residents and supports actions that make the community safer and more prepared for future hazards.

III. Hazard Identification

Flood Events

Flooding in Medford happens when water from rivers, heavy rain, or dam failures spreads onto normally dry land. The areas most at risk are near the Mystic River, wetlands, and locations with poor drainage, and floods can damage homes, roads, utilities, and natural areas. Medford has experienced several damaging floods in the past two decades, costing millions in property damage, even though no lives were lost. Climate change and more frequent severe storms mean that flooding may become stronger and affect more areas, increasing the risk and severity of flooding in the future.

Riverine and Inland Flooding

Flooding is the overflowing of water onto land that is normally dry, commonly caused by rainwater from extreme weather events, rapidly melting snow, and dam or levee failure.

The duration and severity of floods vary. For instance, a flood may have as little as a few inches of water, or it may cover a house. It can occur within minutes or over days or weeks.

The most prevalent types of flooding that impact Medford are riverine flooding, when water levels rise above river banks, and inland flooding, when water accumulates in inland areas. Riverine flood risk is highest near wetlands and river systems, and areas with strained drainage systems face the highest risk for inland flooding.[20]

Another type of flooding is flash floods, which are rapid flooding events that occur within 6 hours of precipitation events such as heavy rain. They are considered particularly dangerous due to their speed. However, as they are typically associated with other severe weather such as thunderstorms, hurricanes, or tropical storms, occurring as the primary or secondary risk of these hazards, they will be incorporated into the hazard description of the Storm Events and Tropical Cyclones sections.

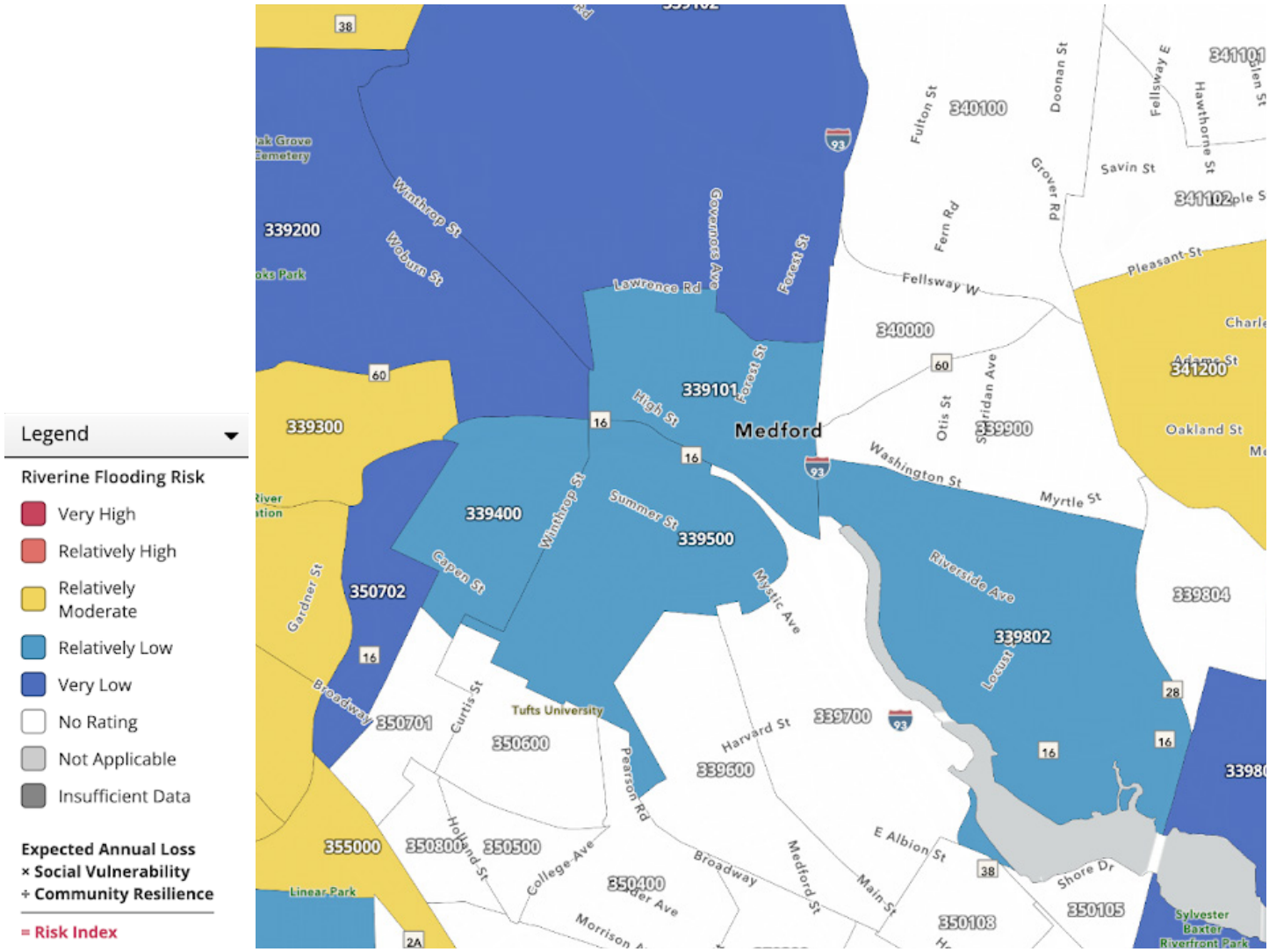
20 https://www.nssl.noaa.gov/education/svrwx101/floods/types/

RIVERINE AND INLAND FLOODING CONTINUED

Location

The following map shows the neighbourhoods in Medford which face risk of riverine flooding. In general, areas around the Mystic River, dams and other bodies of water, and areas with poorer drainage infrastructure face greater risk.

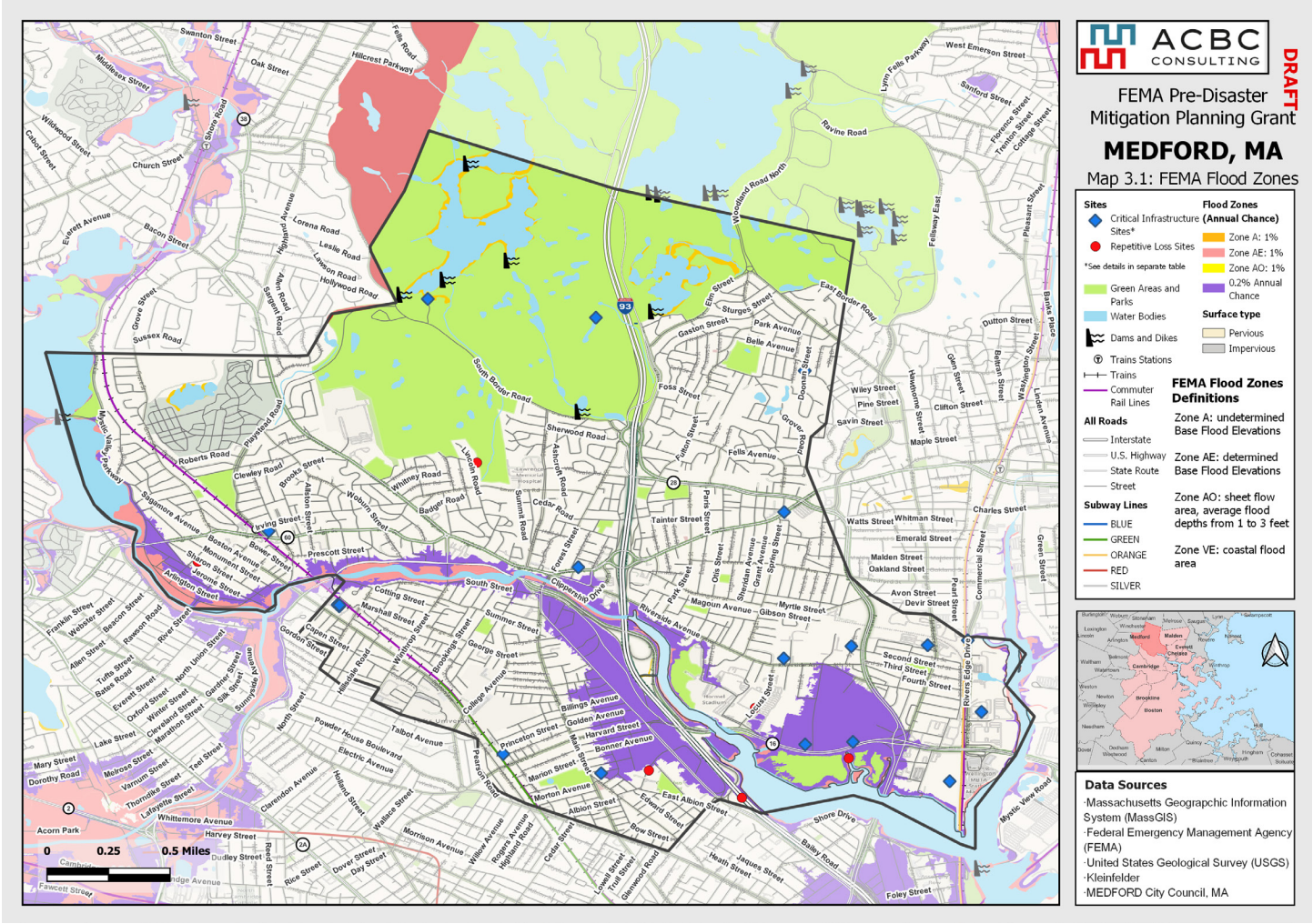
MAP 3.1: RIVERINE FLOODING RISK FOR MEDFORD NEIGHBORHOODS



https://hazards.fema.gov/nri/map

The following map details FEMA Flood Zones in and around Medford. While the annual risk of severe flooding is relatively low, there is a 1% annual chance of flooding that covers a significant portion of the city (shown in purple).

MAP 3.2: FEMA FLOOD ZONES IN MEDFORD



RIVERINE AND INLAND FLOODING CONTINUED

Extent

Flooding is a frequent and potentially severe hazard in Medford. It is one of the most severe and frequent hazards faced in Middlesex County and in the State of Massachusetts. According to FEMA's National Risk Index, in Middlesex County, the Expected Annual Loss value due to flooding is high compared to the rest of the United States, at approximately $13 million per year across the county. However, both the Risk Index score and Expected Annual Loss in Medford are lower compared to county and state averages, at approximately $100,000 Expected Annual Loss value across the city and most census tracks facing low or near-zero risk of flooding.

Flooding impacts several key sectors:

Human: floods can adversely impact people's health and welfare. Floods in Medford usually do not cause injuries to residents, but physical injuries and premature death remain a risk during severe flood events. Flooding can also increase mental health stressors for the population and exacerbate health impacts from aeroallergens and mold. It can cause delays to emergency services, and cause loss or damage to cultural resources.

Economy and infrastructure: floods are likely to damage buildings, transportation and utility systems, and cause economic losses. FEMA's Expected Annual Loss index calculates that Middlesex County faces a "relatively high" risk for damages due to flooding in comparison to the rest of the United States, the majority of which come from damages to infrastructure.[21] For instance, property damage that does not threaten the building's structural integrity is common. As of 2024, in Medford, five buildings are classified as Repetitive Loss Structures by the National Flood Insurance Program, defined as any insurable building for which two or more claims of more than 1000 USD were paid within any ten-year period.[22] All five buildings are residential. Floods also frequently damage electric transmission and utility distribution infrastructure, damage roads, increase the risk of dam failure, and disrupt water resources. In addition to initial loss of structures and the cost of cleanup and repair, economic losses may also result from people's reduced ability to work, business interruptions, and potential supply chain disruptions.

Natural Environment: floods can carry sediment and contaminated water from stormwater runoff and sewer overflows, potentially causing degradation to freshwater ecosystems. Forest and wetland health are also at risk, and soil erosion from flooding is common.

21 https://hazards.fema.gov/nri/report/viewer?dataLOD=Counties&dataIDs=C25017

22 https://www.fema.gov/openfema-data-page/nfip-multiple-loss-properties-v1

RIVERINE AND INLAND FLOODING CONTINUED

Previous Occurence

The City of Medford has experienced thirteen flood events in the last two decades, with an impact of zero mortalities and injuries, and an estimated $13.95 million of property damage. Significant recent floods include the floods of October 2005, May 2006, and March 2010. No significant flood events have occurred since the previous HMP was completed. The following table shows all flood events impacting Medford from 2004 to 2024.[23]

TABLE 3.1: ALL RIVERINE AND INLAND FLOODS IMPACTING THE CITY OF MEDFORD, 2004–2024

BEGIN LOCATION	END LOCATION	BEGIN DATE	END DATE	DEATHS DIRECT	INJURIES DIRECT	DAMAGE PROPERTY
SOUTHEAST MIDDLESEX (ZONE)	SOUTHEAST MIDDLESEX (ZONE)	10/15/2005	10/15/2005	0	0	125,000
COUNTYWIDE	COUNTYWIDE	05/13/2006	05/15/2006	0	0	5,000,000
COUNTYWIDE	COUNTYWIDE	05/13/2006	05/14/2006	0	0	0
MEDFORD	MEDFORD	05/27/2008	05/27/2008	0	0	3,000
NORTH SOMMERVILLE	TUFTS COLLEGE	06/08/2012	06/08/2012	0	0	0
TUFTS COLLEGE	SOMERVILLE	06/23/2012	06/23/2012	0	0	15,000
TUFTS COLLEGE	TUFTS COLLEGE	06/23/2012	06/23/2012	0	0	0
LAKE STREET	TUFTS COLLEGE	07/12/2017	07/12/2017	0	0	0
MEDFORD	MEDFORD	06/25/2018	06/25/2018	0	0	0
TUFTS COLLEGE	TUFTS COLLEGE	08/07/2019	08/07/2019	0	0	300
WEST MEDFORD	WEST MEDFORD	09/02/2019	09/02/2019	0	0	0
TUFTS COLLEGE	TUFTS COLLEGE	09/02/2019	09/02/2019	0	0	0
TOTAL		13 events		0	0	13,953,300

23 https://www.ncei.noaa.gov/stormevents/

RIVERINE AND INLAND FLOODING CONTINUED

The following are descriptions of all recent flood events which caused significant property damage (greater than $10,000) between 2004 and 2024:

- Oct. 2005: excess rain and flooding occurred across Massachusetts due to the interaction of a low pressure system with tropical moisture along the southern Massachusetts coasts. Approximately 1000 evacuations occurred across the state, and countless streets experienced flooding. All of Southeast Middlesex County, the geographic zone in which Medford is located, was impacted, with an estimated $125,000 of property damage incurred.
- May 2006: heavy rain caused widespread flooding across eastern Massachusetts. In several locations, this event is considered the most severe flood recorded since the 1938 Hurricane. The Governor of Massachusetts declared a State of Emergency during this event, and the President declared major disaster status for those affected in Essex, Middlesex, and Suffolk Counties. The event prompted the evacuation of several thousand people in northeast Massachusetts and numerous road and school closures. Two fatalities were attributed to flooding from the storm, none of which occurred in Medford. The countywide economic impact in Medford is an estimated $5 million of property damage.
- March 2010: two heavy rainfall events occurred across several parts of Southern New England, causing high water levels across bodies of water in Massachusetts. These events were closely followed by record-level rainfall due to a low pressure system and coastal front along the l-95 corridor at the end of the month. Seven counties in Massachusetts, including Middlesex County, were issued Federal Disaster Declarations. Across Middlesex County, an estimated $8.8 million of property damage was incurred. Street closures, basement flooding, and flooding of residential and commercial buildings were common.
- June 2012: an upper level disturbance and associated cold pool resulted in showers and thunderstorms. These storms produced damaging wind and large hail across portions of northeastern Massachusetts. In Medford, $15,000 of property damage was incurred.

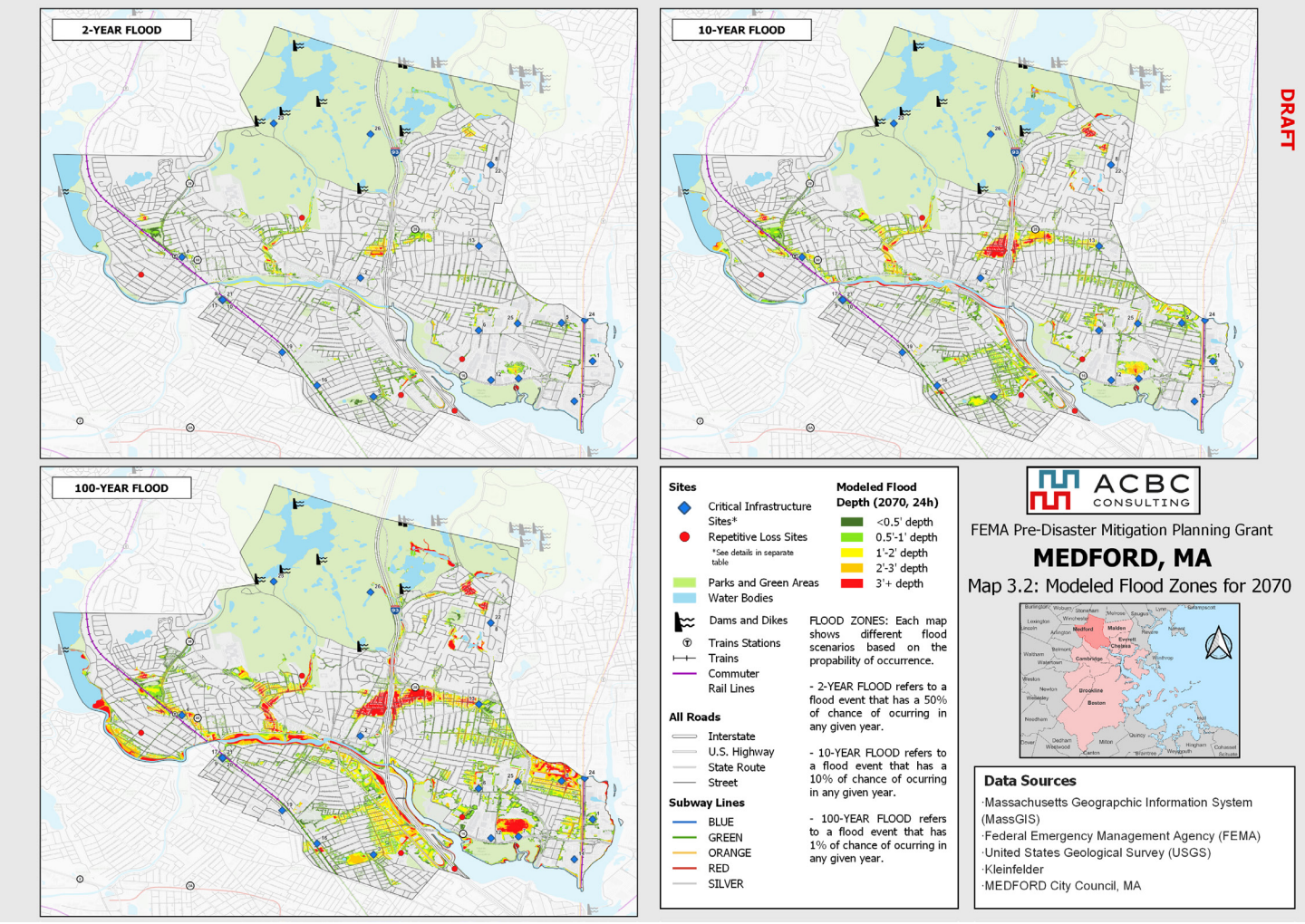
Note that 0 flash flooding events were recorded in Medford in the last 20 years. However, 46 flash floods occurred elsewhere in Middlesex County in the same time period.

RIVERINE AND INLAND FLOODING CONTINUED

Probability of Future Events

The projected changes in precipitation patterns and increased frequency of extreme weather events (such as hurricanes and nor'easters) will increase the frequency and severity of both inland and riverine flooding. These projections mean that Medford should expect more severe flooding in existing flood zones, and flooding to occur in areas that currently face little or no risk of flooding. The following map shows the projected flood zones for the year 2070, less than 50 years from the time of writing this guide (2025). It shows that in case of both severe (10 and 100-year floods) and common flooding events (2-year floods, which have a 50% chance of occurring on any given year), almost all neighbourhoods of Medford are expected to experience flooding and potential damage.

MAP 3.3 MODELED FLOOD ZONES FOR MEDFORD, 2070



Source needed

Dam Failure and Overtopping

Dam failure can occur as a result of structural failure independent of a hazard event, or it can be directly associated with the impacts of hazards such as flooding and earthquakes. Dam failure, or overtopping, is characterized by the sudden and rapid release of impounded water, and can cause loss of life and damage to downstream structures. Dams individually present a flood risk, and can augment the damages of other disasters.

In Medford, there are five dams: the South Reservoir East Dike, the South Reservoir Dam, the Middle Reservoir Dike, the Wright's Pond Dam, and the Bellevue Pond Dam. Medford may also be susceptible to the damages, should dam failure occur in Middlesex County and the surrounding area.

As many dams in Massachusetts were constructed in the nineteenth century, concerns about their lack of modern construction oversight and engineering have been raised. The conditions of dams in Medford have been assessed and updated since the previous HMP, and two dams, the South Reservoir Dam and the Wright's Pond Dam, have seen structural modifications, defined by the National Inventory of Dams as "major modifications or rehabilitation of [the] dam or major control structures". Modifications may restore the condition of the dam, or change the dam's operation, capacity, or structural characteristics, overall with the goal of increasing the longevity and stability of the dam.[24]

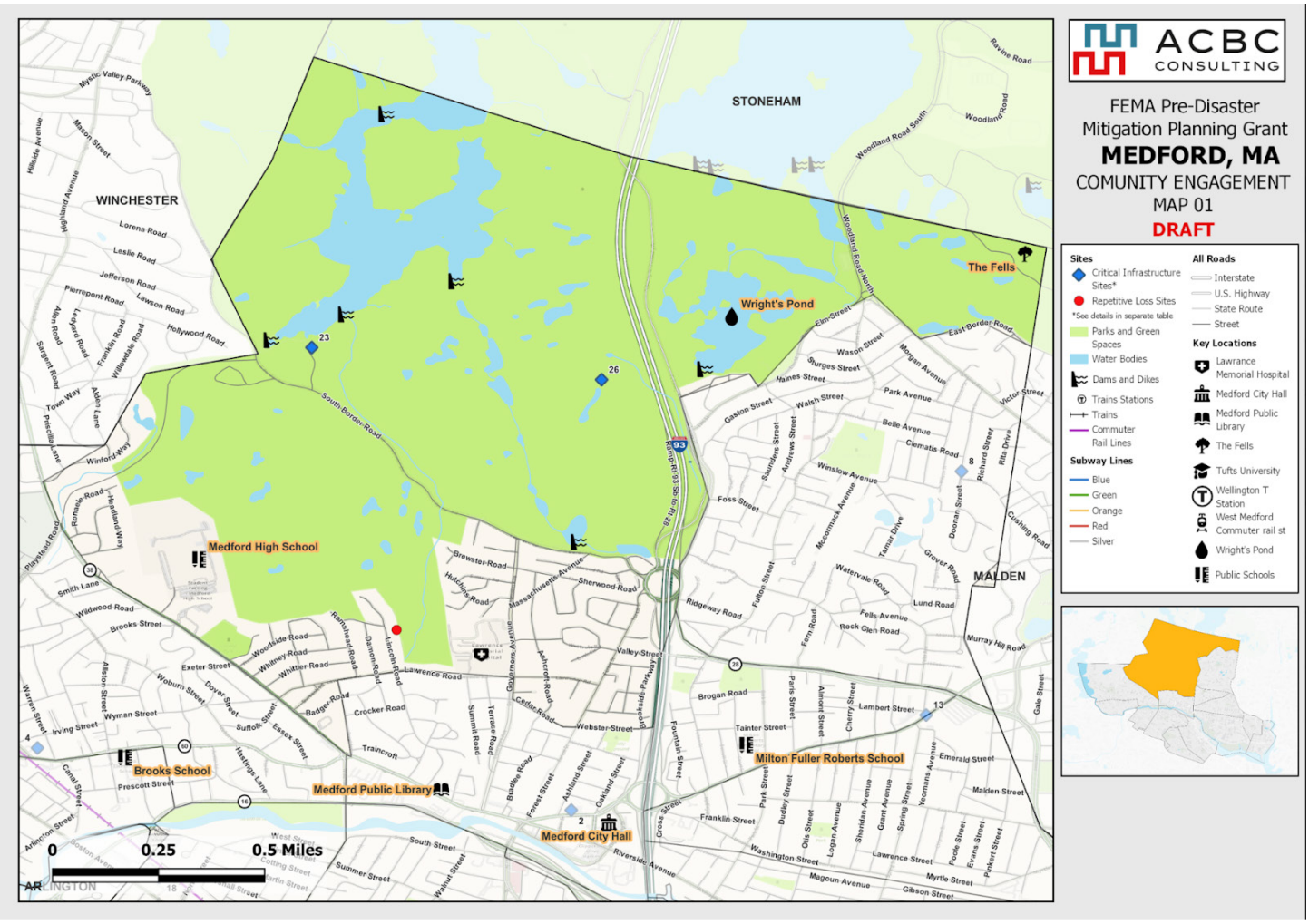
24 Page 7 https://usace-cwbi-prod-il2-nld2-docs.s3-us-gov-west-1.amazonaws.com/ec51e2ba-daff-4dbe-95eb-af13b91066ba/NID%20Data%20Dictionary%202021-12-14.pdf

DAM FAILURE AND OVERTOPPING CONTINUED

Location

The following map shows the location of Medford's dams, which are all located in the northern sections of the city.

MAP 3.4: MAP OF COMMUNITY OVERVIEW WITH LOCATIONS OF DAMS



DAM FAILURE AND OVERTOPPING CONTINUED

Extent

While the likelihood of dam failure is typically low, this section describes the condition and likelihood of failure of the dams in Medford and surrounding areas.

TABLE 3.2: DAM INVENTORY, CITY OF MEDFORD[25]

DAM NAME	YEAR COMPLETED	YEARS MODIFIED	HAZARD POTENTIAL CLASSIFICATION	CONDITION ASSESSMENT	CONDITION ASSESSMENT DATE
South Reservoir East Dike	1882	2011	High	Satisfactory	2023-09-06
South Reservoir Dam	1882	2016	High	Poor	2023-02-22
Middle Reservoir Dike	1891	N/A	Significant	Fair	2019-08-05
Wright's Pond Dam	unknown	2021	High	Fair	2023-11-20
Bellevue Pond Dam	unknown	N/A	N/A	N/A	N/A

The Hazard Potential Classification, defined by the National Inventory of Dams, indicates the potential hazard to the downstream area should the dam or facilities fail or be misoperated.[26] It considers the likelihood of loss of human life, and impacts on economic and environmental sectors. Note that this classification does not signify the probability of dam failure, but rather, only speaks to the consequences should such an event occur.

- **High Hazard Potential (South Reservoir East Dike, South Reservoir Dam, Wright's Pond Dam):** dams whose failure or misoperation will be expected to cause one or more losses of human life. Economic and environmental damages are likely, but not necessary for this classification.
- **Significant Hazard Potential (Middle Reservoir Dike):** dams whose failure or misoperation results in no probable loss of human life, but will cause economic loss and environmental and infrastructural damage.

25 https://nid.sec.usace.army.mil/#/dams/search/sy=@countyState:Middlesex,%20Massachusetts&viewType=map&resultsType=dams&advanced=false&hideList=false&eventSystem=false

26 Page 9 https://usace-cwbi-prod-il2-nld2-docs.s3-us-gov-west-1.amazonaws.com/ec51e2ba-daff-4dbe-95eb-af13b91066ba/NID%20Data%20Dictionary%202021-12-14.pdf

DAM FAILURE AND OVERTOPPING CONTINUED

The condition of dams is assessed based on the presence of safety and structural deficiencies and the dam's performance under normal operational conditions and all loading conditions.

- **Satisfactory (South Reservoir East Dike):** no existing or potential dam safety deficiencies are recognized. Safe performance is expected under all loading conditions, including design-basis earthquake and floods. Permanent risk reduction measures have been implemented to eliminate identified deficiencies.
- **Fair (Middle Reservoir Dike, Wright's Pond Dam):** no existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and seismic events may result in dam deficiencies. Attention may be required to prevent the development of safety concerns.
- **Poor (South Reservoir Dam):** the dam has multiple deficiencies or one significant deficiency that requires remedial work, and there is risk of dam malfunction under normal operating conditions. This designation may also be used when uncertainties exist, and future investigations are needed.

Previous Occurence

There has been no recorded dam failure in recent history in Medford nor Middlesex County.

Likelihood of Future Events

The risk of dam failure in Medford and nearby communities is low. In Medford, the South Reservoir Dam presents an elevated risk in comparison to other locations, but no dams in Medford are rated as "unsatisfactory condition."[27] However, an increase in hazards impacts such as floods, landslides, and extreme weather may be associated with greater risk of dam failure.

In surrounding cities in Middlesex County, three dams were last assessed to be in unsatisfactory condition. Of these dams, the Hager Pond Dam in Marlborough, approximately 30 miles from Medford, is classified as high hazard, while the Crosby Pond Dam in Concord, approximately 13 miles from Medford, is classified as having significant hazard potential. Thus, the Crosby Pond Dam can be identified as the dam that is most likely to adversely affect the city of Medford in a hazard event. The Amelia Earhart Dam in Somerville, although cited by community members as a location of concern, is classified as low hazard, defined by the federal Interagency Committee on Dam Safety as dams whose "failure or misoperation results in no probable loss of human life and low economic and/or environmental losses."

27 https://www.mass.gov/info-details/massgis-data-dams

Coastal Hazards and Coastal Flooding

Coastal hazards refer to risks posed to coastal areas such as coastal flooding, storm and hurricane surges, sea level rise, tsunamis, and coastal erosion. The City of Medford borders but is not located in a coastal zone, as defined by the State of Massachusetts. It is, however, located within a coastal watershed zone due to its proximity to the Mystic River.[28] Due to its distance from the coast, hazards such as coastal erosion and high or low tide do not and will most likely not impact Medford. The type of coastal hazard most likely to pose potential risks to the city is coastal flooding, due to its location in the Mystic River watershed. Coastal flooding is caused by sea level rise, storms, hurricanes, and, exceptionally, tsunamis, all of which are possible hazards in Medford. Of these hazards, sea level rise and storm or hurricane surges are the most relevant to Medford and are the most probable to occur.

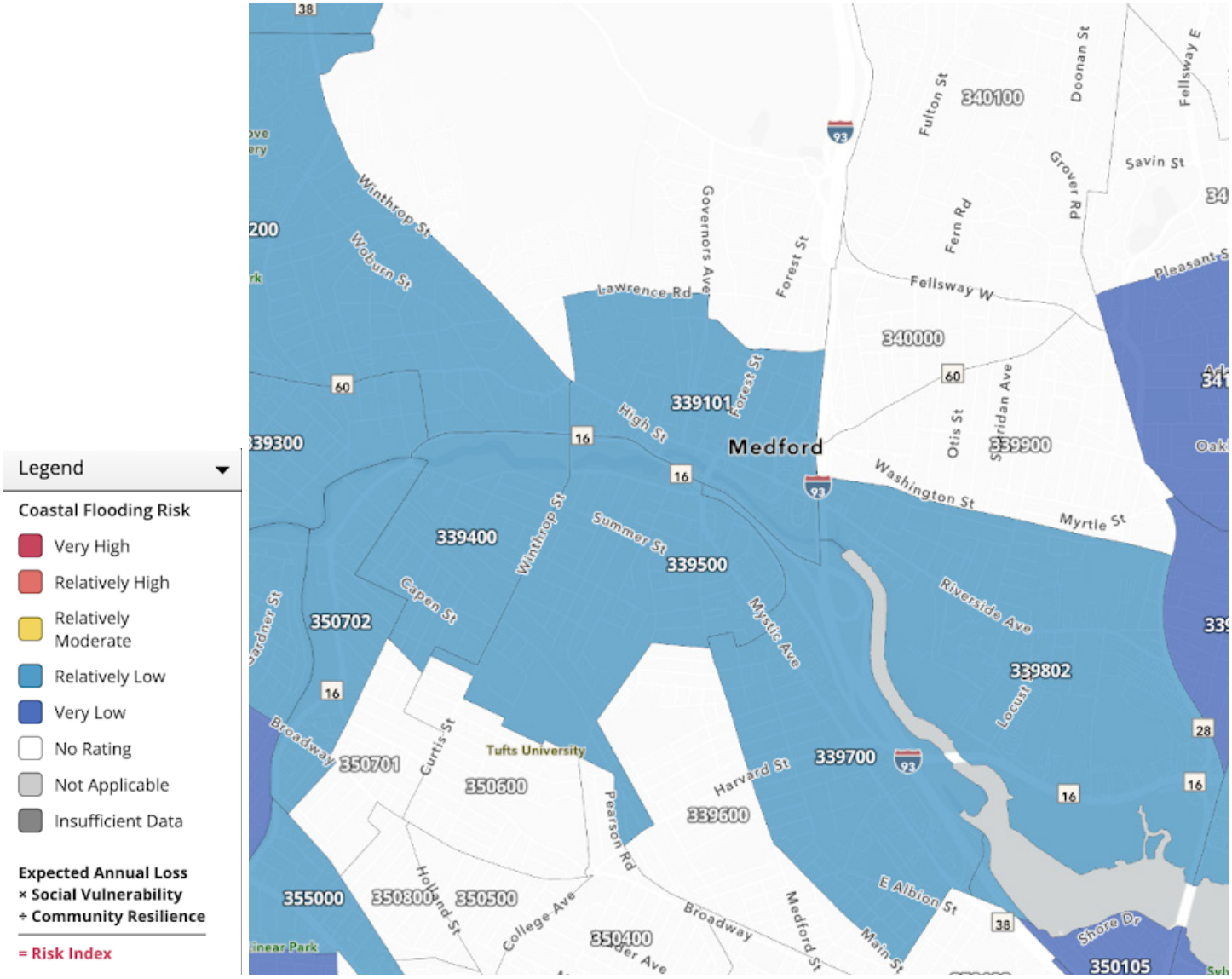
28 https://www.mass.gov/info-details/communities-in-the-massachusetts-coastal-watershed

COASTAL HAZARDS AND COASTAL FLOODING CONTINUED

Location

Coastal flooding is a very low-risk hazard in Medford, with half the city not estimated to be impacted at all. FEMA estimates that Medford has an Expected Annual Loss value of approximately $40,000 to coastal flooding. For more detailed impacts of flooding-associated risks, please consult the Riverine Flooding section of this guide.

MAP 3.5: COASTAL FLOODING RISK FOR MEDFORD NEIGHBORHOODS



https://hazards.fema.gov/nri/map

COASTAL HAZARDS AND COASTAL FLOODING CONTINUED

Extent

Coastal flooding is a very low-risk hazard in Medford, with half the city not estimated to be impacted at all. FEMA estimates that Medford has an Expected Annual Loss value of approximately $40,000 to coastal flooding. For more detailed impacts of flooding-associated risks, please consult the Riverine Flooding section of this guide.

Previous Occurence

Medford was not impacted by coastal hazards in the last 20 years, documenting no events of coastal flooding, storm surge, marine wind, and tsunami according to the NOAA Storms Event Database.

Probability of Future Occurrence

The projections described in this section have a near-certain likelihood of occurring in the future, based on existing greenhouse gas emission levels. Medford will most certainly face increased risk of coastal hazards in future years, although the probability may still overall be low due to its distance from the coastline. Additionally, reductions in greenhouse gas emissions and robust climate action policies can slow or reduce the projected risks.

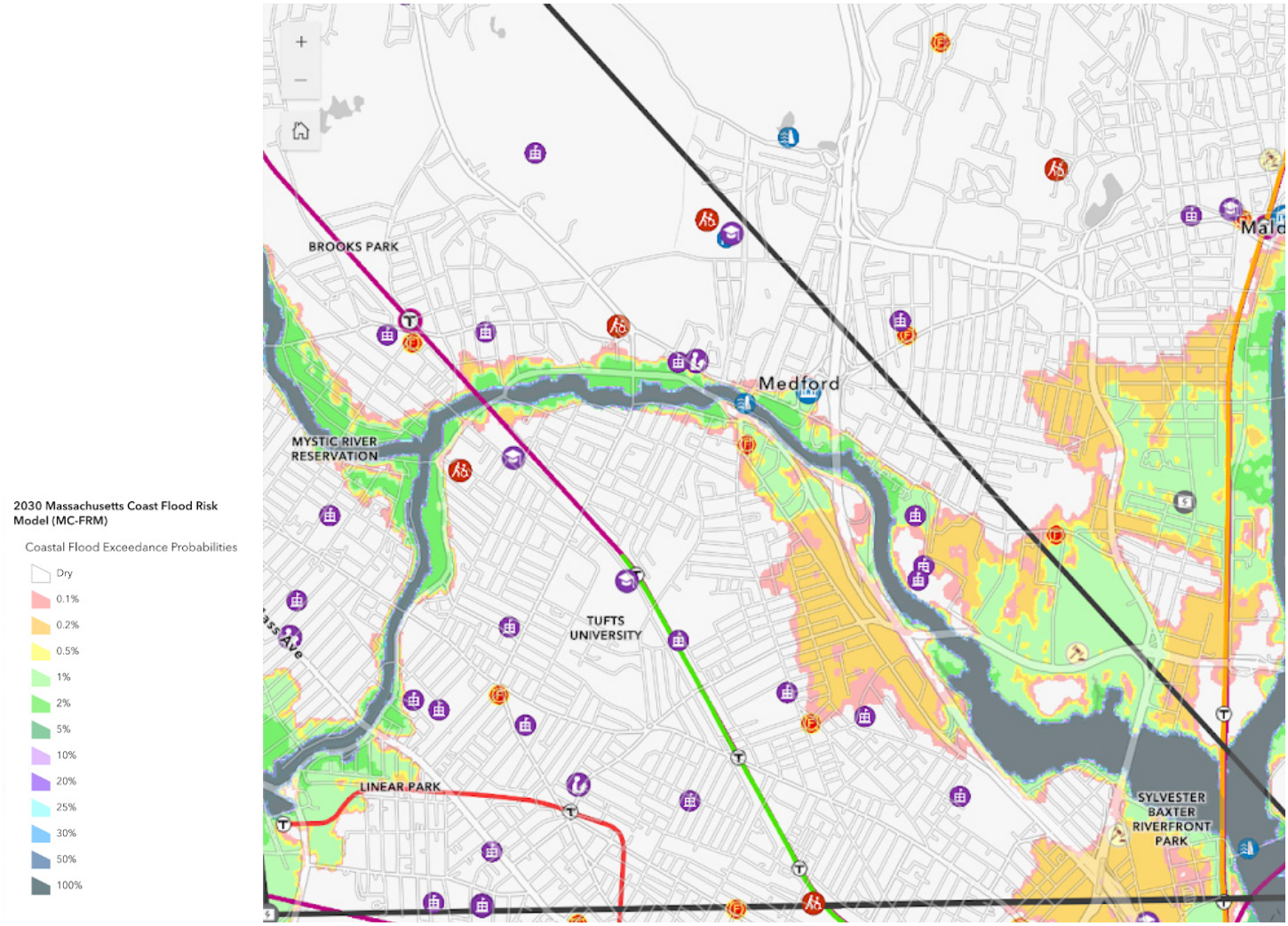
The following map, from the Massachusetts Office of Coastal Zone Management, shows the aggregate coastal flooding risks of Medford in the year 2030, calculated based on continued high emissions of greenhouse gases and storm surges associated with coastal storms (hurricanes and nor'easters). It shows that areas closest to Mystic River will have a 1-2% chance of coastal flooding in the year 2030. Additionally, the NOAA projects that in an intermediate to high greenhouse gas emissions scenario, Medford and surrounding areas will experience 1 foot of sea level rise by 2040, and 1.95 feet by 2060.[29] Correspondingly, the areas in Medford considered low-lying and at greater risk of coastal flooding will increase, while after 4 to 5 feet of sea level rise, part of Medford along the Mystic River banks will be underwater.[30]

29 NOAA Sea Level Rise Viewer

30 https://coast.noaa.gov/slr/#/layer/sce/0/-7917698.885495346/5223916.575758573/14.000/streets/47269/0.8/2060/interHigh/noAccretion/NOS_Minor

COASTAL HAZARDS AND COASTAL FLOODING CONTINUED

MAP 3.6: MA OFFICE OF COASTAL ZONE MANAGEMENT'S PROJECTIONS FOR COASTAL FLOODING, 2030



https://www.mass.gov/info-details/massachusetts-sea-level-rise-and-coastal-flooding-viewer

Storm Events

A storm event is any severe weather that can cause damage, like high winds, heavy rain, snow, or ice. Medford can experience several types of storms, including tropical storms, tornadoes, and winter storms like nor'easters. Tornadoes are rare but can bring extreme damage, while winter storms are more common and bring snow, ice, and dangerous travel conditions. High winds, flooding from heavy rain, and icy roads are some of the biggest risks for Medford residents.

Tropical Cyclones (Hurricanes and Tropical Storms)

Tropical cyclones are rotating, circular storm systems that form over low-pressure areas over tropical waters. Severe tropical cyclones that occur in the Atlantic Ocean or northeastern Pacific Ocean are called hurricanes. In the United States, tropical cyclones can be classified as hurricanes, tropical storms, or tropical depressions based on their level of severity. The National Hurricane Center (NHC) classifies the stages of tropical cyclones as the following:[31]

- Tropical depression: a tropical cyclone with maximum sustained winds of 38 miles per hour (33 knots) or less
- Tropical storm: a tropical cyclone with maximum sustained winds of 39 to 73 mph (34–63 knots)
- Hurricane: a tropical cyclone with maximum sustained winds of 74 mph (64 knots) or higher
- Major hurricane: a tropical cyclone with maximum sustained winds of 111 mph (96 knots) or higher

Tropical cyclones begin as tropical disturbances over warm ocean waters, and go through several stages as they intensifie into a mature cyclone. If their rotations gain enough momentum, wind speeds will increase, eventually maturing into a full tropical storm or hurricane. Tropical cyclones can vary considerably in size, though hurricane-strength tropical cyclones are typically 200–300 miles wide. In cyclones, high winds swirl around a central region of low atmospheric pressure often called the "eye," which are driven by their low-pressure cores and the rotation of the Earth. The "eyewall" of

31 https://www.mass.gov/doc/2021-tropical-cyclone-profile/download

TROPICAL CYCLONES CONTINUED

the storm, which is a ring of thunderstorms surrounding the "eye," is the most dangerous and destructive part of the storm, where winds are strongest and precipitation is heaviest. The eye of the storm is typically 20 to 40 miles in diameter, and the most destructive impacts are typically felt by areas immediately outside this distance. A hurricane or storm track is the line that delineates the path of the eye.

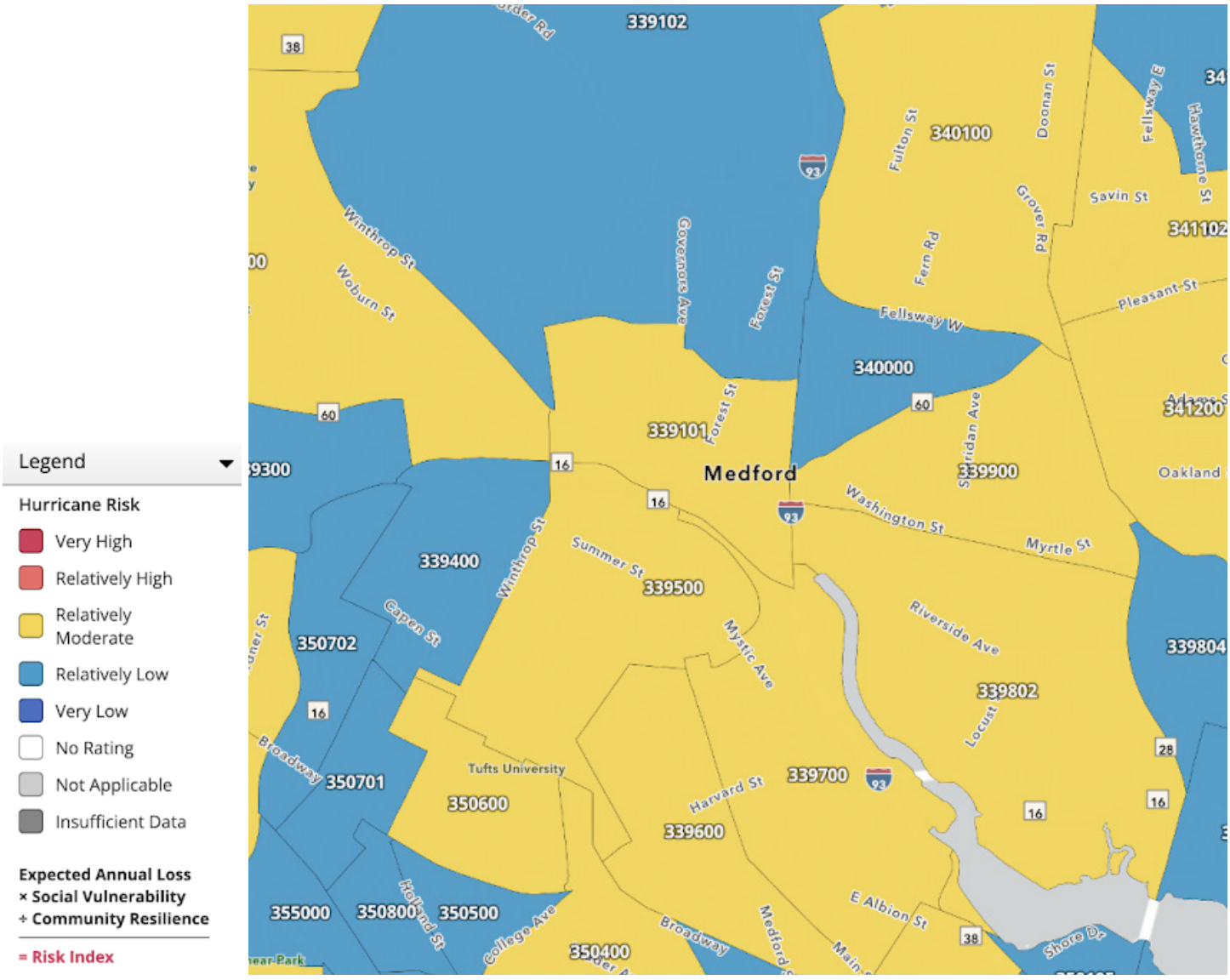
"Hurricane season" for the Atlantic Basin, which includes the Atlantic Ocean, Caribbean Sea, and the Gulf of Mexico, is from June 1 to November 30 each year. Hurricanes are most likely to be felt in Massachusetts from mid-August to late October, but they can occur at any time in the hurricane season. While it is uncommon for the storm path of a hurricane to travel in or near Medford, it is not impossible. However, it is most likely that hurricanes and tropical storms make landfall at a different location, farther south along the Atlantic coastline, and subsequently impact Medford as it travels northward.

TROPICAL CYCLONES CONTINUED

Location

Tropical cyclones are a city-wide hazard, but neighbourhoods near the Mystic River face increased risk of storm surge and coastal flooding. The following map shows the FEMA Risk Index values of Medford census tracts due to hurricane damage. While most neighborhoods face "relatively moderate" risk, several census tracts in the northeastern parts of the city are at lower risk.

MAP 3.7 HURRICANE RISK FOR MEDFORD NEIGHBORHOODS

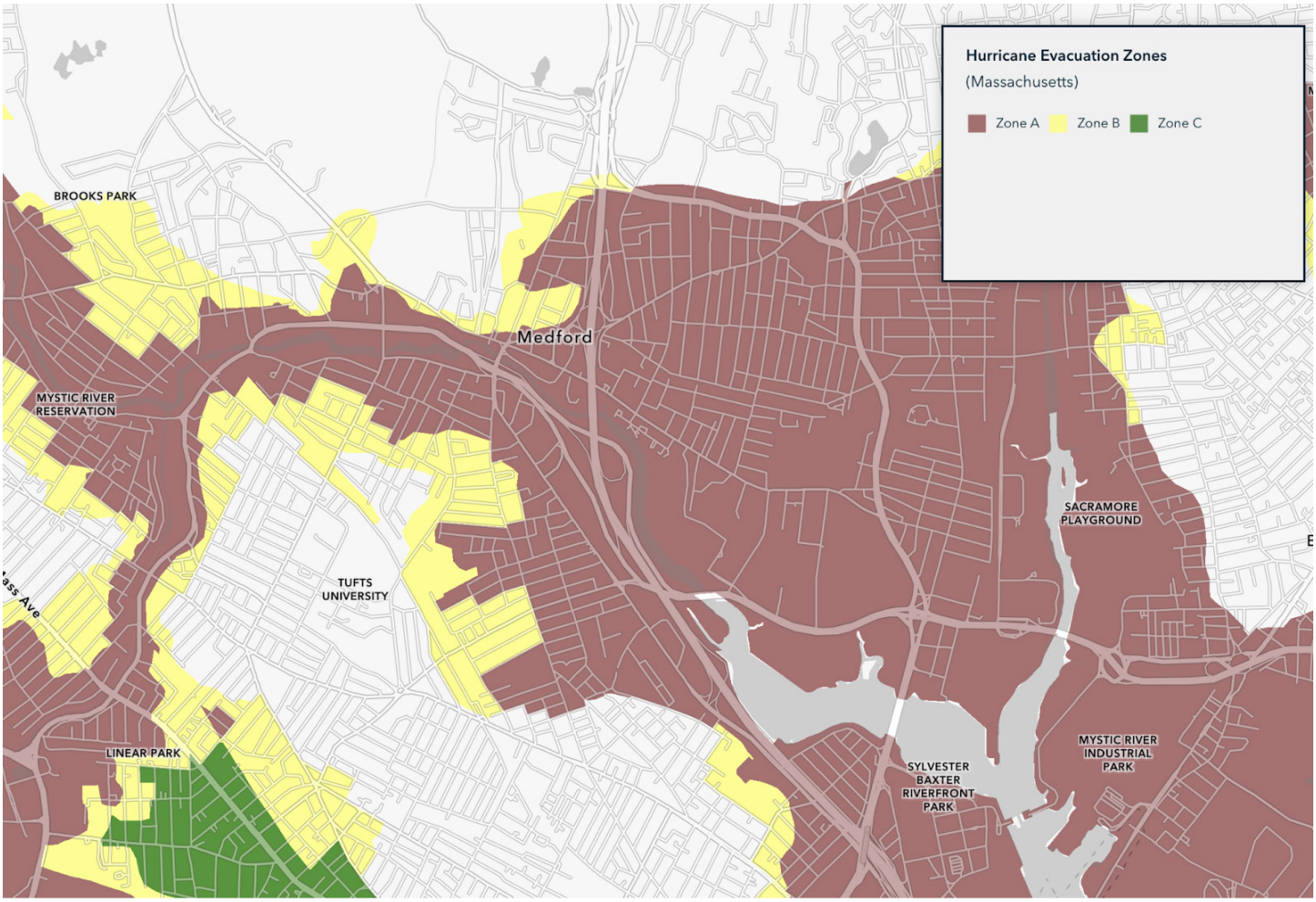


https://hazards.fema.gov/nri/map

TROPICAL CYCLONES CONTINUED

The following map shows the Hurricane Evacuation Zones of Medford and surrounding areas, as defined by the State of Massachusetts.[32] Note that these zones do not directly correspond to hurricane categories, but rather primarily by storm surge impact, which is not measured by the Saffir-Simpson hurricane scale and can vary from storm to storm. According to the State, if individuals live, work, or vacation in an evacuation zone, they should plan for and be prepared to evacuate in case of a hurricane or tropical storm that makes landfall. In the map, Zones A and B are areas that, depending on predicted inundation, may flood from storm surge during a tropical storm or hurricane. Areas in Zone A face more immediate risk in comparison to areas in Zone B. Residents are advised to listen carefully to weather forecasts in case of tropical cyclones, and to know the location of evacuation zones in the city.[33]

MAP 3.8: HURRICANE EVACUATION ZONES IN AND AROUND MEDFORD, MEMA



https://www.mass.gov/doc/medford-hurricane-evacuation-zones-map/download

32 https://experience.arcgis.com/experience/14f5f83e0e254180b0393b73a54af870

33 https://www.mass.gov/info-details/hurricane-evacuation-zones

TROPICAL CYCLONES CONTINUED

Extent

Tropical cyclones are considered one of the most destructive meteorological systems in the world, due to their potential to cause a variety of severe associated hazards. According to Massachusetts' 2021 Tropical Cyclone profile, the primary hazards associated with hurricanes are high winds, storm surge and storm tide, heavy rainfall and inland flooding, rip currents, and tornadoes. Additionally, secondary hazards that may come from hurricanes include coastal and riverine erosion, landslides, and contamination of water supplies.

Definition and summary of pertinent primary tropical cyclone hazards:

High winds: Hurricanes are categorized by the Saffir-Simpson Hurricane Wind Scale, a rating system used to estimate potential economic damage from hurricane winds. This scale, like the NHC classification, rates hurricanes based on its maximum sustained wind speed over any 1-minute period. The scale is designed to give public officials and the general public usable information on the magnitude of a hurricane by giving an indication of the potential wind damages associated with each category of hurricanes. However, it does not consider the impacts of associated hazards caused by hurricanes like storm surge and flooding. The following table from the NOAA and NHC summarizes the Saffir-Simpson categories and their associated damages.[34]

TABLE 3.3: HURRICANE CATEGORIES AND THEIR ASSOCIATED DAMAGES

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	**Devastating damage will occur:** Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	**Catastrophic damage will occur:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	**Catastrophic damage will occur:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

34 https://www.nhc.noaa.gov/aboutsshws.php

TROPICAL CYCLONES CONTINUED

- **Storm surge** is an abnormal rise of water generated by a storm, over and above the predicted astronomical tide. Along the coast, storm surge often poses the greatest threat to life and property. Both coastal areas and areas away from the immediate shoreline, of which the majority of Medford is included, are vulnerable to storm surge. The National Hurricane Center (NHC) cannot predict with complete certainty the track of a hurricane or the timing and extent of storm surge. Surge impacts may occur before, during, or after a storm makes landfall, and may impact areas far from the storm's track. The NHC warns that storm surge has the potential to destroy thousands of homes and businesses in a coastline region.
- **Storm tide** is the total water level rise during a storm due to the combination of storm surge and astronomically high tide, which can cause flooding. When storm surge coincides with high tide, storm tides can reach up to 20 feet or more.
- **Rip currents** are channeled currents flowing away from the shore, usually extending past the line of normal breaking waves. They can quickly drag people or objects out to sea. The strong winds of a tropical cyclone can cause dangerous waves and high-energy swell. When surf breaks along the coast, deadly rip currents can occur, even at large distances ahead of and behind the storm. The south coast of Massachusetts is particularly vulnerable to rip currents due to the depth of coastal waters.
- **Flash floods:** Tropical storms and hurricanes often produce widespread, torrential rains that can exceed 6 inches, which can result in destructive floods. Additionally, flash flooding, defined as a rapid rise in water levels, both on small streams and in urban areas, can occur quickly due to intense rainfall. Rainfall amounts are not directly related to the strength of tropical cyclones, but rather the speed and size of the storm and the geography of the impacted area. Generally, slower moving and larger storms can produce more rainfall, and the heaviest rain will occur to the north and west of a storm track that impacts New England.

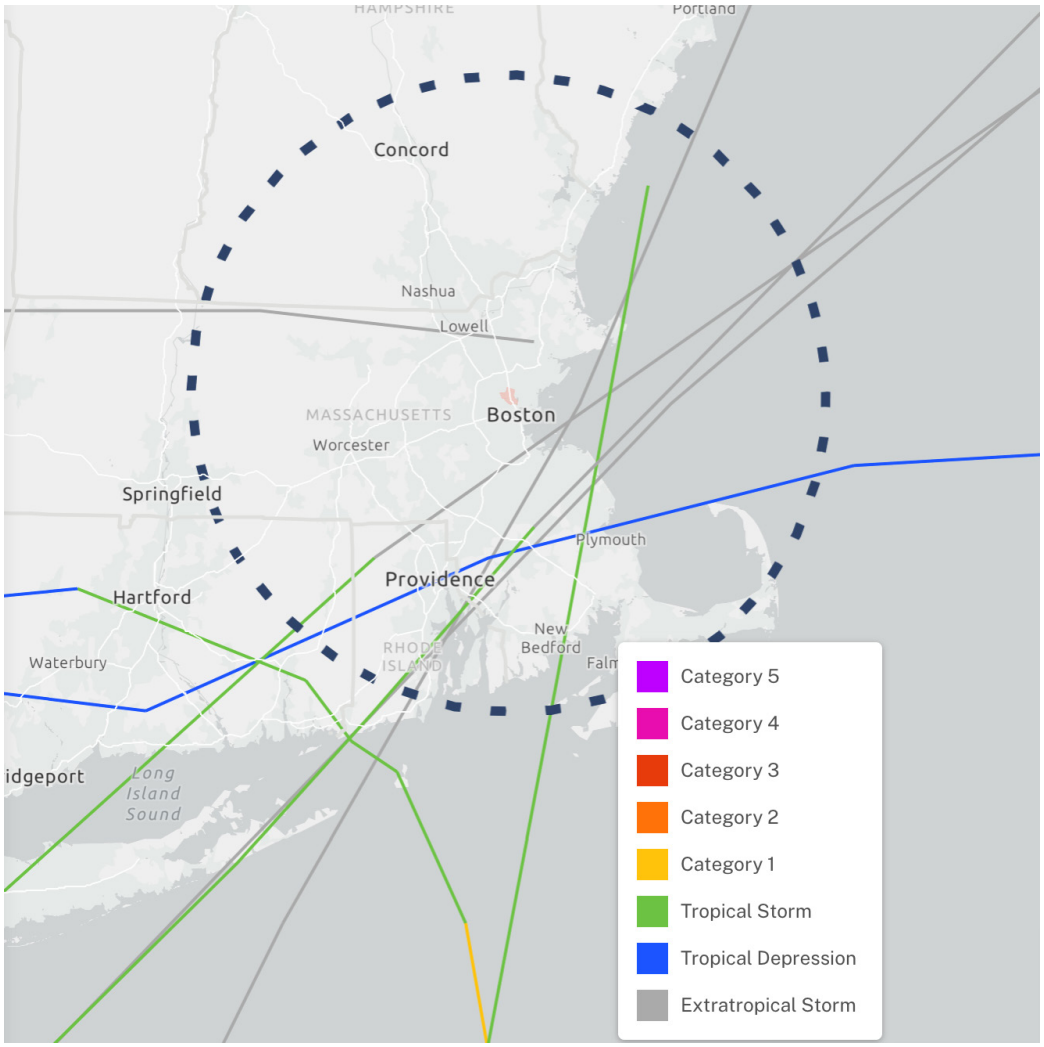
Despite the relatively low frequency of occurrence of hurricanes in Medford, they are considered a high-risk hazard due to the severity of each hurricane event. According to the FEMA National Risk Index, the annualized frequency of hurricanes and tropical storms across Middlesex County is 0.2 events per year. Nonetheless, FEMA estimates that on average, the city of Medford would suffer approximately $2.6 million damage each year due to hurricanes, while the countywide Expected Annual Loss value amounts to $97 million. In Medford, the most common hurricane-related hazards are falling trees and downed power lines, which often results in power outages, damage to buildings, and blocked emergency routes. Additional hazards that are most likely to occur in Medford include riverine flooding, heavy rain, and high winds from extratropical or tropical storms.

TROPICAL CYCLONES CONTINUED

Previous Occurences

According to the State of Massachusetts, based on data from the last 150 years, an average of one tropical cyclone occurs in or around Massachusetts every two years. There has been one recorded storm track that passed through Medford, which occurred in 1944. The most recent tropical cyclone that was hurricane-strength when it reached Massachusetts was Hurricane Bob in 1991. The following map shows the storm tracks of all hurricanes that occurred within 60 nautical miles (approximately 69 miles) of Medford in the last 20 years. 7 storm events occurred in this period, three of which were tropical storms, and 1 was a tropical depression, when they reached Massachusetts.[35]

MAP 3.9: STORM TRACKS OF HURRICANES WITHIN 60 NM OF MEDFORD, 2004 – 2024



https://www.mass.gov/doc/medford-hurricane-evacuation-zones-map/download

35 Note that this section does not contain detailed information of the damages of each individual storm, as it is difficult to gauge localized impacts of large-scale storm events. However, detailed meteorological and economic information of individual storms can be found at the National Hurricane Center website. Additionally, the best impact estimates to the City are provided in the Extent section.

TROPICAL CYCLONES CONTINUED

TABLE 3.4: THE FOLLOWING TABLE SUMMARIZES THE STORM EVENTS SHOWN IN THE ABOVE MAP.

STORM NAME	DATE RANGE	MAX WIND SPEED (KT)	MAX CATEGORY	MAX CATEGORY AROUND MEDFORD
Henri 2021	08/15/2021 – 08/24/2021	65	H1	TD
Fred 2021	08/09/2021 – 08/20/2021	55	TS	ET
Elsa 2021	06/30/2021 – 07/10/2021	75	H1	TS
Andrea 2013	06/05/2013 – 06/08/2013	55	TS	ET
Hanna 2008	08/28/2008 – 09/08/2008	75	H1	TS
Barry 2007	05/31/2007 – 06/05/2007	50	TS	ET
Hermine 2004	08/27/2004 – 08/31/2004	50	TS	TS

Probability of Future Occurrence

According to the State Hazard Mitigation Plan, warming ocean and air temperatures are expected to contribute to the increased intensity of hurricanes and tropical storms. It is projected that Atlantic tropical cyclones and related events will increase in frequency in future years. While on average, 1 storm occurs in Massachusetts every two years, between 2020 and 2022, four had already occurred, pointing to a trend of increasing hurricane frequency that is expected to continue in future years.

Tornados

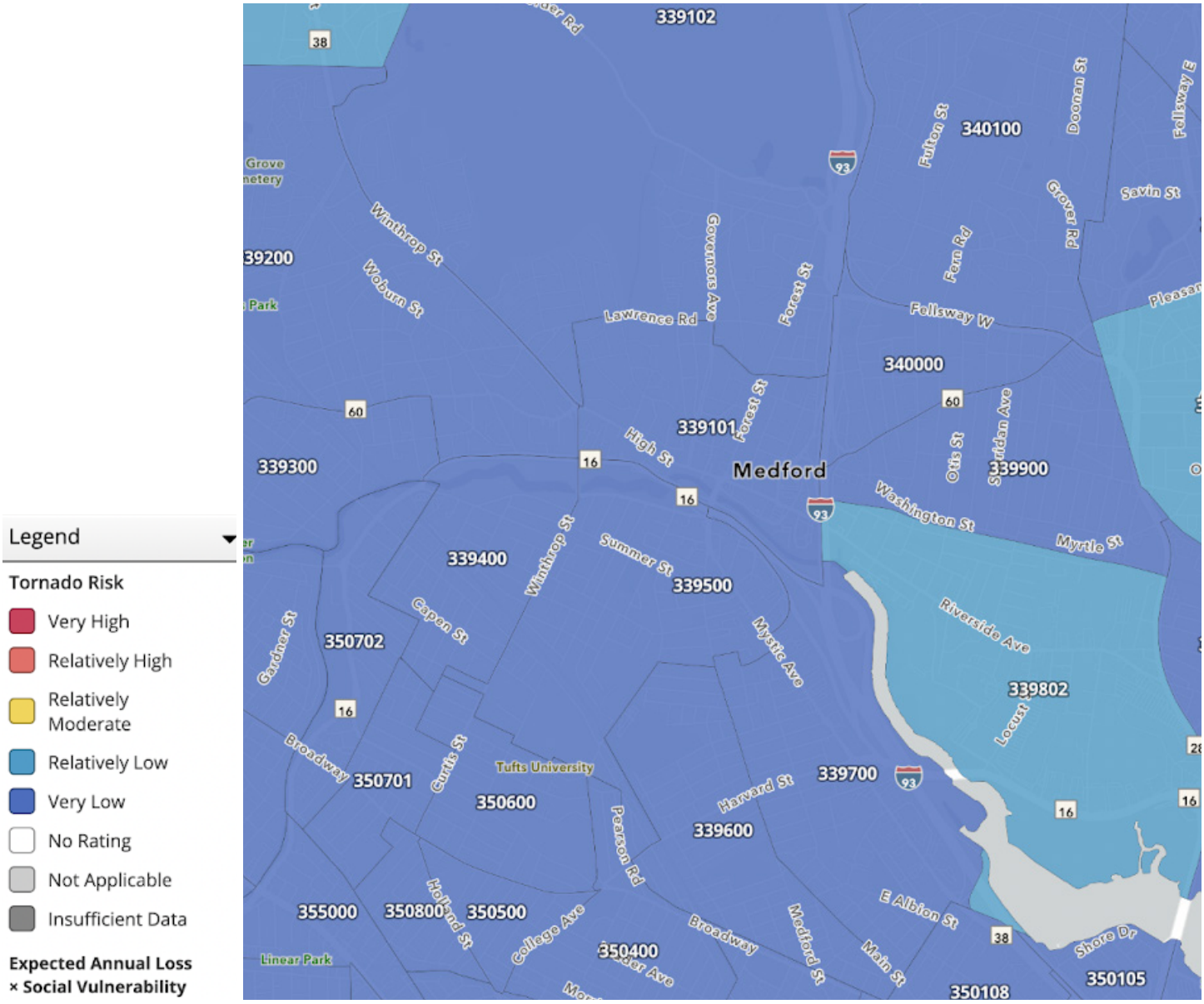
A tornado is a windstorm characterized by a narrow, violently rotating column of air that extends from the base of the storm to the ground. While the average tornado is mostly harmless and lasts only a few minutes, severe tornadoes can last for hours and span miles in diameter, reaching wind speeds of up to 300 miles per hour. While the exact conditions and causes behind each tornado are different, typically signs of a brewing tornado include a storm accompanied by a vortex of spiralling funnel cloud, strong winds, and the presence of pressure systems in the atmosphere. The most destructive tornadoes occur from supercells, which are thunderstorms with a spinning column of air in the center, called a mesocyclone or a vortex. Supercells that do not develop into tornadoes can still produce damaging hail, high winds, lightning, and heavy precipitation. Tornadoes can happen at any time of the year, but are most common in June and July in New England, whereas elsewhere in the U.S., such as the Gulf coast and the Southern Plains, they are more prevalent in spring.

TORNADOES CONTINUED

Location

Tornadoes are a city-wide hazard in Medford, although the impacts of any one event are likely limited to a particular area. According to FEMA's National Risk Index, all areas of Medford face low risk of tornado damage, with areas closest to the Mystic River facing slightly higher risk.

MAP 3.10: TORNADO RISK FOR MEDFORD NEIGHBORHOODS



https://hazards.fema.gov/nri/map

TORNADOES CONTINUED

Extent

As the previous section discusses, tornadoes are considered a low-risk hazard in Medford, as severe events are relatively rare in Massachusetts. According to FEMA, the annualized frequency of tornadoes in Middlesex County is 0.1 events per year, with a total recorded 10 events from 1950 to 2021 across the county. However, tornadoes have the potential to cause significant damage to property and public infrastructure, and pose risks to public safety. FEMA estimates that the city of Medford suffers thousands of dollars of annualized economic damage due to tornadoes, a figure pointing to the significant economic costs associated with each tornado event.

In Medford, most structures pre-date current building codes and could be subject to damages. Evacuation may be required on short notice. Sheltering and mass feeding efforts may be required, along with debris clearance, search and rescue, and emergency fire and medical services. The following are a summary of possible impacts to sectors by tornadoes:

- **Public health and safety:** People with difficulty evacuating, such as households with elderly people or young children and people with reduced mobility face greater safety risks. People with limited internet or phone access or low English proficiency may be unaware of tornado warnings. Flying or falling debris, such as uprooted trees and power lines, can cause critical injuries. First responders responsible for evacuation and fire and medical responses are at risk.
- **Economy and infrastructure:** high winds, heavy rain, and hail can damage personal property and public infrastructure such as road networks and power lines. People living in mobile homes, homes with aboveground foundations, or homes without basements are at increased risk of property damage and safety risks. Recovery and clean-up costs can be significant.
- **Natural environment:** tornadoes can damage forested areas and vegetation, and severe tornadoes can almost eradicate tree cover in neighbourhoods. Heavy winds can introduce hazardous materials to the atmosphere or water supplies, and transport invasive species. Disturbances from high winds may impact biodiversity and forest and soil composition.

Previous Occurences

In the United States, tornado severity is measured by the Enhanced Fujita-scale (EF-scale), which rates the severity of a tornado based on the amount of damage it causes. The rating associated with each tornado is determined by conducting a storm damage assessment; when damages are surveyed, they are compared to a list of existing “damage indicators” and “degrees of damage” which help estimate better the range of wind speeds the tornado likely produced. A rating from EF0 to EF5 is then assigned, representing the levels of damage estimated (not measured) based on damage. It uses three-second gusts estimated at the point of damage based on a judgement of 8 levels of damage to 28 indicators, and are not the same as standard surface observations measured at weather stations. The following table is

TORNADOES CONTINUED

EF SCALE	
EF Rating	3 Second Gust (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

created by the National Weather Service and details each EF Rating on the EF Scale.[36] The strongest tornado in Massachusetts history was the Worcester Tornado in 1953 (NESEC). The most recent tornado events in Massachusetts were in Springfield in 2011 and in Revere in 2014. The Springfield tornado caused significant damage and resulted in 4 deaths in June of 2011. The Revere tornado touched down in Chelsea just south of Route 16 (Revere Beach Parkway) and moved north into Revere's business district along Broadway, past Revere City Hall, and ended near the intersection of Routes 1 and 60. The path was approximately two miles long and 3/8 mile wide, with wind speeds up to 120 miles per hour.

Although there have been no recorded tornadoes within the limits of the City of Medford, there have been 17 tornadoes in surrounding Middlesex County since 1955. In the past 20 years, there have been 3 tornadoes in Middlesex County, which are detailed in the table below.

TABLE 3.6: TORNADOES IN MIDDLESEX COUNTY, 2004–2024

BEGIN LOCATION	END LOCATION	DATE	TOR F SCALE	DEATHS DIRECT	INJURIES DIRECT	PROPERTY DAMAGE
CONCORD	MERRIAMS CORNER	08/22/2016	EF1	0	0	1000000
MARLBOROUGH JCT	MARLBOROUGH	08/23/2021	EF0	0	0	8000
STOW	STOW	08/23/2021	EF0	0	0	2000

The following is an event narrative of the Concord 2016 tornado, the most severe tornado experienced in Middlesex County in the last 20 years.

- **2016 Concord tornado event:** a tornado developed within an area of showers and thunderstorms moving through southern New England, touching down near the Cambridge Turnpike and heading northeast. Elsewhere in New England, associated storms caused flooding, heavy precipitation, and high winds, but did not develop into tornadoes. In Concord, in the neighbourhood of Alcott and Independence Roads, numerous trees were uprooted or damaged, and subsequently blocked roads, damaged homes, and downed power lines, cutting off power to the neighbourhood. High winds also downed utility poles. Overall, 39 houses were damaged in this area, with one house suffering significant structural damage, and no injuries or fatalities were reported.

Probability of Future Occurrence

While current climate models predict an increase in severe thunderstorms in future years, studies are largely inconclusive as to whether tornadoes will increase in frequency in coming years.

36 https://www.weather.gov/oun/efscale

Winter Storms and Nor'easters

Winter storms are a series of weather events which include ice storms, blizzards, heavy snow, and other forms of winter precipitation. Nor'easters are a type of severe winter storm that forms wind circulations and large storm radiuses, and result in heavy snow, high winds, and rain. Winter storms and nor'easters are a common hazard in New England, and can adversely impact public safety, transportation systems, infrastructure, and/or commerce. Medford is at risk of both high winds, extreme precipitation (such as hail, snow, and ice storms), and other associated winter weather phenomena (such as sleet, ice, and cold temperatures).

WINTER STORMS AND NOR'EASTERS CONTINUED

Location

Winter storms typically impact large geographic areas and are a city-wide phenomenon. Certain parts of Medford may be more susceptible to different associated risks of winter storms, such as flooding due to overwhelmed drainage systems or damage to infrastructure. However, according to FEMA's National Risk Index, all census tracts within Medford face similar risk to damage from both ice storms and winter weather events.

Extent

In Medford, winter storms occur relatively frequently. Across Middlesex County, an average of 6.7 winter weather events are recorded per year. However, according to FEMA's National Risk Index, the Expected Annual Loss index for all Medford census tracts is "Very Low", at approximately 20% the national percentile. There is an expected annual loss dollar value of approximately $1000 across all of Medford. These risk values are determined based on historic frequency of the hazard, as well as the community's social vulnerability and community resilience indexes. These values mean that winter storms do not typically cause large-scale damage like loss of life or financially onerous property damage.

However, winter storms may still adversely affect various sectors, cause inconveniences to daily life, and put vulnerable communities at greater risk. In Medford, the impacts of winter storms are most significant on the transportation system, potential restrictions on emergency vehicle access, and school and road closures. A comprehensive summary of impacts to sectors are as follows:

- **Infrastructure:** winter storms frequently cause delayed or disrupted public transit. Storms also cause damage to roofs and structures due to the weight of snow and ice, as well as water damage from melting precipitation. Storms may also damage roads, power lines, and water and broadband networks.
- **Health and safety:** populations without access to housing or sufficient heating resources are particularly vulnerable to hypothermia and frostbite during winter storms. Residents are at greater risk for injuries and loss of life due to automobile accidents, exposure, overexertion, and other forms of personal or vehicular accidents. Public safety personnel may face increased risks, and response times for emergencies may be greater.
- **Economy and governance:** economic and revenue losses due to building damage and disruption in telecommunications, electricity, and transportation systems may occur at the individual and corporate level. State-owned infrastructure and services may be disrupted or damaged.
- **Natural Environment:** storms can adversely impact marshes, wetlands, and forested areas via loss of tree cover, increased soil erosion, and decreased water quality (from damage to wastewater facilities and sewers, and overburdened stormwater systems).

WINTER STORMS AND NOR'EASTERS CONTINUED

Previous Occurences

This section discusses storm events occurring in the Southeast Middlesex zone, as it is the smallest-scale geographic region used for recording winter storms that encompasses the city of Medford. In this region, 84 winter storm events were recorded between 2004 and 2024 by the National Weather Service. Of these events, 4 were classified as blizzards, 38 were heavy snow events, 25 were winter storms, 17 were winter weather. Ice storms impact Middlesex County and the greater Massachusetts coastal area, but were not recorded in Medford between 2004 and 2024. For the purposes of this report, all these weather events are considered winter storms.

The National Weather Service classification criteria for each type of weather event are as follows. Note that each individual weather event is entered once into the database.[37]

- **Blizzard:** a winter storm which produces the following conditions for 3 consecutive hours or longer. 1) Sustained winds or frequent gusts of 35 miles per hour or greater, 2) falling and/or blowing snow reducing visibility frequently to less than ¼ mile. Blizzard-like conditions lasting less than 3 hours are classified as winter storms, heavy snow, or winter weather instead.
- **Heavy snow:** snow accumulation meeting or exceeding regionally-defined 12 or 24 hour warning criteria. Heavy snow events do not include strong winds or other precipitation types.
- **Ice storm:** ice accretion meeting or exceeding regionally-defined warning criteria (typically ¼ or ½ inches). Ice storms do not include freezing rain or other forms of precipitation.
- **Winter storm:** an event with more than one significant hazard including heavy snow, blowing snow, ice, and freezing rain, and meets or exceeds regionally-defined 12 or 24h warning criteria for at least one of the precipitation elements. For instance, heavy snow that meets regional warning criteria, alongside high winds, regardless if the winds meet the criteria for high winds classifications, are considered winter storms. Ice storms meeting warning criteria, alongside freezing rain, are also considered a winter storm. Conversely, storms including multiple elements, but none of which meeting the regionally-defined warning criteria, would not be considered a winter storm.
- **Winter weather:** a winter precipitation event that causes death, injury, or a significant impact to commerce or transportation, but does not meet regionally-defined warning criteria. A winter weather event could result from one or more precipitation types listed in the "winter storms" section, or be used to document out-of-season and unusual or rare occurrences. For instance, a snow squall, which is a short by heavy burst of snow that may not occur for more than 3 hours (blizzards) nor trigger regional warning systems, may be categorized as a winter weather event, should it cause injuries or significant infrastructure damage.

37 https://www.weather.gov/media/directives/010_pdfs/pd01016005curr.pdf

WINTER STORMS AND NOR'EASTERS CONTINUED

Note that nor'easters are not classified as an event type by the National Weather Service. Instead, the associated impacts of nor'easters, such as heavy snow and blizzards, are listed. In general, 1 or 2 nor'easters impact Medford each year. Many severe storm events in Medford's history, such as the storms of October 2005, April 2007, January 2011, October 2011, and February 2023, are associated with nor'easters.

TABLE 3.7: WINTER STORMS AND NOR'EASTER EVENTS IN THE CITY OF MEDFORD, 2004–2024.

EVENT TYPE	BEGIN DATE	END DATE	DEATHS DIRECT	INJURIES DIRECT	DAMAGE PROPERTY
Event Type: Blizzard					
Blizzard	02/08/2013	02/09/2013	0	0	0
Blizzard	02/08/2013	02/09/2013	0	0	0
Blizzard	01/26/2015	01/28/2015	0	0	0
Blizzard	01/26/2015	01/28/2015	0	0	0
Event Type: Heavy Snow					
Heavy Snow	03/16/2004	03/17/2004	0	0	0
Heavy Snow	02/24/2005	02/25/2005	0	0	0
Heavy Snow	12/13/2007	12/13/2007	0	0	0
Heavy Snow	12/16/2007	12/16/2007	0	0	0
Heavy Snow	01/14/2008	01/14/2008	0	0	28000
Heavy Snow	02/22/2008	02/23/2008	0	0	0
Heavy Snow	12/19/2008	12/20/2008	0	0	0
Heavy Snow	12/20/2008	12/21/2008	0	0	8000
Heavy Snow	12/31/2008	12/31/2008	0	0	0
Heavy Snow	01/11/2009	01/11/2009	0	0	0
Heavy Snow	01/18/2009	01/18/2009	0	0	0
Heavy Snow	03/02/2009	03/02/2009	0	0	0
Heavy Snow	12/20/2009	12/20/2009	0	0	0
Heavy Snow	01/18/2010	01/18/2010	0	0	0
Heavy Snow	02/16/2010	02/17/2010	0	0	15000
Heavy Snow	01/26/2011	01/27/2011	0	0	0
Heavy Snow	12/29/2012	12/30/2012	0	0	0
Heavy Snow	02/08/2013	02/09/2013	0	0	0
Heavy Snow	03/07/2013	03/08/2013	0	0	0
Heavy Snow	03/18/2013	03/19/2013	0	0	0
Heavy Snow	12/14/2013	12/15/2013	0	0	0
Heavy Snow	12/17/2013	12/18/2013	0	0	0
Heavy Snow	01/02/2014	01/03/2014	0	0	0
Heavy Snow	02/05/2014	02/05/2014	0	0	0
Heavy Snow	02/13/2014	02/14/2014	0	0	0
Heavy Snow	01/24/2015	01/24/2015	0	0	0
Heavy Snow	02/02/2015	02/02/2015	0	0	0

WINTER STORMS AND NOR'EASTERS CONTINUED

Heavy Snow	02/08/2015	02/10/2015	0	0	0
Heavy Snow	02/14/2015	02/15/2015	0	0	0
Heavy Snow	02/05/2016	02/05/2016	0	0	5000
Heavy Snow	03/14/2017	03/14/2017	0	0	0
Heavy Snow	11/15/2018	11/16/2018	0	0	0
Heavy Snow	12/01/2019	12/03/2019	0	0	2500
Heavy Snow	12/16/2020	12/17/2020	0	0	0
Heavy Snow	02/07/2021	02/07/2021	0	0	0
Heavy Snow	01/07/2022	01/07/2022	0	0	0
Heavy Snow	02/25/2022	02/25/2022	0	0	0
Heavy Snow	01/07/2024	01/07/2024	0	0	0

Event Type: Winter Storm

Winter Storm	12/26/2004	12/27/2004	0	0	0
Winter Storm	01/05/2005	01/06/2005	0	0	0
Winter Storm	01/22/2005	01/23/2005	0	0	0
Winter Storm	03/01/2005	03/01/2005	0	0	0
Winter Storm	02/12/2006	02/12/2006	0	0	10000
Winter Storm	02/14/2007	02/15/2007	0	0	0
Winter Storm	03/16/2007	03/17/2007	0	0	0
Winter Storm	12/26/2010	12/27/2010	0	0	0
Winter Storm	01/12/2011	01/12/2011	0	0	50000
Winter Storm	01/21/2011	01/21/2011	0	0	0
Winter Storm	02/01/2011	02/02/2011	0	0	183500
Winter Storm	02/29/2012	02/29/2012	0	0	0
Winter Storm	03/01/2012	03/01/2012	0	0	0
Winter Storm	01/07/2017	01/08/2017	0	0	0
Winter Storm	02/09/2017	02/09/2017	0	0	0
Winter Storm	02/12/2017	02/13/2017	0	0	0
Winter Storm	12/09/2017	12/09/2017	0	0	0
Winter Storm	01/04/2018	01/04/2018	0	0	1000
Winter Storm	02/17/2018	02/18/2018	0	0	0
Winter Storm	03/07/2018	03/08/2018	0	0	0
Winter Storm	03/13/2018	03/14/2018	0	0	3000
Winter Storm	01/19/2019	01/20/2019	0	0	0
Winter Storm	03/03/2019	03/04/2019	0	0	0
Winter Storm	02/01/2021	02/02/2021	0	0	0
Winter Storm	01/28/2022	01/29/2022	0	0	0

Event Type: Winter Weather

Winter Weather	12/04/2005	12/04/2005	0	5	100000
Winter Weather	10/29/2011	10/30/2011	0	0	5000
Winter Weather	01/21/2012	01/21/2012	0	0	0

Winter Weather	11/07/2012	11/08/2012	0	0	0
Winter Weather	02/17/2013	02/17/2013	0	0	0
Winter Weather	02/21/2015	02/22/2015	0	0	0
Winter Weather	01/23/2016	01/23/2016	0	0	0
Winter Weather	02/08/2016	02/09/2016	0	0	0
Winter Weather	03/21/2016	03/21/2016	0	0	0
Winter Weather	04/03/2016	04/03/2016	0	0	0
Winter Weather	04/04/2016	04/04/2016	0	0	0
Winter Weather	12/17/2016	12/17/2016	0	0	0
Winter Weather	02/08/2017	02/08/2017	0	0	150000
Winter Weather	12/22/2017	12/23/2017	0	0	5000
Winter Weather	12/25/2017	12/25/2017	0	0	0
Winter Weather	04/18/2020	04/18/2020	0	0	5000
Winter Weather	10/30/2020	10/30/2020	0	0	3600
Total		84 events	0	5	574600

The following are descriptions of all events which caused significant property damage (greater than $10,000) and/or injuries between 2004 and 2024 in the Southeast Middlesex zone.

- **December 2005 winter weather event:** a fast-moving winter storm passing south of New England produced one to three inches of snow across Massachusetts. This storm caused a 10-car crash along Interstate 93 in Medford, which resulted in road closures and minor injuries from five people.
- **February 2006 winter storm event:** low pressure in Virginia intensified into a nor'easter about 75 miles southeast of Nantucket County, which produced blizzard conditions, heavy snow, and coastal flooding across southeast New England. Strong winds brought down trees and power lines, and the Boston Logan International Airport reported a record 17.5 inches of snow.
- **January 2008 heavy snow event:** six to twelve inches of heavy snow, accompanied by high winds, fell across southern New England and much of Massachusetts due to a low pressure system. Trees and power lines were downed, some of which fell on cars, homes, and train tracks. In Boston and surrounding cities, many schools were closed and non-essential workers were told to stay home. The region experienced widespread property damage, cancelled flights, delayed public transportation, and spin-out accidents on roads.
- **February 2010 heavy snow event:** a low pressure system impacted much of southern New England. Three to eight inches of snow fell across Middlesex County, the weight of which downed trees and utility infrastructure.

WINTER STORMS AND NOR'EASTERS CONTINUED

- **January 2011 winter storm event:** a developing nor'easter brought heavy snow and strong winds to southeastern Massachusetts. Numerous trees and power lines were downed, and 100,000 homes experienced power loss statewide, the majority of which were in the southeastern Massachusetts zone. Due to snow experienced in the previous month, many roofs collapsed and transportation routes were disrupted. In southeast Middlesex County, twelve to twenty-four inches of snow and strong winds were recorded. President Obama granted several counties, including Middlesex County, federal assistance for costs associated with the storm and its cleanup.
- **February 2011 winter storm event:** a series of low pressure centres impacted the southern New England region with heavy snow and ice. Following the heavy snow events listed above in January 2011 and in the month prior, more roofs collapsed due to heavy snow load across Massachusetts. In southeast Middlesex County, nine to twelve inches of snow fell over a two-day period. Heavy snowfall totalled 81 inches throughout the snow season from December 2010 to February 2011. The heavy property damage incurred are primarily due to collapsed roofs, the majority of which occurred during or after the February 2011 storm.
- **February 2017 winter weather event:** a low pressure wave developed east of Massachusetts along a warm front. Freezing rain and icy road surfaces occurred during the morning rush hour on February 8th, which caused significant vehicle pileups, vehicle crashes, and road closures.

Probability of Future Occurrence

Sea level rise, warning ocean temperatures, and changing atmospheric circulation patterns associated with climate change are likely to increase the frequency and severity of winter storms. Warmer temperatures indicate that, on average, more precipitation will fall as rain as opposed to snow. However, extreme, unusual, and rare weather events are also more likely to occur.

Thunderstorms, Wind Events, and Other Severe Weather

Thunderstorms are violent and short periods of weather disturbance associated with lightning, thunder, dense clouds, heavy rain, hail, and strong winds. Severe thunderstorms are accompanied by swirling vortices of air that can be strong enough to form tornadoes. Typically, thunderstorms are smaller in diameter than tornadoes, and can last for only minutes.

For the purposes of this guide, "other severe weather" describes frequent natural hazards that occur in Medford outside of specific storm events like hurricanes and tornadoes. This classification is compatible with the 2023 state of Massachusetts Hazard Mitigation Plan. Examples of "other severe weather events" include lightning, heavy rain, and high wind events that occur outside of storm events like hurricanes and thunderstorms.

Thunderstorms, lightning, and high winds are common hazards in New England, and often adversely affect public safety, transportation systems, infrastructure, and commerce. Medford is at risk of thunderstorms, and severe weather events like high winds and heavy rainfall.

THUNDERSTORMS, WIND EVENTS, AND OTHER SEVERE WEATHER CONTINUED

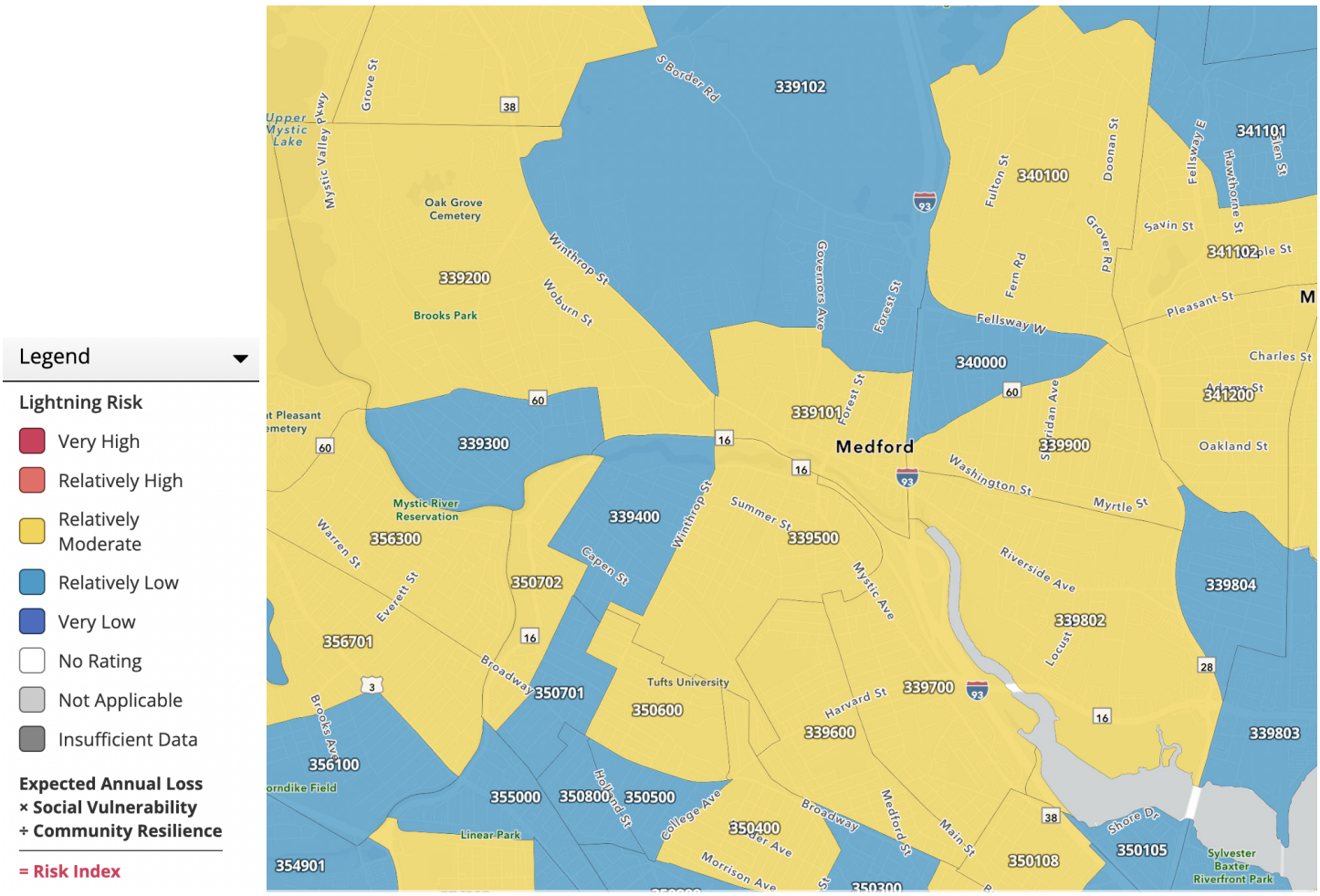
Location

Thunderstorms and other severe weather events are a city-wide phenomenon. Certain parts of Medford may be more susceptible to different associated risks, such as damage to roads and fallen trees. According to FEMA's National Risk Index, all census tracts within Medford face similar risks of high winds. However, certain areas face increased risk of lightning, due to the presence of infrastructure and historical losses associated with lightning events.

Note that in FEMA classifications, the hazard category of "lightning" includes thunderstorms and strong wind events with elements of lightning, and "high winds" include storms and heavy precipitation events accompanied by strong winds, but not lightning. Thunderstorms or heavy rain are not recorded as individual event categories, but incorporated into lightning or high wind categories.

The following map shows the lightning risk index of each Medford census tract.

MAP 3.11: RISK OF LIGHTNING IN MEDFORD BY CENSUS TRACT



https://hazards.fema.gov/nri/map

THUNDERSTORMS, WIND EVENTS, AND OTHER SEVERE WEATHER CONTINUED

Extent

In Medford, thunderstorms and other severe weather events occur relatively frequently. According to FEMA, across Middlesex County, an average of 14.6 lightning events and an average of 0.9 strong wind events are recorded each year across Middlesex County. Note from the previous section that FEMA's category of "lightning" events includes thunderstorms and strong winds with elements of lightning, and "high winds" include storms and heavy precipitation events accompanied by strong winds, but not lightning.

According to FEMA's National Risk Index, the Expected Annual Loss index of lightning events ranges from "relatively moderate" to "relatively low" across Medford census tracts. Census tracts with "relatively low" risk have an expected property loss value of approximately $3,500 to $5,000 per year, while census tracts with "relatively moderate" risk have an expected property loss value of approximately $5,000 to $9,500 per year. The expected annual economic loss across all of Medford due to lightning events is approximately $97,000. Additionally, the Expected Annual Loss index for strong wind events for all Medford census tracts is "very low", at approximately 6 to 15% the national percentile, with an expected $5000 of property damage due to high winds across all of Medford per year. In total, Medford suffers an expected $102,000 in property damage each year due to thunderstorms and other severe weather events like strong winds.

In addition to economic losses, thunderstorms and other severe weather events may adversely affect various sectors. Medford is most vulnerable to damages to structures, fallen trees, and downed power lines due to high winds. Intense rainfall can overwhelm drainage systems and cause localised flooding. A comprehensive summary of impacts to sectors is as follows:

- **Infrastructure:** damage to electricity and water systems, transportation systems and roads, and buildings are likely. For instance, in the event of severe thunderstorms, there may be power outages, public transportation disruptions, and damage to critical facilities.
- **Health and safety:** residents, particularly unhoused populations, are at risk of injury due to high winds and lightning strikes. Emergency response systems and access to medical care may be disrupted due to power outages and road blockages.
- **Economy and governance:** particularly small businesses may experience disrupted business operations and loss of revenue. Damage to or loss of residential homes and state-owned buildings are also possible.
- **Environment:** vegetation in both urban and forested areas may both be damaged or uprooted. Forest and watershed health may be degraded in the event of severe weather disruptions, which may increase the risk of brush fires and reduce water and soil quality in forested areas.

THUNDERSTORMS, WIND EVENTS, AND OTHER SEVERE WEATHER CONTINUED

Previous Occurences

In the Southeast Middlesex zone, the smallest geographic area encompassing Medford that is used to record wind data, 108 wind-related events were recorded between 2004 and 2024. Lightning and thunderstorm wind events are recorded by city: in Medford, 15 events were recorded between 2004 and 2024. Additionally, heavy rain impacts Middlesex County and the greater Massachusetts coastal area, but were not recorded in Medford between 2004 and 2024. The National Weather Service classification criteria for each type of weather event are as follows.[38]

- **High wind:** sustained non-convective winds of 40 miles per hour or greater lasting one hour or longer, or gusts of 58 miles per hour or greater for any duration.
- **Strong wind:** non-convective winds gusting less than 58 miles per hour, or sustained winds less than 40 miles per hour which resulted in a fatality, injury, or property damage.
- **Thunderstorm wind:** winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 58 miles per hour, or winds of any speed from non-severe thunderstorms which produced fatalities, injuries, or property damage.
- **Lightning:** sudden electrical discharge from a thunderstorm, which resulted in a fatality, injury, and/or damage. Note that many more lightning strikes occurred in Medford than the two events recorded in this guide. However, the National Weather Service only records those which caused damage.
- **Heavy rain:** unusually large amounts of rain that does not cause a flash flood or flood event, but causes property damage, fatalities, or injuries. Damage caused by heavy rain events may include collapsed roofs or power lines. Low-impact or isolated flood events such as urban flooding due to poor drainage systems are recorded as flood and not heavy rain events.

Note that while wind-related events have historically caused significant property damage and injuries in Medford and surrounding areas, both the damage and number of events listed below appear disproportionate in comparison to thunderstorm and lightning events due to the larger geographic scale in which wind events encompass and are thus recorded.

38 https://www.weather.gov/media/directives/010_pdfs/pd01016005curr.pdf

THUNDERSTORMS, WIND EVENTS, AND OTHER SEVERE WEATHER CONTINUED

TABLE 3.8: HIGH WIND AND STRONG WIND EVENTS IN SOUTHEAST MIDDLESEX ZONE, 2024-2024.

EVENT TYPE	BEGIN DATE	END DATE	DEATHS DIRECT	INJURIES DIRECT	PROPERTY DAMAGE ($)
High Wind	11/05/2004	11/05/2004	0	0	25000
High Wind	12/23/2004	12/23/2004	0	0	25000
High Wind	03/08/2005	03/08/2005	0	0	25000
High Wind	05/07/2005	05/07/2005	0	0	10000
High Wind	05/24/2005	05/25/2005	0	0	15000
High Wind	05/25/2005	05/25/2005	0	0	15000
High Wind	09/29/2005	09/29/2005	0	0	30000
High Wind	10/16/2005	10/16/2005	0	0	5000
High Wind	10/25/2005	10/25/2005	0	0	8000
High Wind	10/25/2005	10/25/2005	0	0	15000
High Wind	10/25/2005	10/25/2005	0	0	15000
High Wind	12/09/2005	12/09/2005	0	0	20000
High Wind	12/09/2005	12/09/2005	0	0	20000
High Wind	01/18/2006	01/18/2006	0	0	50000
High Wind	01/18/2006	01/18/2006	0	0	20000
High Wind	01/21/2006	01/21/2006	0	0	15000
High Wind	02/17/2006	02/17/2006	0	0	80000
High Wind	10/29/2006	10/29/2006	0	0	10000
High Wind	02/10/2008	02/10/2008	0	0	0
High Wind	03/21/2008	03/21/2008	0	0	0
High Wind	12/31/2008	12/31/2008	0	0	0
High Wind	01/25/2010	01/25/2010	0	0	15000
High Wind	02/25/2010	02/25/2010	0	0	50000
High Wind	02/25/2012	02/25/2012	0	0	35000
High Wind	01/31/2013	01/31/2013	0	0	60000
High Wind	11/01/2013	11/01/2013	0	0	35000
High Wind	10/22/2014	10/23/2014	0	0	50000
High Wind	03/17/2015	03/18/2015	0	0	25000
High Wind	04/04/2015	04/04/2015	0	0	22000
High Wind	02/25/2016	02/25/2016	0	0	10000
High Wind	03/31/2016	03/31/2016	0	0	20000
High Wind	12/15/2016	12/16/2016	0	0	6000
High Wind	03/14/2017	03/14/2017	0	0	35000
High Wind	10/24/2017	10/24/2017	0	0	20000
High Wind	10/30/2017	10/30/2017	0	0	1000
High Wind	03/02/2018	03/03/2018	0	0	75000
High Wind	10/27/2018	10/27/2018	0	0	4000
High Wind	11/03/2018	11/03/2018	0	0	0
High Wind	01/24/2019	01/24/2019	0	0	2500

THUNDERSTORMS, WIND EVENTS, AND OTHER SEVERE WEATHER CONTINUED

High Wind	02/25/2019	02/25/2019	0	0	20000
High Wind	04/13/2020	04/13/2020	0	0	1200
High Wind	11/15/2020	11/15/2020	0	0	0
High Wind	11/30/2020	11/30/2020	0	0	3500
High Wind	03/01/2021	03/02/2021	0	0	2500
High Wind	03/12/2021	03/13/2021	0	0	800
High Wind	10/26/2021	10/27/2021	0	0	38500
High Wind	12/18/2023	12/18/2023	0	0	0
Strong Wind	12/09/2005	12/09/2005	0	0	10000
Strong Wind	04/29/2010	04/29/2010	0	3*	25000
Strong Wind	10/15/2010	10/15/2010	0	0	10000
Strong Wind	11/17/2010	11/17/2010	0	0	5000
Strong Wind	09/18/2012	09/18/2012	0	0	50000
Strong Wind	01/20/2013	01/20/2013	0	0	15000
Strong Wind	03/07/2013	03/07/2013	0	0	25000
Strong Wind	11/24/2013	11/24/2013	0	0	5000
Strong Wind	11/27/2013	11/27/2013	0	0	1000
Strong Wind	03/26/2014	03/26/2014	0	0	5000
Strong Wind	04/15/2014	04/15/2014	0	0	15000
Strong Wind	04/24/2014	04/24/2014	0	0	5000
Strong Wind	01/05/2015	01/05/2015	0	0	2000
Strong Wind	12/15/2015	12/15/2015	0	0	3000
Strong Wind	01/19/2016	01/19/2016	0	0	5000
Strong Wind	05/15/2016	05/15/2016	0	0	1000
Strong Wind	05/15/2016	05/15/2016	0	0	1000
Strong Wind	05/15/2016	05/15/2016	0	0	1000
Strong Wind	05/16/2016	05/16/2016	0	0	500
Strong Wind	05/16/2016	05/16/2016	0	0	5000
Strong Wind	12/18/2016	12/18/2016	0	0	100
Strong Wind	02/13/2017	02/13/2017	0	0	15000
Strong Wind	03/22/2017	03/22/2017	0	0	1000
Strong Wind	04/16/2017	04/16/2017	0	0	8000
Strong Wind	11/10/2017	11/10/2017	0	0	15000
Strong Wind	12/05/2017	12/06/2017	0	0	20000
Strong Wind	04/16/2018	04/16/2018	0	0	1000
Strong Wind	05/04/2018	05/05/2018	0	0	15000
Strong Wind	10/15/2018	10/16/2018	0	0	15000
Strong Wind	02/09/2019	02/09/2019	0	0	1500
Strong Wind	04/03/2019	04/03/2019	0	0	4000
Strong Wind	10/16/2019	10/16/2019	0	0	500
Strong Wind	10/16/2019	10/16/2019	0	0	500
Strong Wind	10/16/2019	10/16/2019	0	0	500
Strong Wind	10/16/2019	10/16/2019	0	0	500

THUNDERSTORMS, WIND EVENTS, AND OTHER SEVERE WEATHER CONTINUED

Strong Wind	10/16/2019	10/16/2019	0	0	500
Strong Wind	10/17/2019	10/17/2019	0	0	800
Strong Wind	10/17/2019	10/17/2019	0	0	500
Strong Wind	10/17/2019	10/17/2019	0	0	800
Strong Wind	10/17/2019	10/17/2019	0	0	300
Strong Wind	10/17/2019	10/17/2019	0	0	500
Strong Wind	10/17/2019	10/17/2019	0	0	800
Strong Wind	01/12/2020	01/12/2020	0	0	500
Strong Wind	02/27/2020	02/27/2020	0	0	1000
Strong Wind	03/13/2020	03/13/2020	0	0	3800
Strong Wind	04/03/2020	04/03/2020	0	0	5000
Strong Wind	04/26/2020	04/27/2020	0	0	300
Strong Wind	05/09/2020	05/09/2020	0	0	4000
Strong Wind	09/30/2020	09/30/2020	0	0	300
Strong Wind	10/10/2020	10/10/2020	0	0	300
Strong Wind	11/15/2020	11/15/2020	0	0	500
Strong Wind	12/05/2020	12/05/2020	0	0	500
Strong Wind	12/25/2020	12/25/2020	0	0	500
Strong Wind	03/14/2021	03/14/2021	0	0	2300
Strong Wind	03/14/2021	03/14/2021	0	0	1000
Strong Wind	04/30/2021	04/30/2021	0	2*	5000
Strong Wind	01/17/2022	01/17/2022	0	0	500
Strong Wind	11/20/2022	11/20/2022	0	0	800
Strong Wind	12/03/2022	12/03/2022	0	0	800
Strong Wind	12/23/2022	12/23/2022	0	0	500
Strong Wind	12/11/2023	12/11/2023	0	0	1500

*No injuries were recorded in the city of Medford. The 5 total injuries from high or strong winds were recorded in nearby cities in the southeast Middlesex County zone.

The following are descriptions of wind events that caused the greatest amount of property damage and/or injuries between 2004 and 2024 in the Southeastern Middlesex Zone.

- **February 2006 high wind event:** a strong cold front swept across southern New England, which produced high winds across most of Massachusetts. Southwest winds sustained between 20 to 30 miles per hour were common, with gusts up to 60 miles per hour. These winds brought down numerous trees, power lines, and wires across the state. Across the state, one fatality and three known injuries were a direct result of this event. In the Southeast Middlesex County zone, no injuries were recorded, and a total of $80,000 property damage was recorded.

THUNDERSTORMS, WIND EVENTS, AND OTHER SEVERE WEATHER CONTINUED

- **March 2018 high wind event:** a low pressure system passed from the Ohio Valley to southern New England, bringing storm-like weather to much of Massachusetts. Central and eastern Massachusetts experienced heavy rain and strong winds, accompanied by coastal flooding and a storm surge. In Medford and surrounding areas, the majority of property damage, amounting to $75,000 in the Southeast Middlesex Zone, were a result of downed trees, downed power lines, and other forms of wind damage to infrastructure.
- **January 2013 high wind event:** a warm front moved northward across southern New England, bringing a period of heavy rain and warm temperatures. Much of southeastern Massachusetts experienced felled trees and downed power lines, with winds gusting up to 60 to 70 miles per hour. The Southeastern Middlesex County zone experienced a total of $60,000 of property damage, primarily from trees falling on wires, cars, and downed power lines.
- **April 2010 strong wind event:** low pressure over the Canadian Maritimes produced wind gusts of 40 to 50 miles per hour throughout southern New England. In the Southeastern Middlesex County zone, winds up to 45 miles per hour were recorded, and a total of $25,000 property damage was experienced. This event notably caused several injuries in the Southeastern Middlesex zone: a 9-year-old boy was struck by a falling tree and injured in Belmont, and two others were hospitalized in Melrose after a falling tree struck their vehicle. No injuries were recorded in the city of Medford.

WINTER STORMS AND NOR'EASTERS CONTINUED

TABLE 3.9: THUNDERSTORM EVENTS IN THE CITY OF MEDFORD, 2004–2024.

EVENT TYPE	LOCATION	BEGIN DATE	END DATE	DEATHS DIRECT	INJURIES DIRECT	PROPERTY DAMAGE ($)
Lightning	MEDFORD	09/06/2014	09/06/2014	0	0	15000
Lightning	TUFTS COLLEGE	09/04/2019	09/04/2019	0	0	5000
Thunderstorm Wind	MEDFORD	08/14/2005	08/14/2005	0	0	5000
Thunderstorm Wind	MEDFORD	06/24/2008	06/24/2008	0	0	1000
Thunderstorm Wind	MEDFORD	07/07/2014	07/07/2014	0	0	25000
Thunderstorm Wind	MEDFORD	09/06/2014	09/06/2014	0	0	3000
Thunderstorm Wind	MEDFORD	07/23/2016	07/23/2016	0	0	1000
Thunderstorm Wind	MEDFORD	06/13/2017	06/13/2017	0	0	1000
Thunderstorm Wind	MEDFORD	06/13/2017	06/13/2017	0	0	6000
Thunderstorm Wind	MEDFORD	09/04/2019	09/04/2019	0	0	700
Thunderstorm Wind	MEDFORD	08/07/2022	08/07/2022	0	0	7000
Thunderstorm Wind	TUFTS COLLEGE	07/25/2023	07/25/2023	0	0	500
Thunderstorm Wind	WEST MEDFORD	06/25/2018	06/25/2018	0	0	10000
Thunderstorm Wind	WEST MEDFORD	06/25/2018	06/25/2018	0	0	2000
Thunderstorm Wind	WEST MEDFORD	08/07/2022	08/07/2022	0	0	8000

The following are descriptions of thunderstorm events that caused the greatest amount of property damage between 2004 and 2024 in the city of Medford. Note that unlike high wind and strong wind events which are only recorded across larger geographic areas such as the Southeastern Middlesex County zone, the above lightning and thunderstorm wind events specifically pertain to the City of Medford. Thus, the comparative lower property damage values correspond to the smaller geographic area.

- **September 2014 lightning event:** this event was the most severe lightning event recorded between 2004 and 2024 in Medford. An approaching cold front produced showers and thunderstorms across southern New England, accompanied by strong winds. In Medford, lightning struck a house near the intersection of Central Street and Route 28, setting it on fire. A total of $15,000 property damage was reported, and no direct injuries or deaths occurred.
- **July 2014 thunderstorm wind event:** this event was the most severe thunderstorm wind event recorded between 2004 and 2024 in Medford. Strong to severe thunderstorms developed into a warm, humid air mass ahead of an approaching cold front in Southern Massachusetts. In Medford, trees were downed on Corey Street and Riverside Avenue. A telephone pole was downed onto Massachusetts Avenue and wires on Lawrence Street were downed, all by thunderstorm winds. A total of $25,000 property damage was reported across the city of Medford.

WINTER STORMS AND NOR'EASTERS CONTINUED

Overall, in the category of thunderstorms and other severe weather types like high winds, heavy rain, and lightning, all event types have historically caused repeated economic loss, primarily from downed trees falling on property, vehicles, and roads, and damage on other utility infrastructure such as power lines. High and strong wind events occur the most frequently, and thus cause the greatest amount of combined economic damage.

Probability of Future Occurrence

Fortunately, the events in this category do not typically cause direct injuries or deaths. The intensity of extreme precipitation events are projected to increase, while the number of days of precipitation is expected to be more variable. Lightning, thunderstorm, and strong wind events are expected to increase in intensity and frequency. Thus, the economic damage caused by these events is also projected to increase, and there may be a greater corresponding likelihood of injuries or deaths that result from these events.

Extreme Temperatures

Extreme temperatures occur when heat or cold reaches levels well above or below what is normal for an area. Medford can experience both heat waves in summer and cold waves in winter. Heat waves last several days and can be dangerous, while cold waves bring prolonged freezing temperatures that can affect health and safety. Certain groups, including low-income and unhoused residents, are especially vulnerable to extreme cold.

Heat Waves

Extreme temperatures is a general term referring to temperature variations above or below normal conditions, depending on average local temperatures. Extreme temperatures may be brief and intense, or they may persist over longer periods. Heat waves are defined as a period of marked unusual hot temperature lasting more than three consecutive days during the warm period of the year.

Medford has four well-defined seasons, with temperature being one of the most significant defining characteristics. The annual average temperature in Middlesex County from 1991 to 2020, based on a weather station at Boston's Logan International Airport, is 51.9 degrees Fahrenheit. The seasonal average temperatures between 1991 and 2020 are as follows: 32.5 °F in winter, 48.4 °F in spring, 71.6 °F in summer, and 55.1 °F in autumn.

TABLE 3.10: SEASONAL AVERAGE TEMPERATURES AT BOSTON'S LOGAN INTERNATIONAL AIRPORT WEATHER STATION

SEASON	AVERAGE TEMPERATURE (F)
Annual	51.9
Winter	32.5
Spring	48.4
Summer	71.6
Autumn	55.1

HEAT WAVES
CONTINUED

Location

While extreme temperatures are a city-wide phenomenon, the vulnerability of residents to negative health impacts varies significantly within populations. Studies show that there is significant spatial variability in population risk to extreme temperature events, with disadvantaged populations in cities being particularly vulnerable.[39] In particular, according to the findings of a 2011 scientific study of the spatial variability of heat-related health impacts in Massachusetts, areas with higher populations of African American people, lower-income areas, and homeless populations are disproportionately face heat-related risks.

Extent

According to FEMA's National Risk Index, the risk of all Medford census tracts to heat waves is relatively low. Across Middlesex County, 12 heat wave events were recorded in the last 15 years, with an annualized frequency of 0.7 heat wave events per year. The estimated property damage values from heat wave events are very low compared to other hazards, and the primary concern of extreme temperatures is public safety.[40]

Across the U.S., extreme temperature is the leading cause of weather-related mortality. Scientific studies show that extreme temperatures may also cause indirect injuries and deaths, for instance by exacerbating the risk of adverse effects from comorbidities, such as lung and respiratory diseases. Additionally, even periods of heat that do not meet local thresholds for heat waves may still increase the population's risk of adverse health impacts.

39 https://www.sciencedirect.com/science/article/pii/S0143622811001433?via%3Dihub, https://ehp.niehs.nih.gov/doi/10.1289/isee.2020.virtual.P-1253

40 https://ehp.niehs.nih.gov/doi/10.1289/isee.2020.virtual.P-1253

HEAT WAVES
CONTINUED

Previous Occurences

Over the last twenty years, one extreme heat event occurred in Medford, which directly caused one death in the Southeast Middlesex zone. In Middlesex County, 3 extreme heat events were recorded from 2004 to 2024. The following table[41] shows a summary of the heat event in Medford, and is followed by a narrative description of the event. Note that several National Weather Service heat advisories have been issued to both the city of Medford and surrounding areas, which, while not severe enough to be considered extreme weather events, may still adversely affect populations.

TABLE 3.11: EXTREME HEAT EVENTS IN MEDFORD, 2004–2024

EVENT TYPE	LOCATION	BEGIN DATE	END DATE	DEATHS DIRECT	INJURIES DIRECT	PROPERTY DAMAGE ($)
Heat	SOUTHEAST MIDDLESEX (ZONE)	07/05/2013	07/06/2013	1	0	0

July 2013 Heat Event: a long period of hot and humid weather occurred across New England. In Boston and surrounding regions, temperatures above 90 °F were recorded from July 3 to July 7. Low temperatures were just below 80 degrees. A 45-year-old mail carrier died on July 6th, in the city of Medford, and the official cause of death was heat illness. The temperature in Medford that day had a heat index of 96 degrees for 8 to 9 hours, and reached as high as 100 degrees.[42]

41 Noaa storm events database

42 https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=462404

HEAT WAVES
CONTINUED

Probability of Future Occurrence

Climate change is contributing to both increasing average temperatures and more extreme weather events. According to the 2022 Massachusetts Climate Change Assessment, temperatures are almost certainly expected to rise across the United States, accompanied by rising humidity that makes hot days feel even hotter. Additionally, projections show that inland areas are likely to warm more and experience more extreme heat than coastal areas.

The following table shows the State of Massachusetts' climate change projections, calculated based on a relatively high greenhouse gas emissions warming scenario (Representative Concentration Pathway RCP 8.5).[43] Temperature projections are provided at the watershed scale, and developed with a Stochastic Weather Generator. These projections show that in addition to a near-certain increase in average temperatures, days with extreme heat are also most likely to increase.

TABLE 3.12: MEDFORD'S PROJECTED TEMPERATURE AND HEAT EVENTS, 2030 AND 2050 BY SEASON.

	PROJECTED TEMPERATURE (% INCREASE FROM 2020)		PROJECTED AVERAGE TEMPERATURE (F)		PROJECTED ANNUAL DAYS ABOVE 90F		PROJECTED ANNUAL DAYS ABOVE 95F		PROJECTED ANNUAL DAYS ABOVE 100F	
Season	2030	2050	2030	2050	2030	2050	2030	2050	2030	2050
Annual	3.6%	5.4%	52.21	53.12	12	21	4	8	0	1
Winter	3.6%	6.3%	31.76	32.53	0	0	0	0	0	0
Spring	2.7%	5.4%	48.58	49.85	1	2	0	0	0	0
Summer	3.6%	5.4%	72.11	73.36	10	17	3	7	0	1
Fall	3.6%	5.4%	55.63	56.6	1	2	0	1	0	0

43 https://resilientma-mapcenter-mass-eoeea.hub.arcgis.com/

Cold Fronts

Cold fronts are a period of unusual cold weather, with sharp and significant drops of air temperatures near the surface persisting for at least two consecutive days during the cold season.

COLD WAVES CONTINUED

Location

Cold waves are a city-wide phenomenon. However, certain populations such as low-income and houseless populations face more cold-related risks. Thus, Environmental Justice neighbourhoods and lower-income neighbourhoods may be more susceptible to extreme cold-related hazards.

Extent

According to FEMA's National Risk Index, the risk of all Medford census tracts to cold waves are relatively low. Across Middlesex County, only 4 cold wave events were recorded in the last 15 years, with an annualized frequency of 0.2 cold wave events per year. The estimated property damage values from cold wave events are very low compared to other hazards.

Previous Occurences

Over the last twenty years, one extreme cold event occurred in Medford. In Middlesex County, 4 extreme cold events were recorded. The following table shows a summary of the cold event which occurred in Medford, which did not cause any direct mortality, injuries, or property damage. It is followed by the event narrative. Note that indirect injuries and deaths were recorded as a result of this event.

TABLE 3.13: EXTREME COLD EVENTS IN MEDFORD, 2004–2024

EVENT TYPE	LOCATION	BEGIN DATE	END DATE	DEATHS DIRECT	INJURIES DIRECT	PROPERTY DAMAGE ($)
Extreme Cold/Wind Chill	SOUTHEAST MIDDLESEX (ZONE)	02/16/2015	02/16/2015	0	0	0

- **February 2015 Cold Event:** all of Southern New England experienced heavy snow and blizzard conditions, with wind chills as low as -30 °F. No cold-related deaths nor injuries were reported, but indirect injuries and deaths as a result of snow were recorded. For instance, large amounts of snow falling off an ice rink led two people to be sent to the hospital. A 57-year-old woman and a 60-year-old man died after being hit by a snow plow.

COLD WAVES
CONTINUED

Probability of Future Occurrence

There is a near-certain likelihood that winters will be warmer on average in future years. Days under 32 °F and 0 °F are projected to occur with less and less frequency on average, and cold waves will generally reduce in likelihood. However, due to the increased likelihood of extreme and unpredictable weather events like Nor'easters and winter storms, periods of severe cold and winter conditions may still occur.

Geological Hazards

Geological hazards in Medford include droughts, earthquakes, landslides, and small brush fires. Droughts are periods of unusually dry weather that can affect water supply and local vegetation. Earthquakes and landslides are uncommon in Medford but can happen and cause damage. Small brush fires are often caused by human activity, but rarely grow into large wildfires in this region. Climate change can increase the frequency, duration, and severity of droughts, which in turn heightens the risk of fires and landslides.

Drought

Drought is a prolonged dry period characterized by lack of precipitation. Droughts typically occur when regular weather patterns are disrupted. A variety of factors contribute to drought events, such as changes in atmospheric circulation patterns that stall storm tracks and warmer ocean temperatures. While the northeastern United States is often not associated with drought, the region has experienced several historic drought conditions in recent years. In addition to longer drought periods that can last years, New England is also prone to "flash droughts", which are the rapid onset of intense dry periods that follows a period of normal to above-normal precipitation. While these droughts may last only 2–6 months, they may still result in agricultural losses, shortages in water supplies, and low streamflows.

DROUGHT
CONTINUED

Location

Droughts are a city-wide hazard in Medford. While Medford is susceptible to droughts at both the county and regional level, FEMA's National Risk Index shows that census tracts in western Middlesex County and northeastern Massachusetts are at greater risk of economic loss due to droughts in comparison to Medford.

Extent

According to FEMA, Middlesex County is at moderate risk of droughts and associated damages, though at a census tract level, Medford is not among the most at-risk communities, as droughts are most likely to economically affect agricultural and water-dependent industries. Under moderate to severe drought conditions, Medford could be vulnerable to restrictions on public water supply, such as limiting indoor water usage and prohibiting or restricting outdoor watering.

In general, droughts can adversely affect a host of natural and human systems, the impacts of which can last well beyond the end of the drought period. Examples of impacts to natural systems include diminished quantity and quality of streamflow, groundwater, and surface water, which in turn can impact wildlife and habitat. Droughts can also increase the risk of brush fires, reduce forest and vegetation health, and increase riverbank and soil erosion. In addition, droughts often result in economic losses and infrastructural disruption or damage, by disrupting agricultural and hydroelectric sectors, and putting strain on public water supply. Droughts can also present public health hazards through increased fire hazard, reduction in food safety and security, and increased mental health stressors, while straining government and emergency response systems.

Previous Occurences

The most severe, statewide droughts in Massachusetts occurred in 1879-1883, 1908-1912, 1929-1932, 1939-1944, 1961-1969, 1980-1983, and 2016-2017. The 9-year drought from 1961 to 1969 is considered the historic drought of record. The longevity and severity of this drought forced public water supplies to implement water-use restrictions, and many communities used emergency water supplies. The 2016-2017 drought was the most significant drought in the state since the 1960s. In many parts of the state, streamflow and groundwater levels reached new lows. In addition, while droughts are historically slow-onset and long-lasting events, most recent droughts in 2016-2017 and less severe droughts in 2020 and 2022 were characterized by periods of rapid intensification in conditions ("flash droughts" or rapid intensification droughts).[44]

44 Mass dmp p3–4

DROUGHT CONTINUED

Drought levels are calculated by the state of Massachusetts' Drought Management Task Force and are comparable to the federal levels set by the U.S. Drought Monitor. Drought levels in Massachusetts are primarily determined by six indices: level of precipitation, streamflow, groundwater, lakes and impoundments, fire hazard, and evapotranspiration.[45] The end of a drought or reduction of drought level are primarily determined by groundwater and precipitation levels, as they have the most significant impact on factors such as stream flow, water supply, and soil moisture. In Massachusetts, there are five drought levels, which are defined as follows:[46]

Level 0: Normal. No drought.

Level 1: Mild drought. 20th to 30th percentile range. Estimated to recur once every 3 to 5 years. Previously categorized* as "advisory" level. Residents and businesses are instructed to minimize overall water use; communities are instructed to establish year-round water conservation programs, develop local drought management plans, and provide information and education to residents.

Level 2: Significant drought. 10th to 20th percentile range. Estimated to recur once every 5 to 10 years. Previously categorized* as "watch" level. In addition to Level 1 drought recommendations, communities are instructed to take immediate steps to limit or prohibit washing of hard surfaces such as sidewalks, patios, and driveways, and to establish water-use reduction targets for all water users.

Level 3: Critical drought. 2nd to 10th percentile range. Estimated to recur once every 10 to 50 years. Previously categorized* as "warning" level. In addition to Level 2 drought recommendations, further watering restrictions, such as bans on all nonessential outdoor uses, should be implemented.

Level 4: Emergency. Less than 2nd percentile range. Estimated to recur once every 50 to 100 years. Cities are required to provide at least bi-weekly reports of drought conditions, activate Regional Emergency Operations Centers, issue public warnings in accordance with the state's indexes, and implement further water use restrictions.

*Prior to the 2019 state of Massachusetts Drought Management Plan revision.

45 https://www.mass.gov/doc/massachusetts-drought-management-plan/download p. 11

46 https://www.mass.gov/doc/massachusetts-drought-management-plan/download p. 37-43

DROUGHT CONTINUED

The following table shows all occurrences of drought in the Northeast Massachusetts zone in the last 20 years (from 2004 to early 2025, when this update was written). This region includes Essex, Middlesex, and Suffolk counties, and is a geographic designation set by the state of Massachusetts due to similarities in climate conditions and geographic proximity. 7 droughts were recorded in this time period, of which 3 events (2016-2017, 2022, 2024-2025) reached critical status (Level 3). No emergency level droughts occurred in this time period, although the droughts in 2016-2017 and 2024-2025 reached emergency levels elsewhere in the state.

TABLE 3.14: DROUGHT STATUS IN NORTHEAST MASSACHUSETTS (ESSEX, MIDDLESEX, SUFFOLK COUNTIES), 2004–2025[47]

YEAR	MONTH	DROUGHT STATUS
2007–2008		
2007	September	Level 1
2007	October	Level 1
2007	November	Level 1
2007	December	Level 1
2008	January	Level 1
2010		
2010	July	Level 1
2010	August	Level 1
2010	September	Level 1
2016–2017		
2016	June	Level 2
2016	July	Level 3
2016	August	Level 3
2016	September	Level 3
2016	October	Level 3
2016	November	Level 3
2016	December	Level 2
2017	January	Level 1
2017	February	Level 1
2017	March	Level 1
2020		
2020	May	Level 2
2020	June	Level 1
2020	July	Level 2
2020	August	Level 2
2020	September	Level 2
2020	October	Level 1
2020	November	Level 1
2021		
2021	March	Level 1
2022		
2022	May	Level 2
2022	June	Level 2
2022	July	Level 3
2022	August	Level 3
2022	September	Level 2
2022	October	Level 1
2022	November	Level 2
2022	December	Level 1
2024–2025		
2024	September	Level 1
2024	October	Level 3
2024	November	Level 3
2024	December	Level 2
2025	January	Level 3
2025	February	Level 3
2025	March	Level 2
2025	April	Level 1
2025	May	Level 0
2025	June	Level 0
2025	July	Level 0

47 https://www.mass.gov/doc/drought-status-history-0/download

DROUGHT
CONTINUED

Probability of Future Events

Currently, across the state of Massachusetts, emergency level droughts are estimated to occur once every 50 to 100 years, or have a 1% to 2% chance of occurring each year. Level 3 or critical droughts are estimated to occur once every 10 to 50 years, or have a 2% to 10% chance of occurring per year. However, the frequency and severity of droughts are projected to increase, and flash droughts, or rapid intensification droughts, are projected to become more common.

Land use change and increased urbanisation, rising temperatures, reduced snowpack, and changes in precipitation patterns are all factors contributing to worsening droughts. For instance, reduced snowpack will affect the ability of groundwater supplies to recharge and the availability of water for the growing period. While annual precipitation in Massachusetts is increasing due to climate change, most precipitation will fall during extreme precipitation events, which does not replenish streamflows like smaller and more frequent storms do.

Brush Fires

A brush fire is an uncontrolled fire which burns the underbrush of forested or grassland areas. They differ from wildfires, which include forest fires, grassland fires, rangeland fires, and wildland-urban interface fires, by the size of the area burnt and the damages caused. The National Weather Service classifies wildfires as those that cause one or more fatalities, one or more significant injuries, and/or property damage, and those that burn an area greater than 100 acres for forest fires and 300 acres for grassland or rangeland fires.[48] Brush fires, in comparison, are smaller than the size and scale of wildfires. Medford and surrounding areas are not prone to wildfires, and brush fires in the region do not grow to the size of wildfires.

While brush fires can be caused by natural events, such as lightning, drought, heat, and invasive species, they can also be caused by human activities. Common causes of small-scale brush fires and other vegetation fires include smoking, campfires, and the burning of debris. In Massachusetts, as many as 98% of wildland fires are caused by human activity.

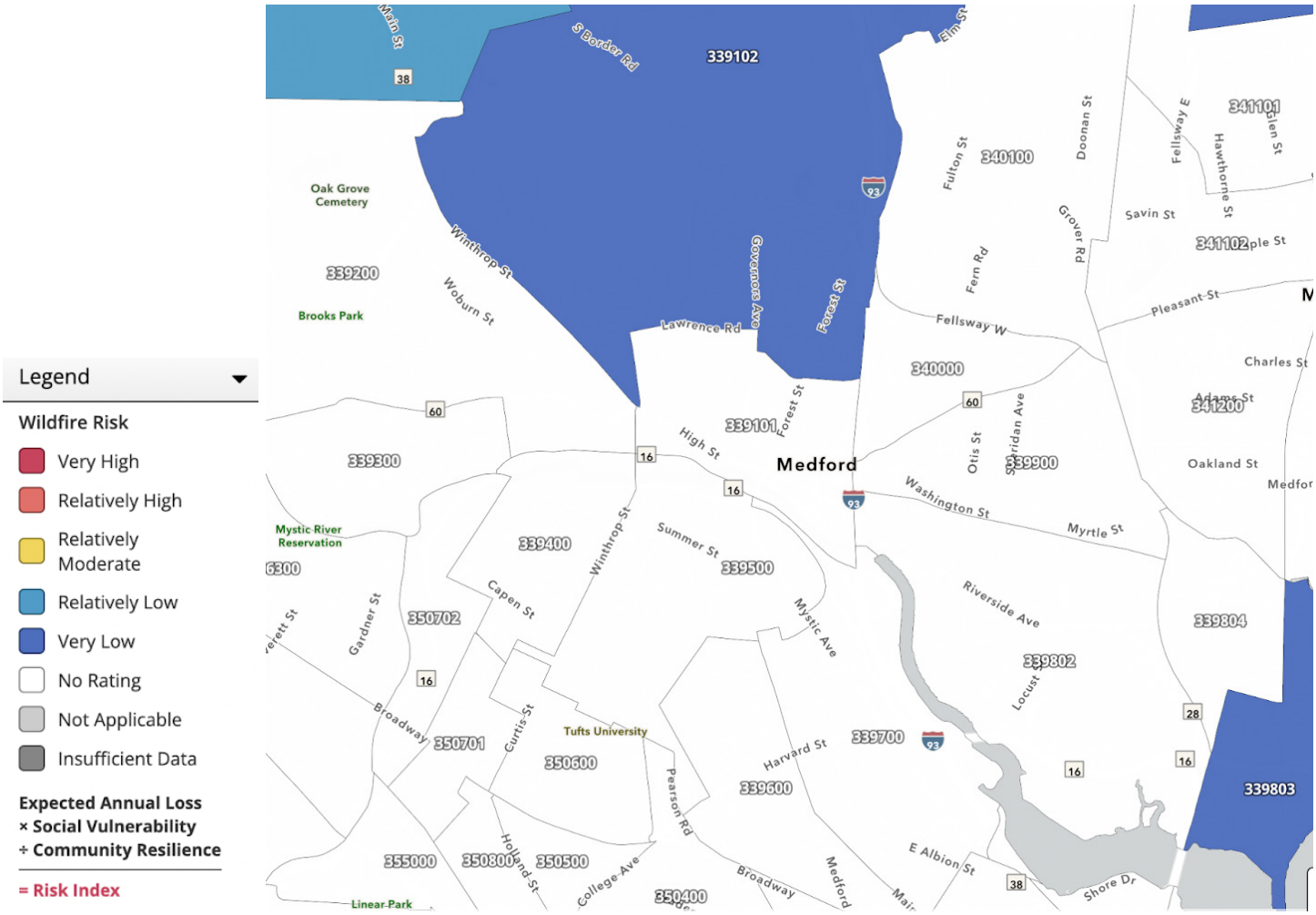
48 https://www.weather.gov/media/directives/010_pdfs/pd01016005curr.pdf

BRUSH FIRES CONTINUED

Location

The following map shows the FEMA National Risk Index values of wildfire risk in Medford. The majority of Medford neighbourhoods have no risk of wildfires. Areas with significant amounts of vegetation have a "very low" risk of wildfire.

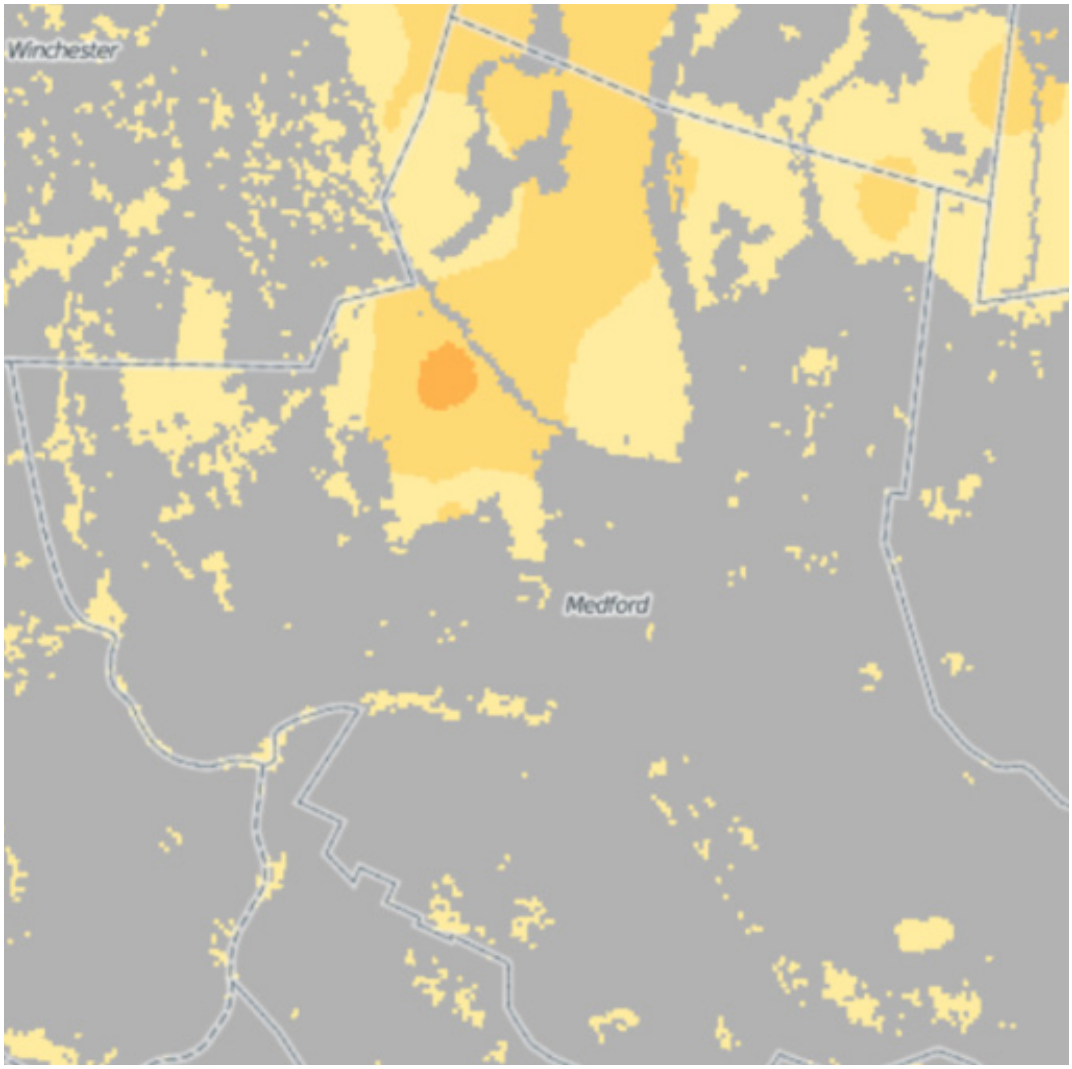
MAP 3.12: WILDFIRE RISK FOR MEDFORD NEIGHBORHOODS



https://hazards.fema.gov/nri/map

The following map shows the annual burn probability in Medford. This index calculates the probability that a specific geographic location will experience a wildland, vegetation, or brush fire in the period of one year. This index includes less severe instances of brush and vegetation fires which the FEMA map for wildfires may not take into account. Overall, this map shows that neighbourhoods all across Medford have a very small risk of brush fires occurring, with the most at-risk areas surround the Middlesex Fells and the South Reservoir

TABLE 3.13: ANNUAL BURN PROBABILITY IN MEDFORD, BY 30-METRE GRIDS[49]



https://resilientma-mapcenter-mass-eoeea.hub.arcgis.com/#ClimateDashboard

COLOR	ANNUAL BURN PROBABILITY	RELATIVE HAZARD POTENTIAL
Grey	0	None
Light yellow	1 in 50,000 to 1 in 10,000	Very low
Medium yellow	1 in 10,000 to 1 in 5,000	Low
Orange	1 in 5,000 to 1 in 2,000	Low

49 https://wrap.northeastmidwestwildfirerisk.com/Map/Public/#map-themes

BRUSH FIRES CONTINUED

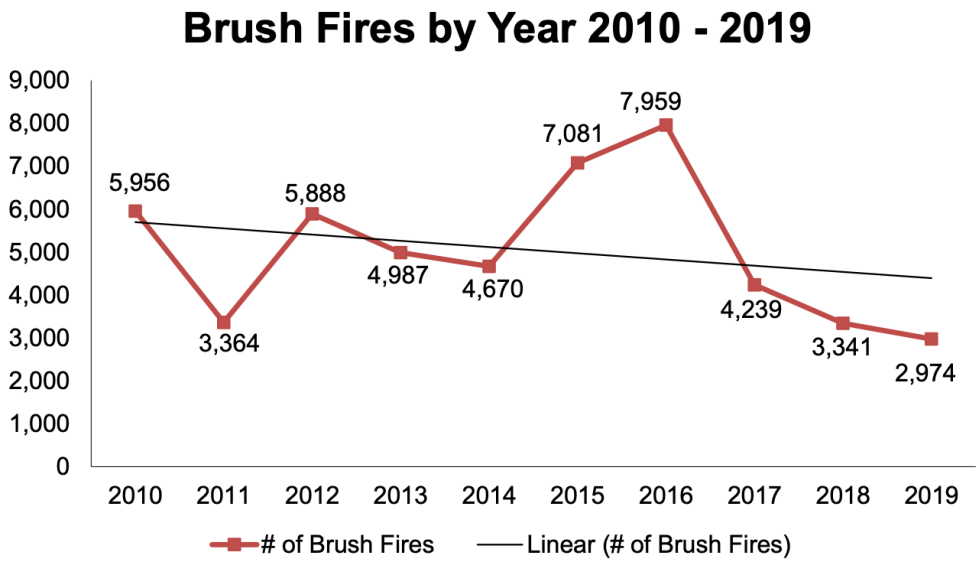
Extent

Medford faces near-zero risk of wildfires, and low risk of severe brush and vegetation fires. However, the presence of smaller brush fires may still adversely affect the population's health or cause minor economic damage. Populations who are unable to evacuate quickly, such as elderly populations and young children, and people with mobility limitations may be at increased risk of suffering fire-related health risks. Residents can also face health impacts due to poor air quality from smoke. Additionally, small fires, if uncontrolled, can damage private homes and state-owned infrastructures, garner costs associated with debris management and cleanup, and disproportionately impact residents lacking fire or home insurance.

Previous Occurences

The Massachusetts Fire Incident Reporting System (MFIRS) details the occurrences of small-scale fires and fires caused by human activity.[50] According to the most recent complete Annual Report from 2019, brush fires are the most variable type of fire, with large increases and decreases across the years due to weather conditions. In general, brush fires usually account for about 10 to 20% of total fires, which includes structure fires, vehicle fires, and many types of outdoor fires. Figure 3.1 shows the number of brush fires by year, 2010 to 2019, in the State of Massachusetts.

FIGURE 3.1: BRUSH FIRES IN MASSACHUSETTS, 2010–2019. FROM MFIRS 2019 ANNUAL REPORT.



50 https://www.mass.gov/info-details/fire-data-and-statistics

BRUSH FIRES CONTINUED

Figure 3.1 shows the number of fires reported in the MFIRS System in Medford, the data of which are available for the 15-year period between 2008 and 2021. Brush fires are included in the category of "other fires", which accounts for all other fire types which are not structure fires, vehicle fires, or arson. Typically, brush fires and outside rubbish fires take up approximately half of this category, while other forms of outdoor fires and vegetation and crop fires make up a small portion of the total number. While data for injuries and damages caused specifically for brush fires are not available at the city level, state-level data suggests that brush fires cause a very small portion of the total damages from fires. For instance, in 2019 in the state of Massachusetts, brush fires accounted for 12% of the total number of fires, 0 of 42 civilian deaths, 2 of 248 civilian injuries, 0 of 2 fire service deaths, 10 of 506 fire service injuries, and approximately $136,000 of $248,800,000 damages.

TABLE 3.15: NUMBER AND TYPES OF FIRES IN MEDFORD

YEAR	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES*
2008	251	147	20	84
2009	367	217	34	116
2010	288	148	30	110
2011	265	168	22	75
2012	291	175	16	100
2013	276	166	21	89
2014	225	125	15	85
2015	286	143	20	123
2016	242	143	16	83
2017	239	169	9	61
2018	215	131	25	59
2019	205	149	15	41
2020	288	182	12	94
2021	222	142	18	62

*This category includes brush fires. Typically, approximately half of this category are made up of brush and vegetation fires.

Probability of Future Occurrence

Precipitation changes, prolonged drought, rising temperatures, and increased frequency of lightning are some projected effects of climate change that are expected to contribute to the frequency and severity of brush fires. For instance, as droughts become more frequent and severe, forest types that do not traditionally burn and are not adapted to fire will be more likely to burn. These fires may increase the frequency of small-scale brush, grassland, and vegetation fires, as well as increase the likelihood that these fires grow to the size of wildfires.

Earthquakes

An earthquake is a shaking of the earth's surface caused by a slip of a fault on the earth's surface. When stress on tectonic plate edges overcomes the friction, an earthquake occurs that releases energy in waves through the earth's crust. Earthquakes can be induced by various causes, some of which are manmade, such as impoundment of reservoirs, surface and underground mining, and injection of fluids into underground formation. However, most earthquakes are not induced by human activity, and human-induced earthquakes are usually small.

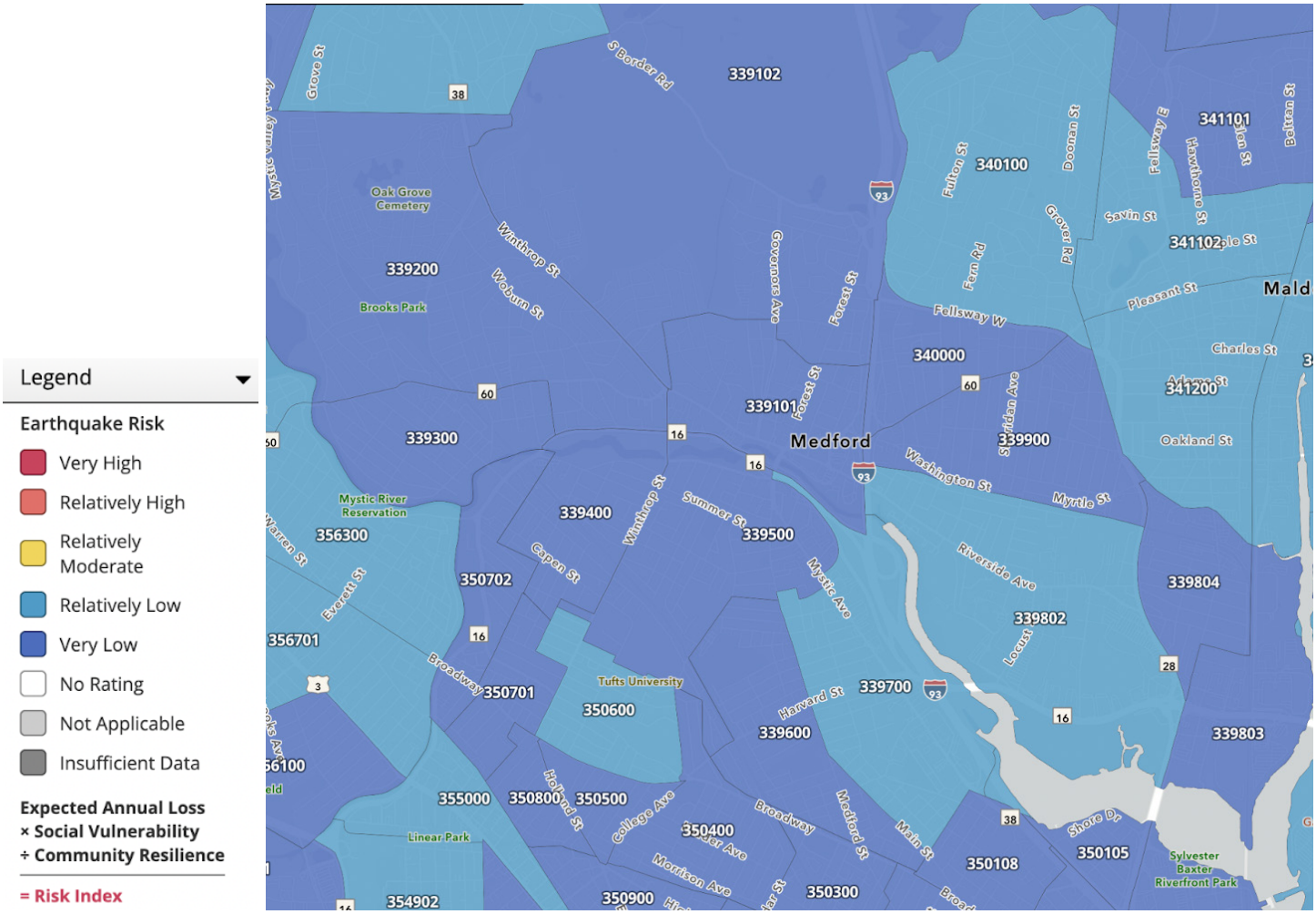
The New England region is not located along active faults, but rather, sits in the middle of the North American tectonic plate. While most earthquakes occur near plate boundaries, such as in California and along the West Coast in the U.S., earthquakes can still occur in the middle of the continent, far away from plate boundaries. Regional variations in the earth's crust come from tectonic activities that occur over thousands of years, and stress on the earth's surface is continuously transmitted from the boundaries throughout tectonic plates. Thus, Massachusetts faces a significantly lower risk of severe earthquakes in comparison to regions along plate boundaries, but still may be susceptible to both light and severe earthquakes.

EARTHQUAKES CONTINUED

Location

In Medford, earthquakes are a city-wide hazard, but neighbourhoods near the Mystic River face slightly increased risk of earthquake-related damages due to the area's geological makeup and soil structure. The following map shows each Medford census tract's risk of damage from earthquakes according to FEMA's National Risk Index. All census tracts in Medford face "relatively low" to "very low" risk, with the majority of them facing very low risk. Areas near the Mystic River basin are more prone to damages from earthquakes due to the soil structure.

MAP 3.14: RISK OF EARTHQUAKE DAMAGE IN MEDFORD BY CENTSUS TRACT



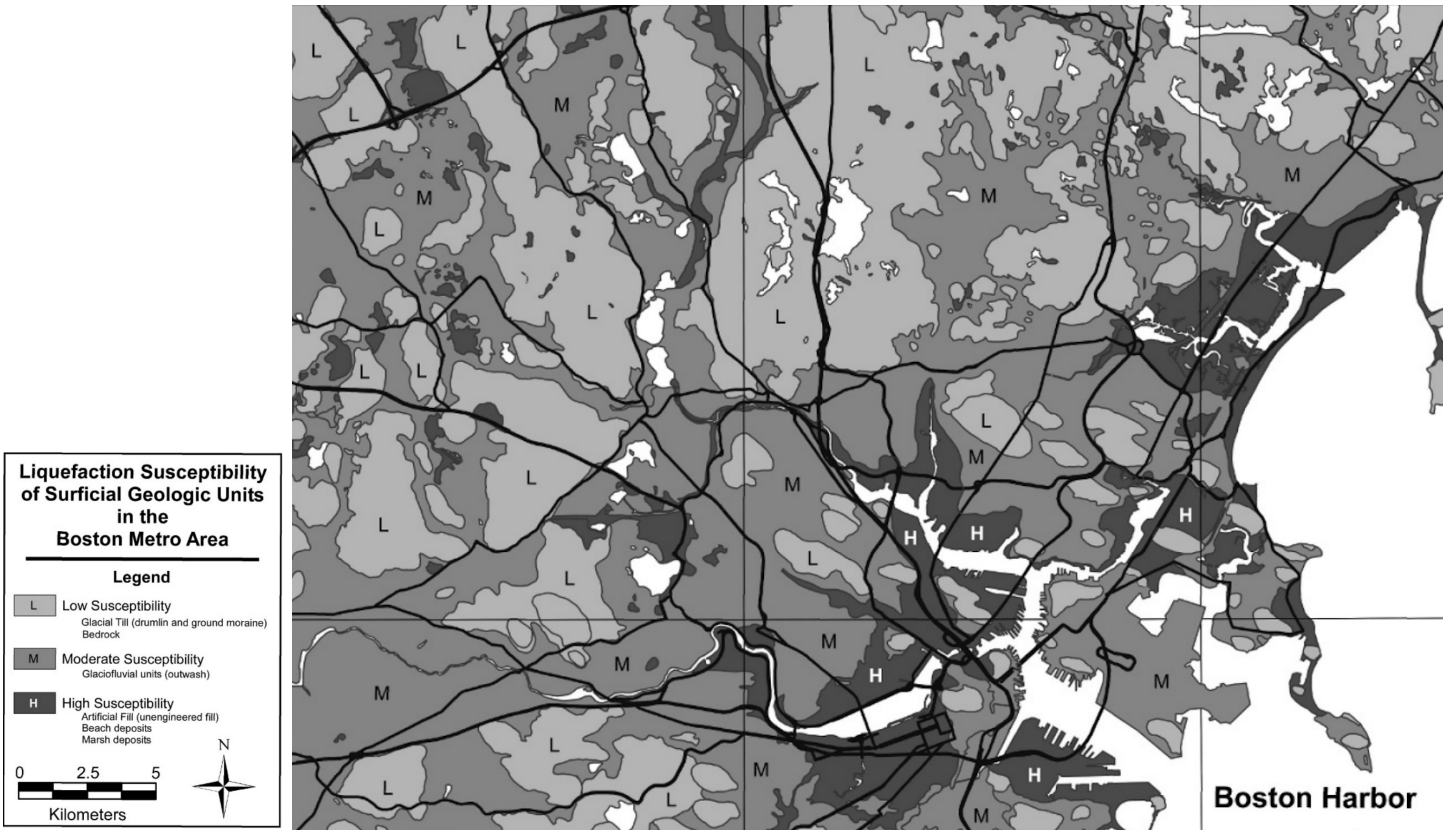
https://hazards.fema.gov/nri/map

EARTHQUAKES CONTINUED

In Medford and surrounding areas, liquefaction presents an additional hazard. Liquefaction occurs when loosely-packed or water-logged sediments lose their strength in response to ground movement. Liquefied soil may move in large masses or lose bearing strength; liquefaction occurring beneath buildings can cause significant damage. Soil types in the coastal Massachusetts area most susceptible to liquefaction are artificial fills, beach deposits, marsh deposits, and fluvial deposits, all of which are present in Medford along the Mystic River.[51]

The following map shows the soil types and liquefaction susceptibility of the Boston harbor area.[52] The area of high liquefaction susceptibility in Medford occurs along the Mystic River due to the presence of artificial fills and fluvial deposits.

MAP 3.15: SUSCEPTIBILITY TO LIQUEFACTION IN BOSTON METRO AREA,



Brankman, C., Baise, L., "Liquefaction Susceptibility Mapping in Boston, Massachusetts," The Geological Society of America

51 https://users.pfw.edu/isiorho/G300LidSucMapBoston.pdf

52 https://users.pfw.edu/isiorho/G300LidSucMapBoston.pdf

EARTHQUAKES CONTINUED

Extent

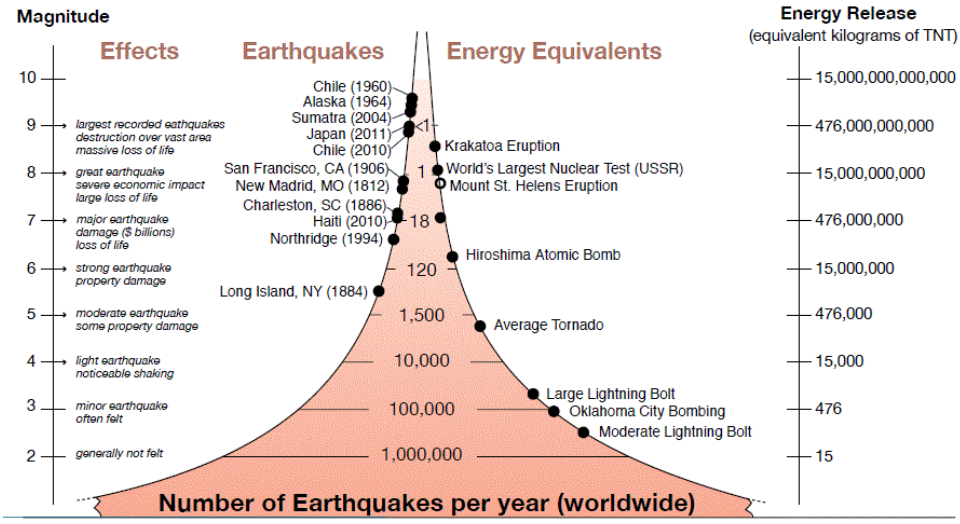
Damage from earthquakes typically comes from ground movement, surface faulting, and ground failure caused by weak or unstable soils. Common impacts of earthquakes include structural damage to buildings, damage to roads and transportation systems, and disruption or breakage of utility infrastructure like water, gas, and electricity. Additionally, earthquakes can disrupt emergency communications and emergency response systems.

While the likelihood of an earthquake occurring in Medford is extremely low, earthquakes occurring elsewhere may be felt or cause structural damage within Medford. Notably, construction sites and unreinforced masonry structures, particularly those on top of unstable soils, are most likely to fail. Earthquakes could also cause secondary impacts, such as damage to emergency response equipment within structures, even if the structures themselves do not fail. For instance, hospital equipment that is not properly placed or reinforced could break, should the building experience shaking, which would delay emergency response times.

Previous Occurences

Earthquakes are commonly measured by the Richter scale which ranges to magnitude 0 to 10. This scale expresses the amount of seismic energy that is released by an earthquake. Magnitudes of 0 to 2.9 are considered minor, and may be felt slightly by people, with no damage to buildings. Magnitudes of 3 to 4.9 are considered light, and are often felt by people, but do not usually cause damage. Magnitudes 5 to 5.9 are considered moderate, magnitudes 6 to 6.9 are considered strong, and from 7 to 10 are considered major to extreme. These earthquakes typically cause damage and are felt across large areas. The following diagram summarizes the logarithmic extent of earthquakes by the Richter scale.[53]

FIGURE 3.2: EARTHQUAKE MAGNITUDE AND INCIDENCE



53 https://redsismica.uprm.edu/english/education/size.php

EARTHQUAKES CONTINUED

There is not one magnitude above which it can be certain that an earthquake would cause damage, as the amount of damage caused by earthquakes depends on many variables like the type of soil in an area, the construction and type of building, and distance from the epicenter of the earthquake. However, typically, serious damage does not occur until the earthquake reaches a magnitude of above 4 or 5. Additionally, the presence and severity of foreshocks and aftershocks, which are shaking that precede and follow larger earthquakes, can present additional hazards. For instance, if an earthquake damages the structural integrity of a building's foundation, an aftershock could cause it to collapse.

There have been no recorded earthquakes with epicenters in the city of Medford. The previous Hazard Mitigation Plan details historic earthquakes in the state of Massachusetts, the most severe of which occurred in Cape Ann, Massachusetts in 1755, which had a magnitude of 6.2 and caused widespread building collapse. These historic events show that severe earthquakes in the New England area are rare, but still have the potential to occur and to cause damage.

In more recent years, many small-scale earthquakes occurred in Massachusetts and the greater New England area. According to the U.S. Geological Survey, 103 earthquakes above magnitude 1 were recorded within a 100 km radius of the city of Medford in the last 20 years (between 2004 and 2024). Of these, 3 earthquakes were felt in Medford, and 10 had a magnitude of 2.5 or higher (Table 3.16).

TABLE 3.16: LIST OF SIGNIFICANT* EARTHQUAKES OCCURRING WITHIN 100KM OF MEDFORD, 2004–2024

TIME	DEPTH (KM)	MAGNITUDE	PLACE
2025-01-27	10.65	3.8	9 km SE of York Harbor, Maine**
2020-11-08	10	3.6	10 km S of Bliss Corner, Massachusetts**
2015-01-12	5.4	3.3	0 km NE of Wauregan, Connecticut
2010-06-07	9.9	2.9	29 km SE of York Beach, Maine
2008-03-09	0.3	2.8	25 km SE of York Beach, Maine
2023-12-23	5	2.7	5 km SW of Chichester, New Hampshire**
2018-02-15	7.27	2.7	0 km SE of East Kingston, New Hampshire
2015-01-13	8.75	2.6	2 km E of Wauregan, Connecticut
2007-10-19	0.5	2.5	2 km WSW of Littleton Common, Massachusetts
2005-11-17	5	2.5	4 km S of Plymouth, Massachusetts

*Significant earthquakes defined as 2.5 Richter magnitude or higher.
** Earthquakes felt in Medford.

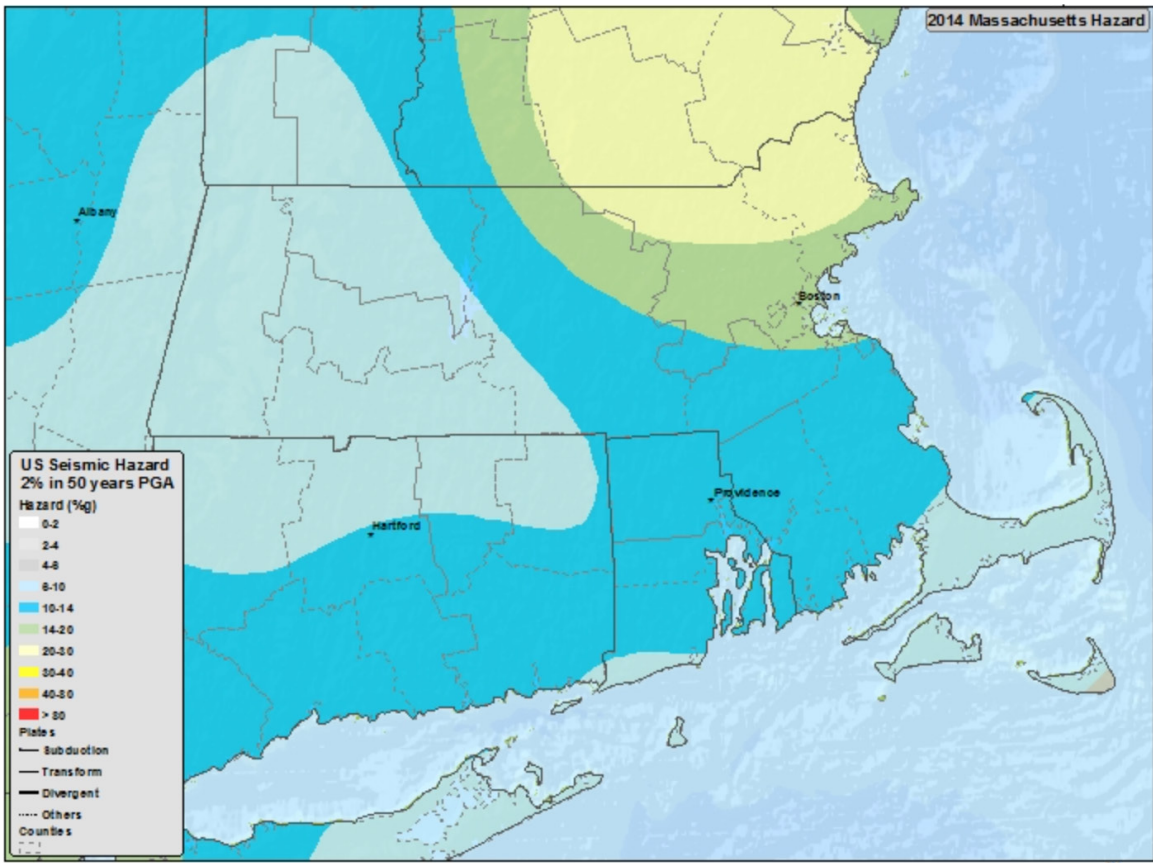
EARTHQUAKES CONTINUED

Probability of Future Occurrence

There is a very low probability of earthquakes occurring in Medford. According to FEMA, there is a 0.073% probability of earthquakes occurring in Middlesex County each year.[54] Each year, there is a likelihood that earthquakes occurring elsewhere are felt in Medford, and a low probability of minor property damage. Research does not identify effects of climate change on the earthquake hazard in Massachusetts.

The following is the latest available seismic hazard map of the state of Massachusetts, created by the United States Geological Survey (USGS). It is calculated based on historic earthquake occurrences and how far away shaking can be felt from any given earthquake, which is a function of both the magnitude of the earthquake and the characteristics of rocks in a given area. The colors denote the level of horizontal shaking that has a 1-in-50 chance of being exceeded in a 50-year period, and are represented as percentages of g, the acceleration of a falling object due to gravity.[55] In short, it shows that the area most prone to earthquakes in the state is northeastern Massachusetts, and that Medford and surrounding areas have a low probability of experiencing shaking due to nearby earthquakes.

MAP 3.16: SEISMIC HAZARD MAP, MASSACHUSETTS, 2014, USGS



https://www.usgs.gov/media/images/2014-seismic-hazard-map-massachusetts

54 FEMA NRI

55 https://www.usgs.gov/programs/earthquake-hazards/science/introduction-national-seismic-hazard-maps

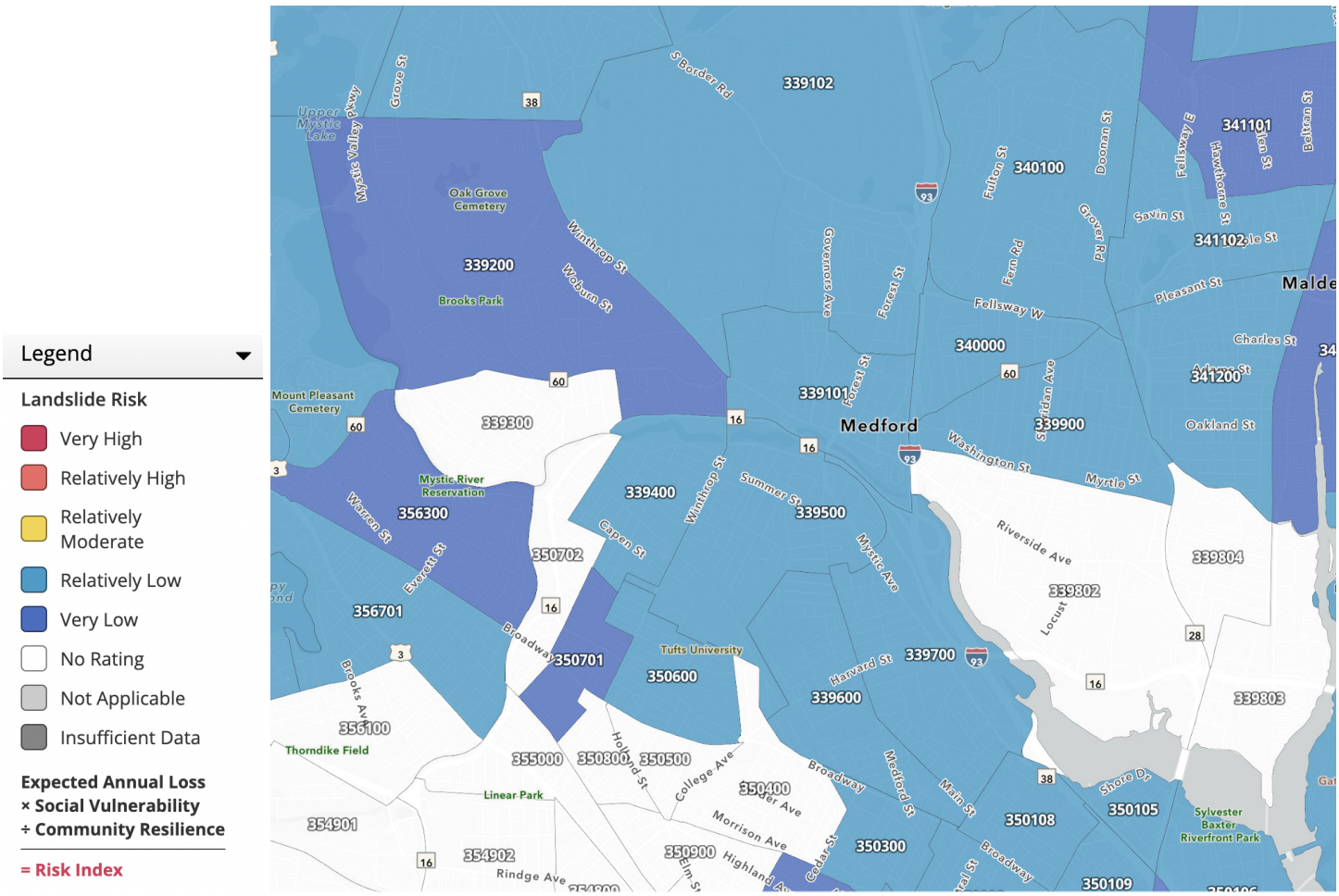
Landslides

The term landslide includes various types of ground movements, such as rock falls, failure of slopes, and shallow debris flows. The primary cause of landslides is gravity acting on unstable slopes. Contributing factors include erosion of soil and slopes by bodies of water or by precipitation (e.g., snowmelt or heavy rains), earthquakes, or stress caused by man-made structures. In short, landslides can result from human activities or as a secondary impact of other hazards such as flooding and heavy snow. Landslides pose a potential hazard across the majority of the city of Medford. However, there are no documented occurrences of landslides in Medford, and Medford's risk of landslides is overall very low.

Location

According to FEMA, all census tracts in Medford face a low risk of landslides. However, certain areas face relatively higher risk, due to their geographic proximity to slopes and risk of associated hazards like flooding. The following map shows the FEMA landslide risk index of each Medford census tract.

MAP 3.17: LANDSLIDE RISK IN MEDFORD NEIGHBORHOODS



https://hazards.fema.gov/nri/map

Extent

While landslides are unlikely to occur in Medford, severe weather events or smaller-scale mudflows can disrupt roads and public infrastructure and damage the natural environment. Landslides and mudflows can cause soil erosion and require maintenance and cleanup costs. Movement of soil can disrupt native flora, increase the area's susceptibility to invasive species, and pollute bodies of water.

Previous Occurences

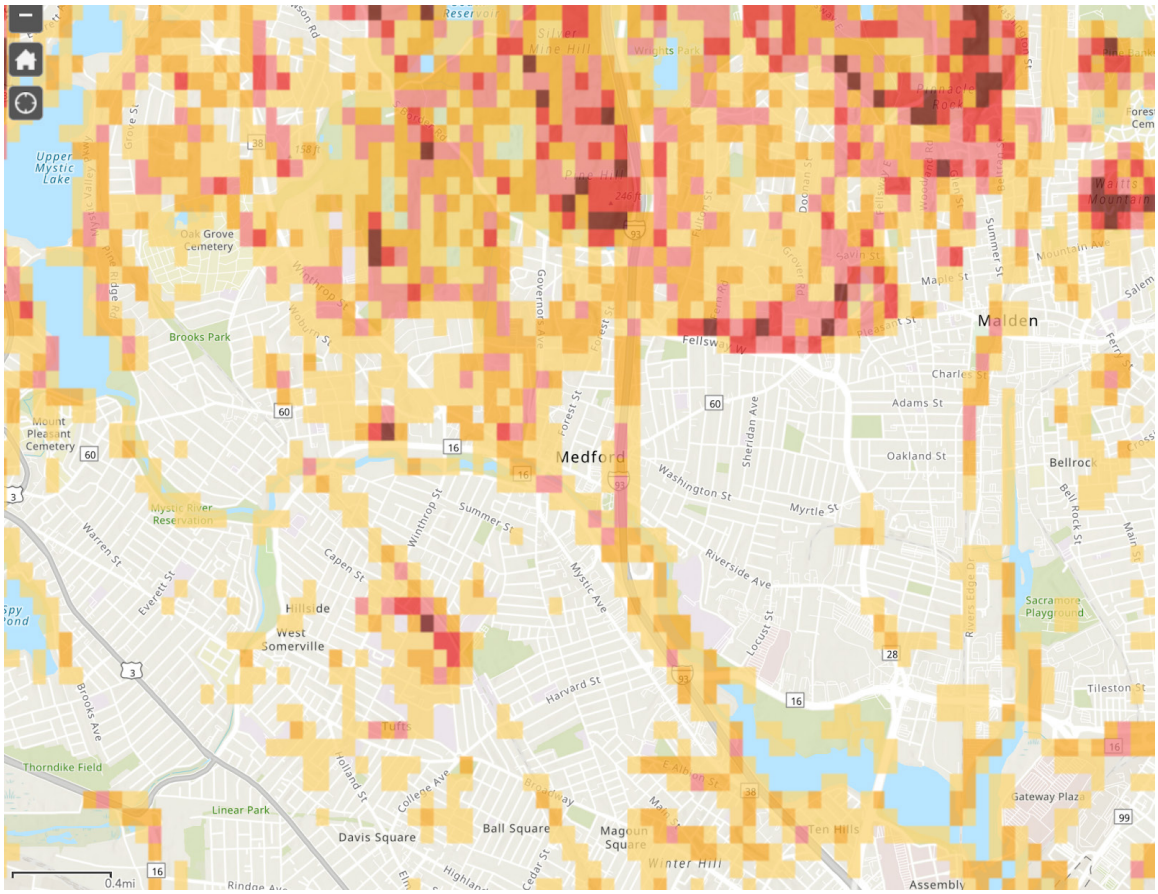
There are no documented previous occurrences of landslides in Medford. Additionally, according to the U.S. Geological Survey's landslide inventories updated in February 2025, the closest documented landslides to Medford occurred in Maine, and the auxiliary effects of these landslides are not felt in Massachusetts.[56]

Probability of Future Events

The projected increase in related hazards, such as brush fires, floods, and extreme precipitation events, may contribute to increasing likelihood of landslides and mudflows in the future. For instance, brush fires reduce the vegetation cover of certain forested areas, and thus erode soil quality and stability. Floods and extreme snowfall or rainfall may also erode the quality of soil and stability of slopes, thereby increasing the risk of landslides. The following map from the U.S. Geological Survey (USGS) shows the future susceptibility of landslides in Medford. The colored grids show the projected susceptibility of each area, with forested and sloped areas most susceptible to future landslides. Overall, future events are projected to be rare, but increasing in likelihood compared to previous decades.

56 https://www.sciencebase.gov/catalog/item/671eef1fd34ed0f827ea9f12

MAP 3.18: MEDFORD LANDSLIDE SUSCEPTIBILITY, US LANDSLIDE INVENTORY AND SUSCEPTIBILITY, USGS



Increasing Susceptibility

Areas without colored shading represent very low landslide potential

https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=ae120962f459434b8c904b456c82669d

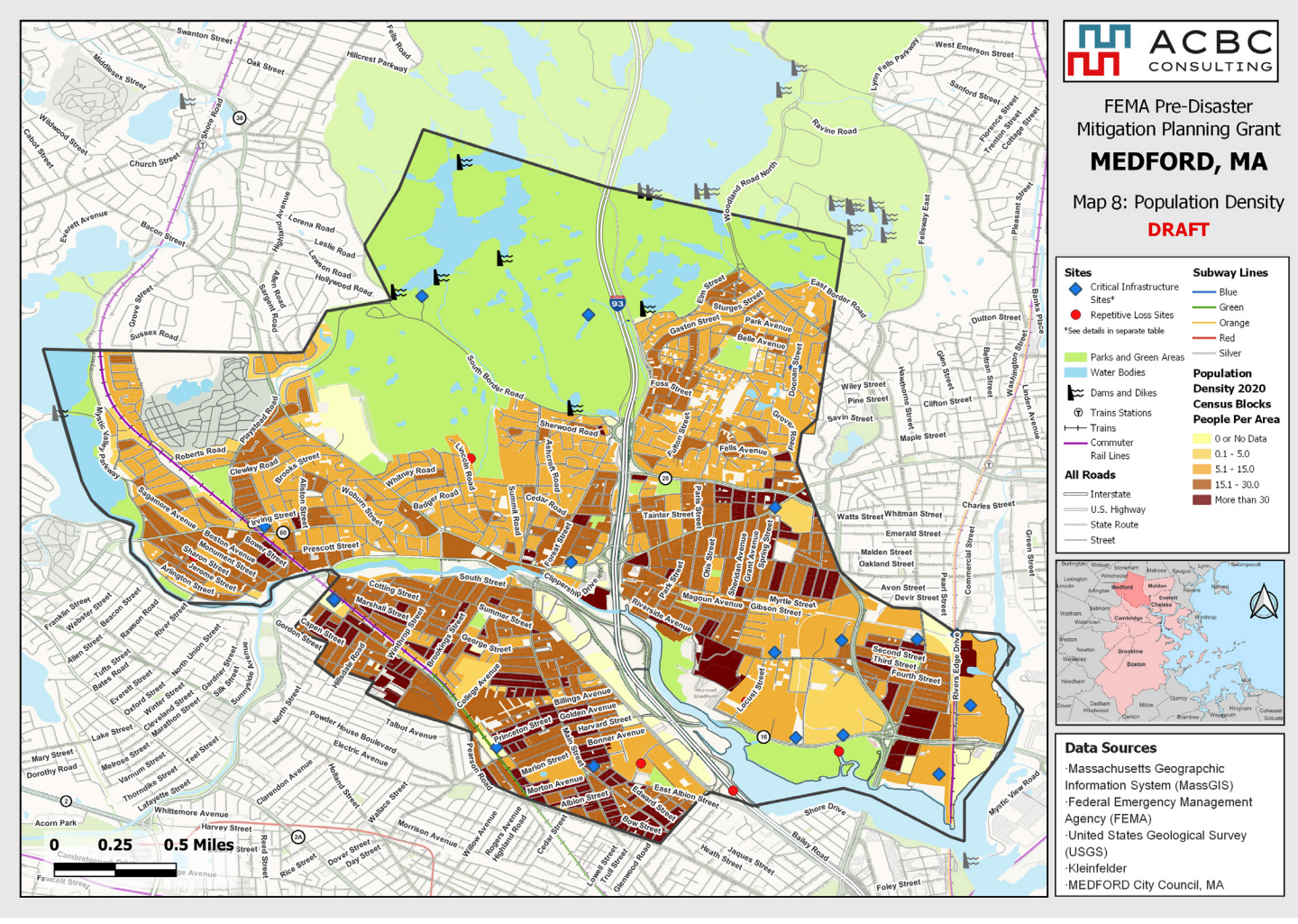
IV. Identification of Community Assets

People

Demographic Characteristics

As of the 2020 U.S. Census, Medford had a population of 59,659, and has remained relatively steady over the last two decades.[57] The southern and eastern parts of the city are densely-populated residential and commercial areas. The following map details the population density in Medford.

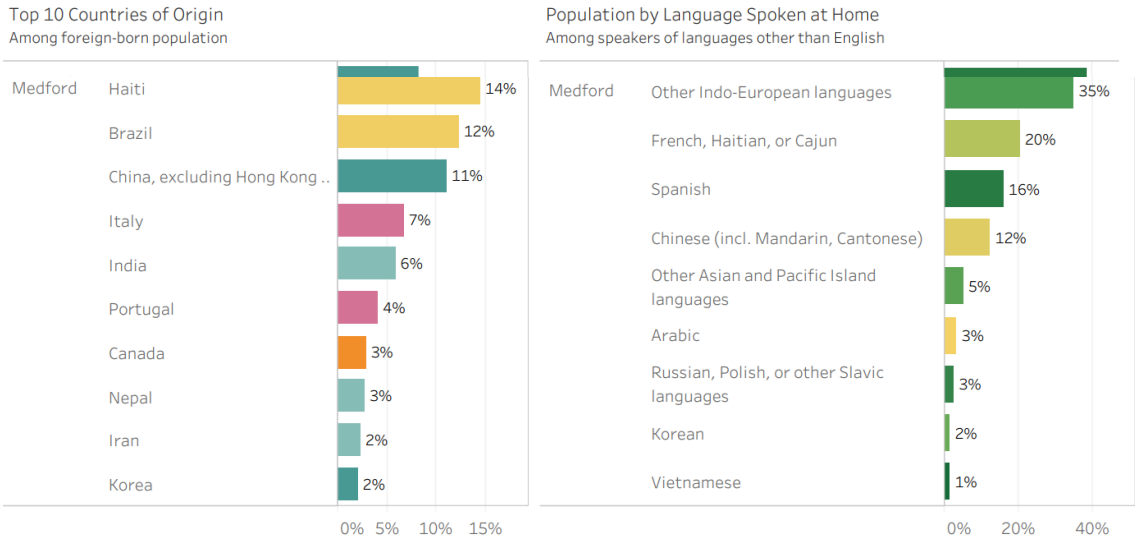
MAP 4.1 MEDFORD POPULATION DENSITY



57 https://data.census.gov/profile/Medford_city,_Middlesex_County,_Massachusetts?g=060XX00US2501739835

Approximately 26% of residents identify as non-White, including 11.5% Asian, 8% Black or African American, 6% Hispanic or Latino, and 8% multiracial people. 24.2% of Medford's population are native or foreign-born. 30% of all residents speak a language other than English at home, and 9.97% of the population in Medford above the age of 5 have limited English proficiency (in comparison to the State's 9.7%). The following figure shows the countries of origin and languages spoken at home by Medford's minority residents.

FIGURE 4.1: COUNTRIES OF ORIGIN OTHER THAN USA AND LANGUAGES OTHER THAN ENGLISH IN MEDFORD BY PERCENT



The following table shows the percentage of languages spoken by Medford residents who are not proficient in English.

TABLE 4.1: LANGUAGES OTHER THAN ENGLISH SPOKEN IN MEDFORD BY PERCENT

Language	Area Percent	State Percent	US Percent
Other Indo-European Languages (includes Albanian, Lithuanian, Pashto/Pushto, Romanian, Swedish)	3.05%	2.19%	0.60%
Spanish	2.22%	4.10%	5.31%
Chinese (includes Mandarin, Cantonese)	1.66%	1.03%	0.57%
French, Haitian, or Cajun	1.23%	0.66%	0.19%
Vietnamese	0.70%	0.38%	0.28%
Other Asian and Pacific Island languages	0.37%	0.39%	0.36%
Russian, Polish, or other Slavic languages	0.35%	0.36%	0.27%
Arabic	0.26%	0.21%	0.15%
Korean	0.05%	0.09%	0.18%
German or other West Germanic languages	0.04%	0.03%	0.10%
Other and unspecified languages	0.03%	0.23%	0.21%
Tagalog (includes Filipino)	0.00%	0.02%	0.17%

The median household income in Medford is $118,089, which is relatively lower than the median income in Middlesex County ($123,705) but significantly higher than that of the State ($99,858). 57.6% of residents hold a bachelor's degree or higher, 15.8% are 65 years and older, and 3% are veterans. 8.2% of the population live below the poverty line (in comparison to the State's 10.4%), and the employment rate of adults aged 18 and older is 67.9%. The homeownership rate in Medford is 53.1%, which is slightly below state and county averages, while the median gross rent is $2,477.

An estimated 3.4% of Medford residents are without healthcare coverage. An estimated 4.2% of residents are food-insecure, or have low food access according to the US Department of Agriculture, but Medford does not encompass any identified food desert areas, the closest of which can be found in central-western Malden.[58] 9.2% of residents are considered disabled, in comparison to the statewide value of 12% and national value of 13%, including 4.5% of people with independent living difficulties, 4.4% with ambulatory difficulties, and 3.8% with cognitive difficulties. State health data shows that Native and Black or African American populations experience disproportionately high rates of disability in comparison to other races, and there are slightly higher percentages of women who are disabled in comparison to men.[59] Notably, 13.9% of Black or African American people in Medford have a disability, while 10.6% of White people have a disability.

Environmental Justice (EJ) Populations

Medford is home to several communities identified as Environmental Justice (EJ) populations under the state of Massachusetts' 2020 criteria. These designations are based on demographic factors collected in the 2020 Census, and are defined as census block groups in which one or more of the following criteria are met:[60]

- 40% or more of the population identifies as non-white or Hispanic/Latino (minority population designation, labeled "Minority" in map legend)
- The median household income is 65% or less of the statewide median (low income designation, labeled "Income" in map legend)
- 25% or more of households have no one over the age of 14 who speaks English "very well." (lack of English language proficiency designation, labeled "English isolation" in map legend).

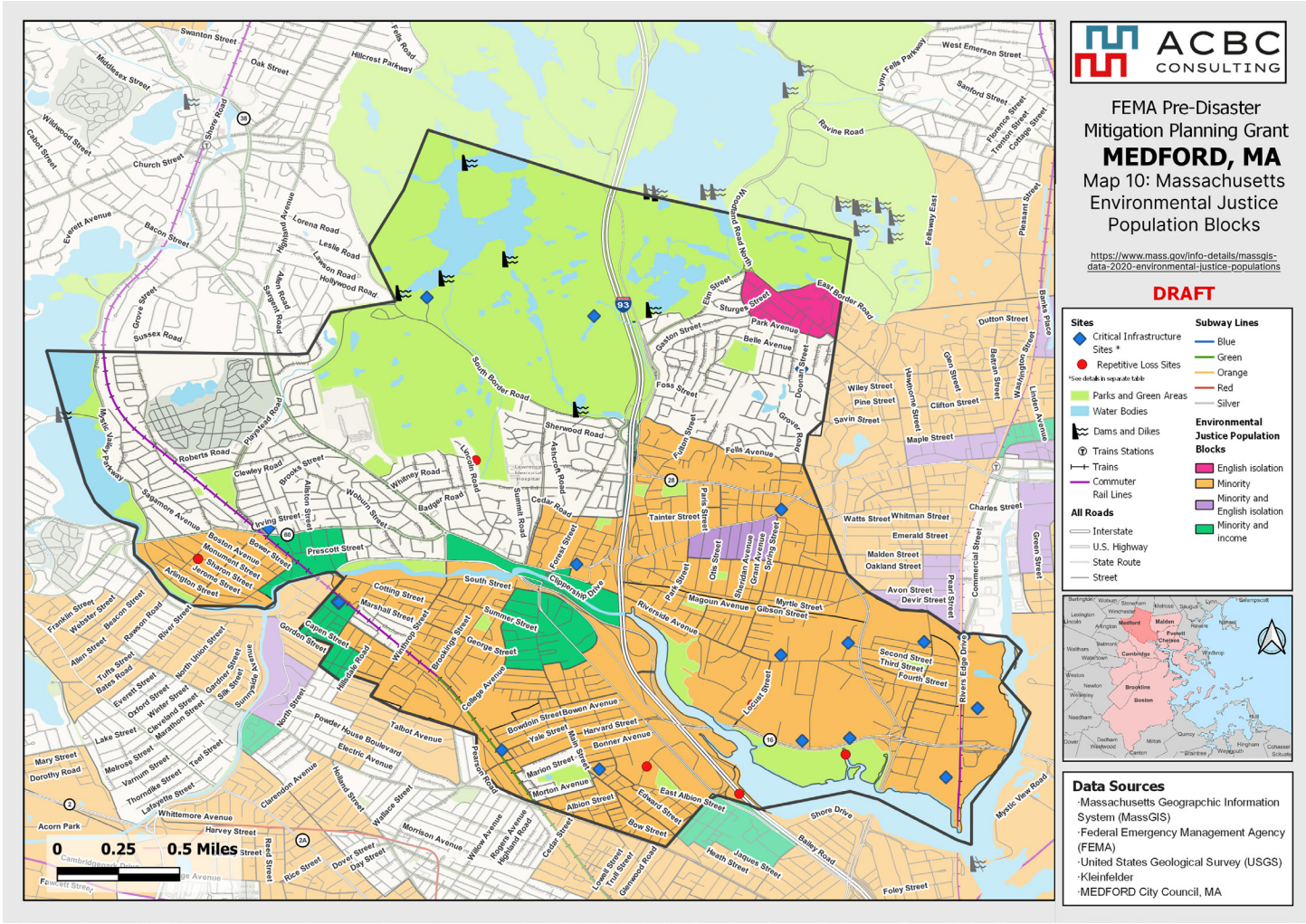
58 https://healthdatatool.mass.gov/report-tool/

59 https://healthdatatool.mass.gov/report-tool/

60 https://www.mass.gov/info-details/massgis-data-2020-environmental-justice-populations

The following map shows the distribution of Environmental Justice populations in Medford.[61] Out of 56 census bloc groups, 40 meet at least one (1) EJ criterion, making up 71.4% of total number of block groups. 43,607 people live in EJ communities, or 73.1% of all of Medford's population. The majority of EJ communities are geographically distributed in the South Medford and Wellington neighbourhoods.

MAP 4.2: ENVIRONMENTAL JUSTICE POPULATION BLOCKS IN MEDFORD



Additionally, the State of Massachusetts has flagged two census tracts (3399 and 3398.01) in the easternmost sections of the city for having more than 5% of the population who do not speak English very well.[62] In these areas, the predominant languages spoken by residents who are not proficient in English are Spanish or Spanish Creole, Portuguese or Portuguese Creole, and Arabic.

61 Massachusetts 2020 Environmental Justice Populations

62 https://mass-eoeea.maps.arcgis.com/apps/MapSeries/index html?appid=535e4419dc0545be980545a0eeaf9b53

Community-Identified Vulnerable Populations

Community members, such as those working in social services, seniors, and those working in housing services, who participated in outreach programs, identified the following demographics as being particularly vulnerable to hazard risks or in need of increased assistance during hazards:

- Senior or older adult residents,
- Individuals with disabilities and medically complex individuals,
- Residents with limited mobility,
- Residents who are nonverbal or use assistive technology,
- Residents with dementia, cognitive decline, and mental health challenges,
- Medically vulnerable residents who rely on power for oxygen, electric wheelchairs, elevators, and assistive communication devices who may face additional risk in power outages,
- Residents with English language barriers - particularly when combined with other factors such as aging populations,
- Residents lacking reliable means of transportation,
- Residents lacking family or social support systems, and neighborhoods with poor community cohesion.

As discussed in the Demographic Characteristics section, 15.8% of Medford residents are above the age of 65, which accounts for almost 9,500 people. While Medford does not have a significantly aging population structure, senior citizens nonetheless face increased risk of climate hazards. In addition, disability or mobility challenges, and living alone, are factors that render senior populations more vulnerable. In Medford, 18.8% of residents, or approximately 1,011 people, aged 65 to 74 have a disability, and 46.3% of residents aged 75 and above, or approximately 1,642 people, have a disability. Additionally, 28.85% of residents aged 65 and above live alone.

Although community members identified community cohesion as a key factor in climate resilience, Medford has a higher percentage of residents who self-identify to be socially isolated. According to the 2019-2023 US Census Bureau American Community Survey, 34.5% of adults in Medford self-identify as feeling socially isolated in their communities (in comparison to the state average of 32.5% and national average of 31.9%). Additionally, 23.4% of residents self-report lacking social and emotional support from friends and family (in comparison to the statewide average of 22.8%). Socially isolated residents typically face increased vulnerability, as they are less able to participate and benefit from mutual support initiatives, and may be less informed of community and statewide resources.

Other populations at increased risk include individuals living alone (28.61% of Medford households), households with no or slow internet (7.29% Medford households), and adults lacking reliable transportation (6.7% of adults aged 18 and above in Medford).

Projected Changes in Population

According to the University of Massachusetts, the population of the City of Medford is projected to remain relatively stable from 2000 to 2050, with a slight increase in the 2020s. The 2000 population in Medford was 55,744, and the 2010 population was 56,173.[63] Based on calculations made in 2024, the 2025 population in Medford will increase to 59,353, an approximately 6.5% increase from 2020, but return to approximately 53,944 by 2050.

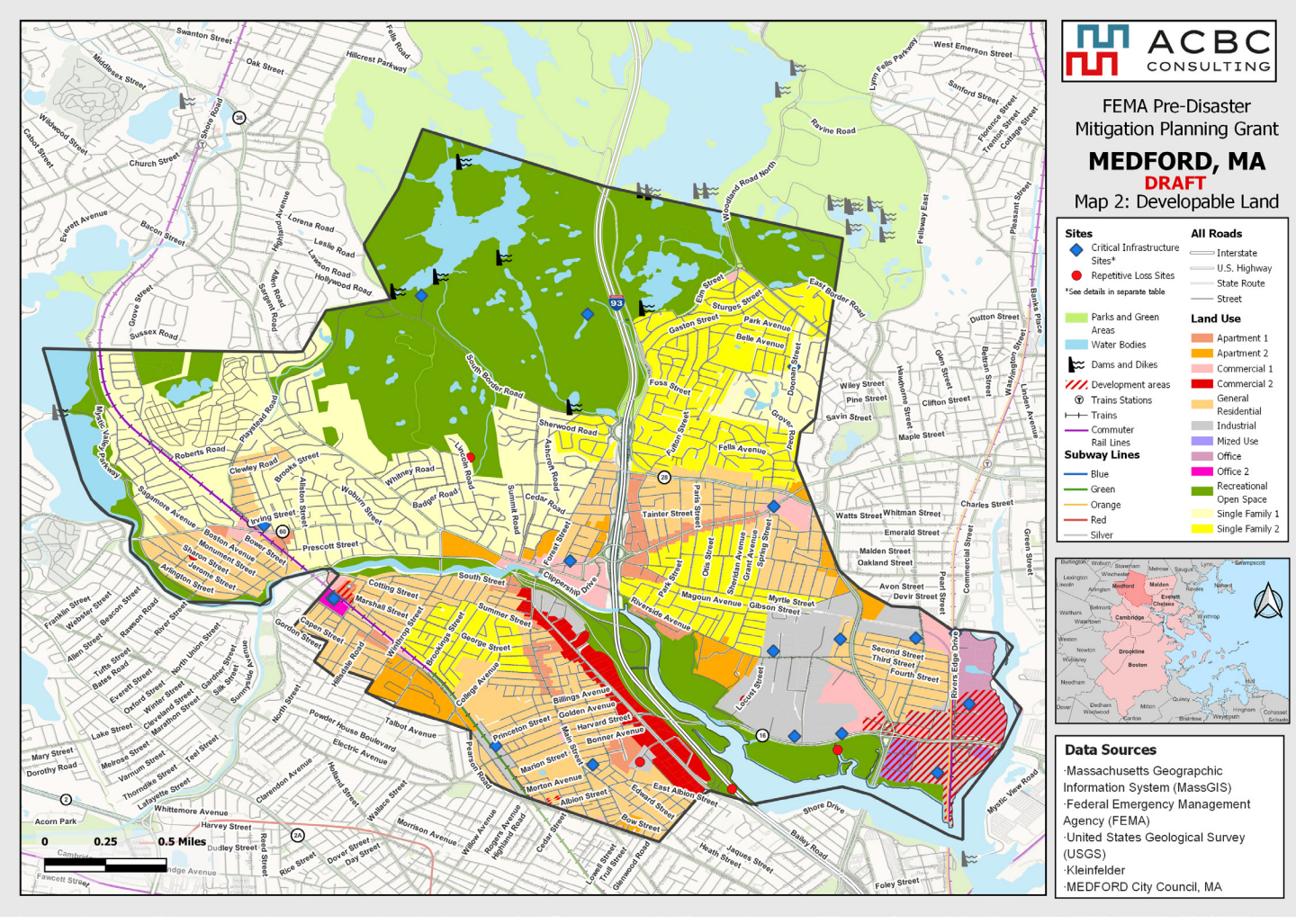
63 https://donahue.umass.edu/business-groups/economic-public-policy-research/massachusetts-population-estimates-program/population-projections

Built Environment

Land Use and Existing Structures

Approximately half of Medford is occupied by residential areas, the majority of which are single-family homes and apartment complexes. Businesses exist across the city, but the most prominent economic sectors are located in the south and eastern areas of the city. Specifically, commercial areas are spread around the southern and eastern areas of the city and centered around the southern banks of the Mystic River, while industrial areas are almost exclusively concentrated in the southeasternmost corner of the city. The following map shows the land use type across the city. Additionally, it locates all critical infrastructure sites which will be discussed in the "Key Infrastructure" section.

MAP 4.3: LAND USE IN MEDFORD



Critical Facilities

FEMA defines critical infrastructure sites as "assets, systems, and networks, whether physical or virtual, so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, public health or safety, or any combination thereof".[64] In Medford, there are 26 critical infrastructure sites spread across the city, the locations are included in the land use map in the previous section. These sites are primarily Water Department water treatment plants or pump stations and electric substations. The following table lists the locations and types of Critical Infrastructure facilities in Medford based on information provided by the city.

TABLE 4.2: LOCATIONS AND TYPES OF CRITICAL INFRASTRUCTURE LOCATED IN MEDFORD

FACILITY TYPE	NAME	ADDRESS
Communications Towers – Private	Worldcom Mldema	10 Cabot Rd.
Electric Substations	Medford NO. 9 Substation	56 Salem St.
Electric Substations	Codding Avenue, NO. 64 Substation	Codding Avenue
Electric Substations	West Medford NO. 17 Substation	7 Playstead Rd.
Electric Substations	Wellington NO. 11 Substation	Middlesex Ave. @ 37 Woodruff Ave.
Water Dept/WTPs/ Pump Stations	SOUTH RES (SO TREATMENT PLANT)	n/a
Power Plants	MPTV Power Corporation	400 Riverside Ave
Other	The Boston Radio Dial WEZE (AM) Transmitter	4068 Mystic Valley Parkway
Water Dept/WTPs/ Pump Stations	Storm Drain Pump Station	Sydney Street
Water Dept/WTPs/ Pump Stations	Water Booster Pump Station	Doonan St
Water Dept/WTPs/ Pump Stations	Arquele Inc	200 Boston Ave Suite 3600
Water Dept/WTPs/ Pump Stations	Akceli	200 Boston Ave Suite 2100
Water Dept/WTPs/ Pump Stations	Ancora Pharmaceuticals Inc	200 Boston Ave Suite 4975
Water Dept/WTPs/ Pump Stations	General Electric	3960 Mystic Valley Parkway
Water Dept/WTPs/ Pump Stations	MBTA Fellsway Bus Garage Bus wash	446 Salem St
Water Dept/WTPs/ Pump Stations	MBTA Wellington Carhouse Train wash	37 Revere Beach Parkway
Water Dept/WTPs/ Pump Stations	Mystic Plating Corp	213 Corporation Way
Water Dept/WTPs/ Pump Stations	Nanosys Inc	200 Boston Ave Suite 4000
Water Dept/WTPs/ Pump Stations	Science and Technology Center–Tufts	4 Colby St
Water Dept/WTPs/ Pump Stations	Tecan Boston	200 Boston Ave Suite 3000
Water Dept/WTPs/ Pump Stations	Trustees of Tufts College	200 Boston Ave
Water Dept/WTPs/ Pump Stations	Tufts University	419 Boston Ave
Water Dept/WTPs/ Pump Stations	Elegix	200 Boston Ave
Water Dept/WTPs/ Pump Stations	Kinetic Pharmaceuticals	200 Boston Ave Suite 4700

64 https://emilms.fema.gov/is_0520/groups/78.html

Communications Towers – Public		Doonan St
High Hazard Dams	Wrights Pond Dam	Elm St

Additionally, 16 hazardous materials sites exist in Medford, which contain at least one type of dangerous goods, such as flammable and combustible liquids, corrosive substances, and toxic (poisonous) substances. Hazardous materials, when released, are capable of creating harm to public safety, property, and the environment. The U.S. Department of Transportation and National Fire Protection Association, alongside FEMA, set standards for the maintenance and categorization of hazardous materials sites. FEMA recommends that local planners consider zoning and regulations to ensure that hazardous facilities are not located near residents, schools, and businesses, and that facilities coordinate with local first responders and produce emergency plans as part of permitting processes to ensure public safety.[65] FEMA additionally recommends that local public information and warning systems are in place in case of hazardous materials accidents. The following table shows the locations and types of hazardous materials sites in Medford.

FACILITY TYPE	NAME	ADDRESS
Facilities	Codding Avenue, NO. 64 Substation	Codding Avenue
Facilities	Federal Express (CEFRC)	10 Sycamore ave.
Facilities	General Electric International Inc.	3960 Mystic Valley Parkway
Facilities	Materials Development Corporation	81 Hicks Ave.
Facilities	Medford Lawrence Memorial Hospital	170 Governors Ave.
Facilities	Medford NO. 9 Substation	56 Salem St.
Facilities	Penske Truck Leasing Co	436 Riverside Ave.
Facilities	Penske Truck Leasing Co.	407 Mystic Ave.
Facilities	Tufts University Main Campus	Packard Avenue
Facilities	Verizon Wireless	Malden Hospital Fellsway
Facilities	Verizon Wireless	65 Valley St.
Facilities	Wellington NO. 11 Substation	Middlesex Ave. @ 37 Woodruff Ave.
Facilities	West Medford NO. 17 Substation	7 Playstead Rd.
Facilities	Worldcom Mldema	10 Cabot Rd.
Fuel Transfer Stations	DPW Tanks (Gas and Diesel)	James St and Swan St

65 https://www.fema.gov/sites/default/files/2020-07/hazardous-materials-incidents.pdf

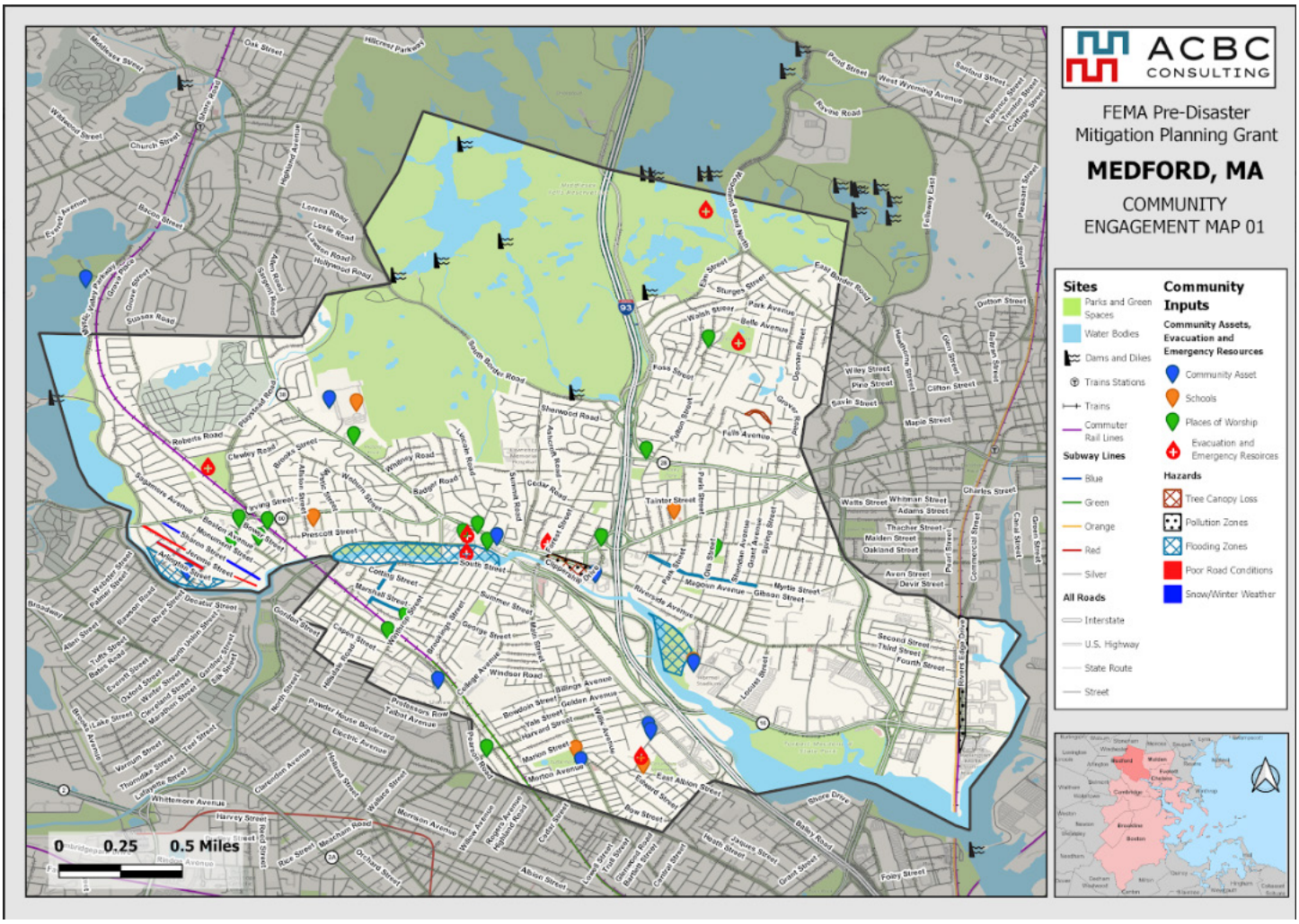
Finally, Appendix B lists all other relevant sites and infrastructure as defined by the City of Medford, which includes both public safety sites like fire stations, medical facilities like hospitals, clinics, and elderly housing, and community infrastructure sites like parks.

Cultural Assets

Medford residents identified several types of trusted community spaces as important locations for everyday support and emergency response, providing a range of informal and formal social and emergency support.

- Community centers (Medford Family Network, West Medford Community Center, Walnut Street Center) and city departments (fire department, emergency management): important locations for both everyday support and emergency response and resources.
- Other public spaces (Medford Public Library, Station Landing, Chevalier Theatre, Mystic River Reservation, Mystic Valley Food Bank, schools, outdoor spaces, and parks): key assets that provide both opportunity for social connection and emergency response resources.
- Local businesses (cafes, barbershops, grocers, particularly businesses on Wellington Street): informal anchors for community connection and information-sharing.
- Places of worship (churches, synagogues, Islamic Center): important for social resilience and connecting with at-risk populations.

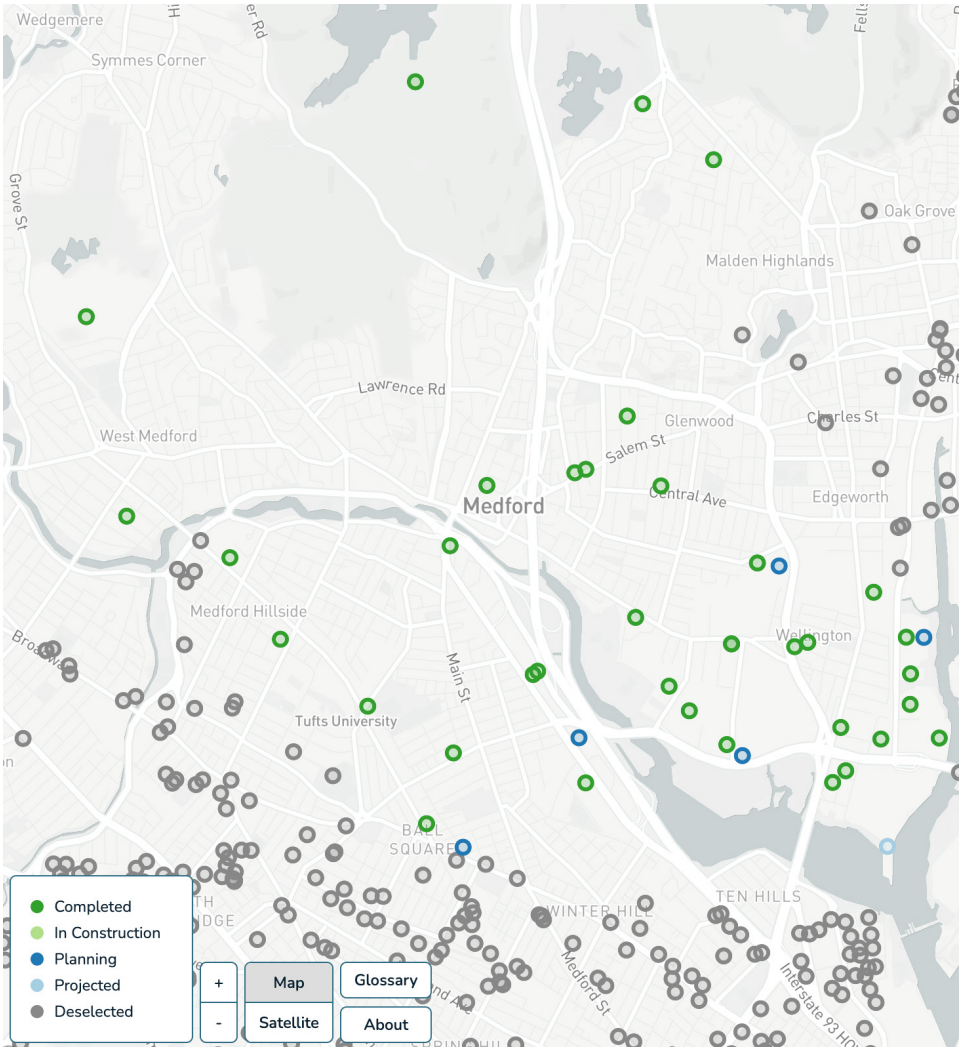
MAP 4.4: COMMUNITY OVERVIEW MEDFORD WITH CULTURAL RESOURCES



Recent and Future Developments

Additionally, 16 hazardous materials sites exist in Medford, which contain at least one type of dangerous goods, such as flammable and combustible liquids, corrosive substances, and toxic (poisonous) substances. Hazardous materials, when released, are capable of creating harm to public safety, property, and the environment. The U.S. Department of Transportation and National Fire Protection Association, alongside FEMA, set standards for the maintenance and categorization of hazardous materials sites. FEMA recommends that local planners consider zoning and regulations to ensure that hazardous facilities are not located near residents, schools, and businesses, and that facilities coordinate with local first responders and produce emergency plans as part of permitting processes to ensure public safety.[66] FEMA additionally recommends that local public information and warning systems are in place in case of hazardous materials accidents. The following table shows the locations and types of hazardous materials sites in Medford.

MAP 4.5: RECENT, PLANNED, AND PROJECTED DEVELOPMENTS IN MEDFORD, MASSBUILDS



66 https://www.fema.gov/sites/default/files/2020-07/hazardous-materials-incidents.pdf

Appendix C lists the locations and structure type of the 37 recently developed properties in Medford. The following table describes the 6 planned or projected developments (years 2026-2032).

TABLE 4.4: DEVELOPMENT PROJECTS PLANNED OR PROJECTED, 2026-2032

NAME	ADDRESS	STATUS	YEAR COMPLETED	DESCRIPTION OF PROPERTY
100 Winchester Street	Winchester Street	planning	2026	65 unit development with 4000 sqft of commercial
4000 Mystic Valley Parkway	Mystic Valley Parkway	planning	2026	40B development with 350 large multi-family units, 88 affordable units
280 Mystic Ave	Mystic Avenue	planning	2028	Redevelopment of the site at 278-283 Mystic Avenue to feature 378 apartment homes. Units will range in size from studio through three bedrooms and 25% will be designated affordable (40B Development). 456 parking spaces.
Rivers Edge - Future Phases	233-281 Rivers Edge Dr	planning	2030	Office Buildings 400 and 500 Rivers Edge Drive
Wellington Station Air Rights		projected	2030	Development of City-owned air rights over MBTA land, proposals under consideration
970 Fellsway	Fellsway	planning	2032	Industrial building to be demolished and construction of a 278 unit apartment building, and 11 units in townhomes. 73 affordable units.

Economy

Medford's economy is diverse, with a total of 908 employer firms located in the city as of 2022. The majority of residents over the age of 16 and employed work as private wage and salary workers (85.3%), with 11.1% in government roles and 3.5% self-employed.

Residents are concentrated in "management, business, science, and arts occupations" (approximately 20,793 people), followed by "sales and office occupations" (6,133) and "service occupations" (5,034). Major employers and economic sectors include healthcare facilities, Tufts University, public schools, government offices, and retail businesses. Commercial activity is concentrated in Medford Square, Wellington Circle, and neighborhood commercial corridors, which provide essential goods, services, and employment opportunities. Local events and traditions, such as Medford Day, farmers' markets, and neighborhood festivals, contribute additional economic and social value, supporting small businesses and fostering community cohesion.

The city's economy is closely linked to critical infrastructure, including roads, public transit, utilities, and emergency services. A significant disruption to major employers, commercial centers, or infrastructure could result in severe economic impacts, including job loss, decreased city revenues, and reduced access to essential goods and services. Such disruptions would also affect the community's ability to recover from disasters, as many residents and businesses rely on these sectors for their livelihoods. Preserving and supporting key economic sectors, commercial hubs, and community events is essential for Medford's resilience, ensuring that both economic activity and social cohesion are maintained in the face of potential hazards.

TABLE 4.5: INDUSTRIES EMPLOYING MEDFORD RESIDENTS BY PERCENT

Measure	Value
Educational services, and health care and social assistance	28.7%
Professional, scientific, and management, and administrative and waste management services	21.6%
Arts, entertainment, and recreation, and accommodation and food services	7.9%
Retail trade	7.8%
Finance and insurance, and real estate and rental and leasing	7.4%
Manufacturing	7.1%
Other services, except public administration	4.8%
Construction	4.6%
Public administration	3.6%
Transportation and warehousing, and utilities	2.7%

V. Analysis of Risks

The purpose of the vulnerability assessment is to estimate the potential impacts of natural hazards on the community. Because geological and climate-related hazards are inherently unpredictable, FEMA recommends using multiple types of analysis to support robust conclusions.[67] Building on the hazard identification section, which incorporates historical analysis of past events, observed impacts, and projected trends related to climate change, this section extends the assessment through both exposure and scenario analysis. Two geospatial overlays were conducted to examine the intersection of hazard risks. The first shows composite hazards and community assets. The second shows composite hazards integrated with the CDC Environmental Justice Index (EJI) and community assets. Both pay particular attention to existing and future assets located in known hazard areas.

HAZUS Scenario 1 analysis is currently in progress and will provide further scenario-based estimates of potential impacts, which will be included in the final draft of the Hazard Mitigation Plan.

67 Cite fema local hazard mitigation guidebook ?

Exposure Analysis

Exposure analysis, or overlay analysis, is conducted using geospatial analysis of a series of frequently occurring and/or high risk hazards. The following composite hazard map reflects this analysis: it includes risk of high wind, landslides, flooding, and storm surge. The data sources and definitions of the identified hazards are as follows:

Flooding

The areas identified are at risk for "100-year" floods based on FEMA's Q3 Flood Zones.[68] Various types of flood zones are incorporated into this map, but all areas have a 1% annual risk of flooding with velocity hazard (wave action).[69]

High Winds

The area(s) identified is at risk for events of "100-year" high wind speeds of 110 miles per hour or higher, according to the National Oceanic and Atmospheric Administration (NOAA). In other words, high wind events exceeding this threshold have a 1% probability of occurrence each year.

Landslide

The area identified as at risk for moderate landslides surpasses a slope-relief threshold based on statistical susceptibility models calculated by the United States Geological Survey (USGS). A weighted linear susceptibility map and quantile nonlinear susceptibility maps are both used to create a composite metric. For more information, please visit the data source.[70]

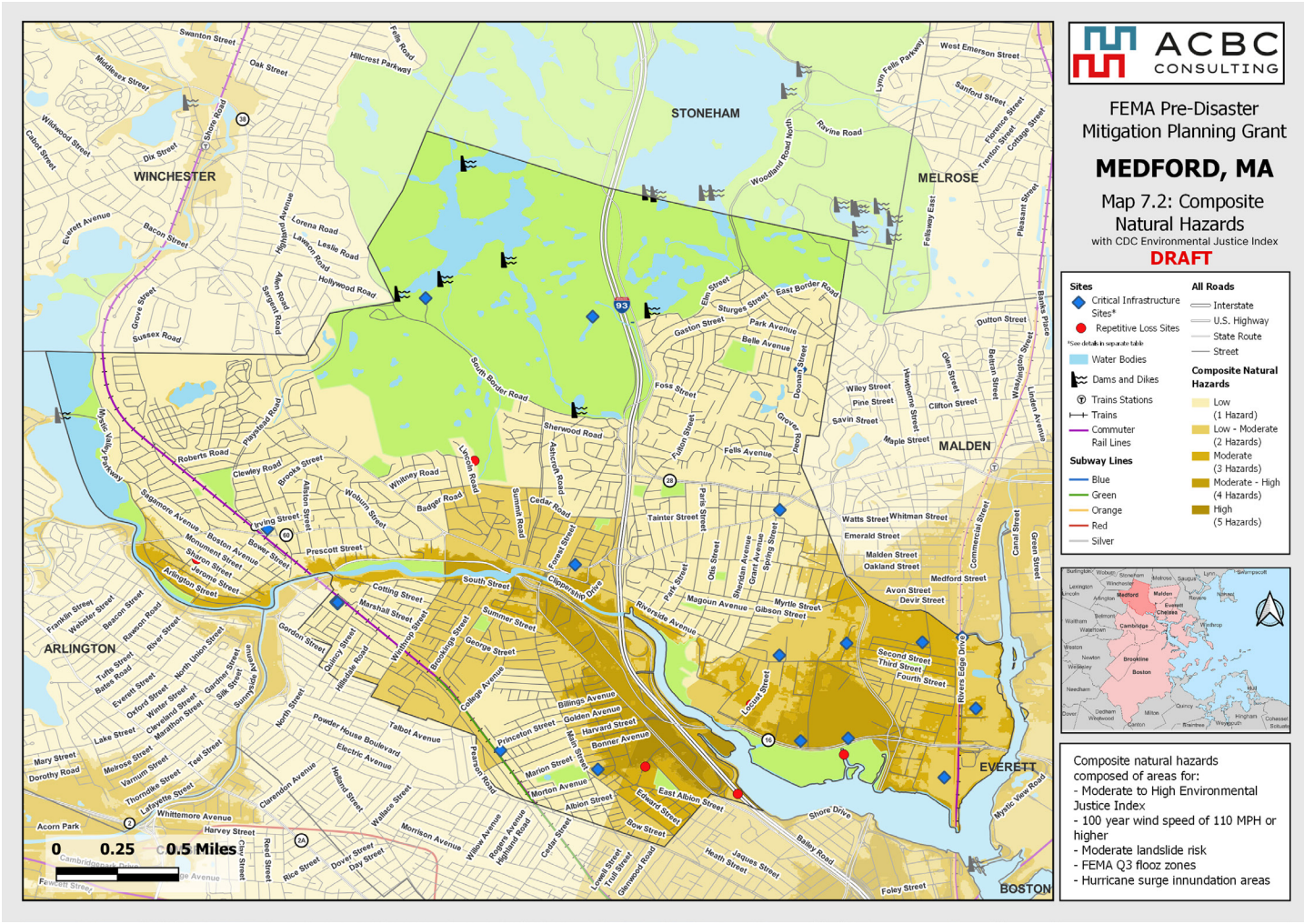
Storm Surge

The area identified is at risk for storm surge above 3 feet in case of Categories 1 to 5 hurricanes and tropical storms according to the National Weather Service (NWS)'s National Hurricane Center (NHC). The information is based on historic information and predictive simulations.[71] For more information, please visit the data source.

68 https://www.mass.gov/info-details/massgis-data-fema-q3-flood-zones-from-paper-firms#downloads
69 https://www.mass.gov/doc/q3floodzonescodetable/download
70 https://www.sciencebase.gov/catalog/item/65ccea5bd34ef4b119cb3bac
71 https://www.nhc.noaa.gov/nationalsurge/

There is a risk of 100-year high winds in all parts of Medford. Areas surrounding the Mystic River face risk of storm surge and flooding, and areas near dams and other bodies of water face risk of flooding. The southeastern part of the city, primarily the neighborhood of Wellington, and the southeastern section of the Tufts University neighborhood, faces moderate risk of landslides. Overall, the aforementioned southeastern portions of the city face moderate to very high risk of composite natural hazards, while all areas near the Mystic River face high hazard risk, primarily due to risk of flooding and storm surge.

MAP 5.1 : COMPOSITE NATURAL HAZARDS, MEDFORD



Composite Hazard and Environmental Justice Analysis

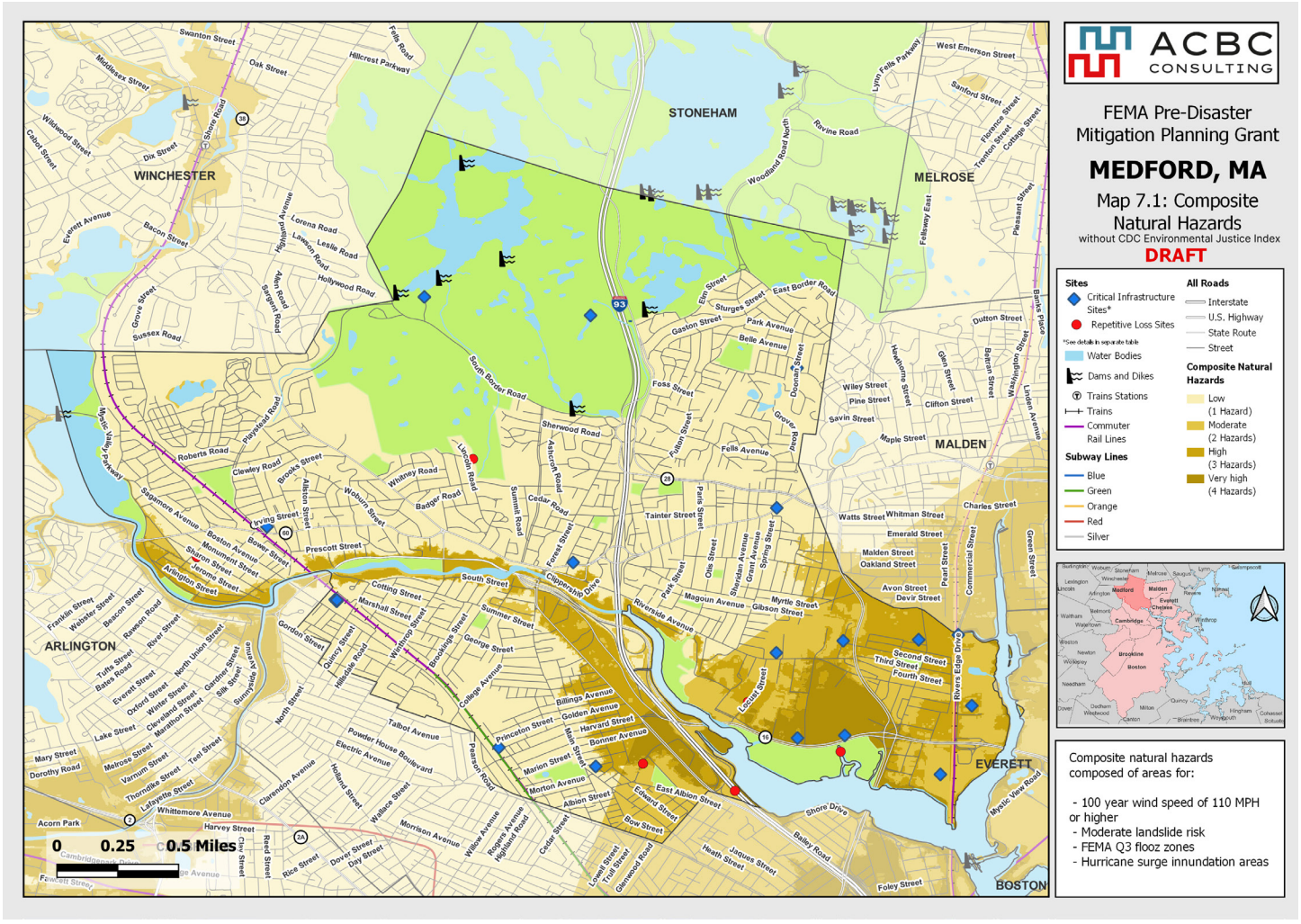
To strengthen the equity and social vulnerability component of the assessment, a second map layer was developed incorporating the CDC Environmental Justice Index. This overlay identifies census tracts in Medford with moderate to high environmental justice vulnerability, based on cumulative health, socioeconomic, and environmental stressors. Integrating this layer into the composite hazard map provides a multidimensional view of risk, allowing for the identification of neighborhoods that face both physical hazard exposure and underlying vulnerability due to social and environmental inequities.

Key Findings and Implications

- When the CDC Environmental Justice Index (EJI) is included in the enhanced composite map, additional neighborhoods, such as **Medford Square** and **South Medford**, are identified as higher-risk areas where social and environmental vulnerabilities overlap.
- This approach highlights communities where factors like lower income, minority status, or limited access to resources compound the potential impacts of natural hazards, indicating a greater cumulative risk.
- The multidimensional analysis demonstrates that overall risk is determined not only by physical exposure to hazards but also by the underlying vulnerability of populations.

Incorporating the EJI enables mitigation efforts to prioritize areas where hazard exposure and social vulnerability intersect, ensuring that resources are directed to communities most likely to experience disproportionate impacts from disasters. This strategy supports a more equitable allocation of mitigation resources and strengthens compliance with federal guidance to address both hazard and health equity considerations in hazard mitigation planning.

MAP 5.2: COMPOSITE NATURAL HAZARDS AND ENVIRONMENTAL JUSTICE INDEX, MEDFORD



Exposure Analysis x Historical Analysis

Historical risk analysis evaluates how past hazard events have affected infrastructure, resources, and people in a community. This assessment helps identify patterns of vulnerability and risk. In this plan, the historical analysis focuses on potential impacts to critical infrastructure, current and future development, cultural and social resources, and populations and neighborhoods with environmental justice concerns.

Risk to Critical Infrastructure

Critical infrastructure sites and various documented sites in the Community Assets sections such as medical facilities are dispersed around the City of Medford, but several locations are situated in high-hazard areas. Infrastructural sites in the Wellington neighborhood, eastern parts of the Tufts University area, and structures near the Mystic River basin all face elevated risk of hazard damage. The following table identifies the Critical Infrastructure sites located in moderate to very high hazard risk areas, including locations which are not situated directly in but close to flood zones.

TABLE 5.1 CRITICAL INFRASTRUCTURE SITES IN OR NEAR MODERATE TO VERY HIGH HAZARD RISK AREAS

REFERENCE NUMBER SHOWN ON MAP	FACILITY TYPE	NAME	COMPOSITE HAZARD INDEX
7	Other	The Boston Radio Dial WEZE (AM) Transmitter	Very High
12	Water Department Infrastructure, Water Treatment Plants, or Pump Stations	General Electric	Very High
1	Communications Towers (Private)	Worldcom Mldema	High
24	Water Department Infrastructure, Water Treatment Plants, or Pump Stations	Mystic Plating Corp	High
25	Water Department Infrastructure, Water Treatment Plants, or Pump Stations	Storm Drain Pump Station	High
6	Power Plants	MPTV Power Corporation	Moderate
14	Water Department Infrastructure, Water Treatment Plants, or Pump Stations	MBTA Wellington Carhouse Train wash	Moderate
23	Water Department Infrastructure, Water Treatment Plants, or Pump Stations	South Reservoir Treatment Plant	Moderate
2	Electric Substations	Medford NO. 9 Substation	Low at site, close to flood zones

3	Electric Substations	Codding Avenue, NO. 64 Substation	Low at site, close to flood zones
9	Water Department Infrastructure, Water Treatment Plants, or Pump Stations	Arquele Inc	Low at site, close to flood zones
20	Water Department Infrastructure, Water Treatment Plants, or Pump Stations	Elegix	Low at site, close to flood zones

Overall, 12 Critical Infrastructure sites were identified to face elevated (moderate to very high) hazard risk. 7 locations are water treatment or water department public infrastructure, 3 are electric substations or power plants, and 2 are communications or radio infrastructure.

Risk to Recent and Future Developments

A majority of the 37 new building developments (more information can be found in the Community Assets: Structures and Economy section), most of which are residential buildings, are located in moderate to very high hazard zones. Notably, building development in Wellington is most prevalent, and residential buildings near flood zones are also being developed. However, according to the city, new development regulations under its Floodplain District zoning and modern building bylaws mean that recent and future developments do not face significantly elevated hazard risks, and may be more resilient in case of disasters in comparison to older buildings constructed before modern oversight.

The following table shows the five new developments in Medford currently in the planning phase, excluding the sixth development of air rights listed in the Community Assets: Structures section. Three developments, all of which are residential buildings, have moderate to high hazard risk, primarily due to high wind and flooding risks. One development has moderate risk, and one has low risk.

TABLE 5.2: NEW DEVELOPMENTS IN MEDFORD CURRENTLY IN PLANNING PHASE

NAME	ADDRESS	STATUS	YEAR OF COMPLETION (PROJECTED)	HAZARD POTENTIAL AT OR AROUND SITE
100 Winchester Street	100 Winchester Street	planning	2026	Low
4000 Mystic Valley Parkway	4000 Mystic Valley Parkway	planning	2026	Moderate–high
280 Mystic Ave	280 Mystic Avenue	planning	2028	Moderate–high
Rivers Edge – Future Phases	233–281 Rivers Edge Dr	planning	2030	Moderate
970 Fellsway	Fellsway	planning	2032	Moderate–high

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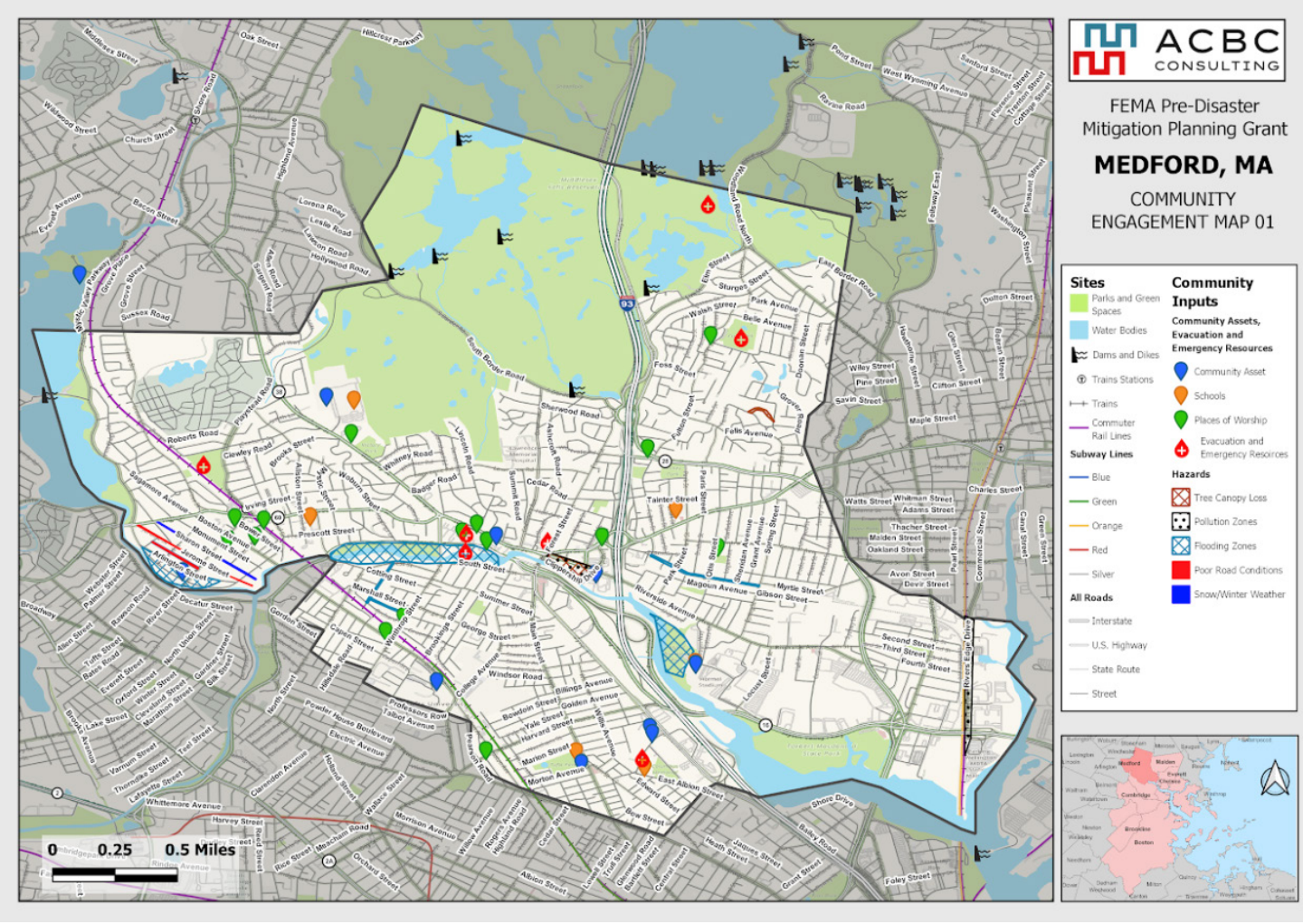
Risk to Cultural and Social Resources

The following map shows the locations of cultural and social assets as defined by Medford residents, city staff, and community service workers in community engagement activities.[72]

MAP 5.3: COMMUNITY OVERVIEW MAP, MEDFORD



72 Further results are elaborated upon in the Community Assets: Cultural and Social Assets portion of this manuscript.

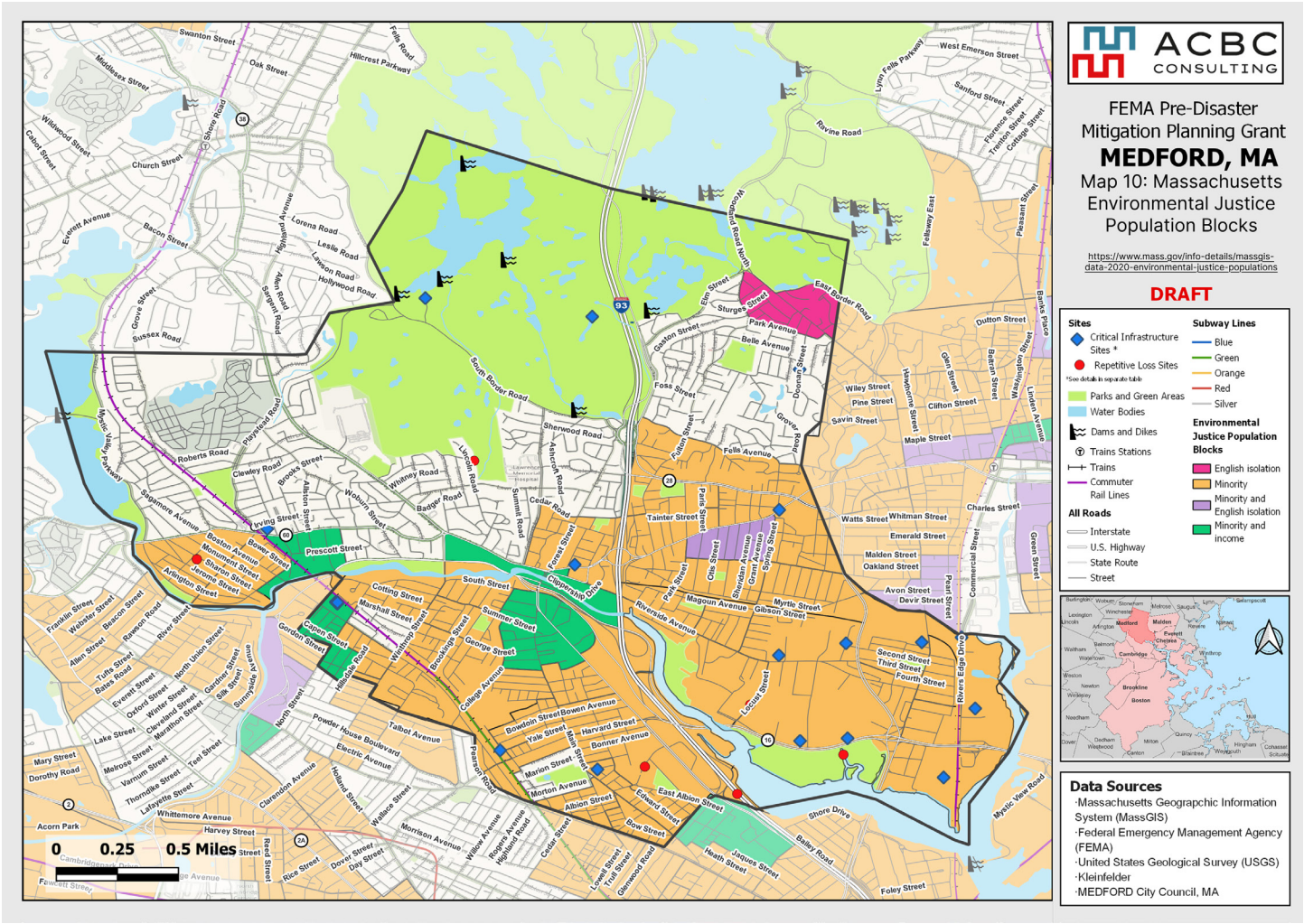
Risk to Cultural and Social Resources

Many identified sites are not located in high-risk hazard areas. Several locations, the majority of which are places of worship, are located along the Mystic River, and therefore face elevated flood risks. Additionally, several sites identified as providing evacuation and emergency resources are located in or near flood and storm surge zones, which can increase the accessibility of resources to residents who live in hazard-prone areas. However, these sites also face elevated risk of damage or lack of access in times of crisis. It is thus recommended that emergency resources be provided in informal and formal community centers in every neighborhood. Additionally, it is recommended to establish more robust evacuation and emergency resources to residents in the Wellington neighborhood, as it is identified as an area of high composite hazard risk and possessing several critical infrastructure sites, but lacks social, cultural, and emergency preparedness assets as identified by residents.

Risk to Environmental Justice Populations and Neighborhoods

The following map shows the location of Massachusetts-defined Environmental Justice block groups in Medford. Explanations of the specific designations can be found in the Community Assets: People section of this document.

MAP 5.4: ENVIRONMENTAL JUSTICE POPULATION BLOCKS, MEDFORD



Moderate to high hazard areas largely coincide with MA Environmental Justice (EJ) neighborhood blocks. In particular, the Wellington and eastern Tufts College areas are entirely designated "minority" EJ blocks. Additionally, the center and western portions of the Mystic River banks feature both low income and minority EJ neighborhoods, which present additional risks to populations. For instance, residents in low-income neighborhoods may struggle to financially recover from economic damage from hazards, and not be equipped with preparedness resources like backup generators. Generally, members of minority neighborhoods may benefit from additional translation and community-targeted outreach, and low-income neighborhoods may benefit from a series of preparedness and emergency response resources.

HAZUS Scenario 1 Analysis

The HAZUS Scenario 1 mapping for Medford is currently in progress. This analysis will provide detailed estimates of potential hazards, vulnerabilities, and potential economic and infrastructure impacts. The completed mapping and analysis will be included in the final draft of the Hazard Mitigation Plan and made available for public review and comment at that time. Stakeholders are encouraged to review this section in the final draft to provide input on the findings and proposed mitigation actions.

VI. Capabilities Assessment

Planning and Regulatory

The planning and regulatory capabilities of the City of Medford are rooted in both state and local laws, policies, and plans that guide the growth, development, and mitigation of hazards. These frameworks ensure the sustainability, resilience, and safety of the community in the face of various hazards, including but not limited to, floods, storms, earthquakes, and other environmental risks.

Legal Framework for Land Use Planning

In the state of Massachusetts, the legal framework for land use planning is governed by state law, including the Massachusetts State Building Code. The building code is enforced at the local level by the Medford Building Department. This code includes detailed regulations on construction practices designed to mitigate a range of natural hazards, such as wind loads, earthquake-resistant design, floodproofing, and snow loads. These regulations help ensure that new and existing structures are safe and resilient to environmental stressors. The Massachusetts State Building Code can be accessed at Massachusetts State Building Code – 780 CMR, which serves as a critical resource for the enforcement of building regulations across the state.

Plans and Programs Consulted

The City of Medford has developed and adopted a variety of plans and programs to address growth and development, while also incorporating hazard mitigation and resilience. Key plans consulted include -

- **Comprehensive Plan:** The 2023 Comprehensive Plan serves as the city's primary planning document for guiding long-term growth and development. It provides a framework for land use, zoning, infrastructure improvements, and more.
- **Housing Production Plan:** The 2021 Housing Production Plan outlines strategies for meeting the city's housing needs while addressing the potential for climate change impacts and resilience.
- **Affordable Housing Trust Action Plan:** Affordable Housing Trust Action Plan (2025-2030) details strategies for creating and preserving affordable housing in Medford.
- **Open Space and Recreation Plan:** The 2019 Open Space and Recreation Plan guides the development and preservation of open spaces and recreational areas.

- **Mass Care and Sheltering Plan:** The 2025 City of Medford Mass Care and Sheltering Plan establishes protocols for providing mass care and sheltering during emergencies, ensuring that residents have access to safe and adequate shelter during disasters.
- **Comprehensive Emergency Management Plans:** The 2023 Comprehensive Emergency Management Plan (CEMP) covers disaster recovery and response frameworks, preparing the city for emergencies such as major water main breaks and other significant incidents.
- **Transportation Plans:** These include studies on bike lane improvements, pedestrian access, and broader transportation strategies aimed at enhancing the city's infrastructure while reducing environmental impacts.
- **Capital Improvement Program (CIP):** The CIP is a planning tool updated every two years that prioritizes capital projects, including infrastructure improvements necessary for hazard mitigation.

Other Relevant Plans and Programs Consulted

Medford also has several additional plans focused on resilience and sustainability, including the updated **Flood Plain Ordinance**, updated water and sewer regulations, the **National Fire Protection Association (NFPA) codes**, the **2022 Climate Action and Adaptation Plan**, and the **2019 Climate Change Vulnerability Assessment** (which is being updated).

Hazard Mitigation Laws and Ordinances

Medford utilizes various laws, ordinances, and regulations to mitigate potential hazards. Among these include:

- **Zoning Ordinance:** Medford's zoning ordinance governs land use across the city, ensuring that growth is directed in ways that avoid areas with high hazard risks, such as floodplains or steep slopes.
- **Floodplain Management:** The city has adopted updated floodplain ordinances designed to protect properties from flood damage. These ordinances require adherence to specific regulations for developments located in flood-prone areas.
- **Site Plan Review:** Any development project exceeding 10,000 square feet or involving six or more residential units undergoes a site plan review. This process ensures that new developments comply with zoning regulations, environmental protections, and hazard mitigation measures.

Growth and Development Regulations

The City of Medford regulates growth and development through the Department of Planning, Development, and Sustainability, which includes an Economic Development Division. While no formal economic development plans are currently in place, the comprehensive plan incorporates economic development strategies. These strategies promote responsible growth that aligns with the city's environmental goals, such as climate change adaptation, stormwater management, and sustainable urban planning.

Protection of Critical Facilities and Community Lifelines

Medford places a significant focus on protecting critical facilities and community lifelines, which are essential for the safety and well-being of residents. The city's efforts include maintaining and enhancing protective measures for infrastructure like dams and levees, including the Wright's Pond Dam, which recently underwent updates to ensure its continued safety. Additionally, Eversource gas operations have an emergency response plan that includes provisions for safeguarding critical energy infrastructure.

Hazard Risk and Planning Considerations

In Medford, planning and development decisions actively consider climate change and hazard risk. The city's Climate Planner works closely with other planners in the Department of Planning, Development, and Sustainability to ensure that climate change adaptation measures are integrated across all areas of planning. This collaborative approach allows for the consideration of climate-related hazards—such as extreme weather events, sea level rise, and temperature fluctuations—when making development decisions. By "cross-pollinating" with other planning disciplines, the city ensures that new developments are more resilient and better equipped to handle emerging climate-related risks.

Administrative and Technical

The City of Medford's administrative and technical capabilities play a crucial role in ensuring the effective execution of hazard mitigation actions. These capabilities encompass the expertise, tools, and collaborative frameworks that enable the city to address and mitigate risks, while fostering coordinated action across various departments, agencies, and external partners.

Several key departments and municipal professionals are available to assist in the development and implementation of the hazard mitigation plan. These departments have the necessary expertise in emergency management, infrastructure, and risk management to ensure effective execution.

HMP Planning Committee: Emergency Management Subcommittee

The Emergency Management Sub-Committee consists of city officials and municipal professionals who bring specialized expertise in emergency response planning, risk management, and infrastructure:

- The Mayor's Office
- Health Department / Emergency Management Team
- Fire Department
- Police Department
- Department of Public Works (DPW) and Engineering
- Buildings Department
- Planning, Development, and Sustainability (PDS)
- Office of Diversity, Equity, and Inclusion (DEI)
- Communications Office
- Medford Public Schools
- IT Department
- Finance Department

These municipal departments are essential for the successful execution of the mitigation plan, providing administrative oversight, technical assistance, and coordination among different sectors.

The primary responsibility for implementing mitigation actions lies with the Medford Emergency Management Team and the relevant Department Heads. These leaders coordinate efforts, allocate resources, and ensure that all mitigation actions align with the city's goals for resilience and sustainability. Department heads play a pivotal role in ensuring the integration of mitigation actions into their respective areas, from emergency response planning to infrastructure management.

External Technical Expertise and Resources

While Medford's internal staff provides considerable expertise, the city also engages external consultants and technical resources to support mitigation efforts, including:

- **Metropolitan Area Planning Council (MAPC):** MAPC contributes to the development of the city's Comprehensive Emergency Management Plan (CEMP) and Shelter Plan, ensuring that Medford's emergency response and sheltering systems are well-designed and capable of addressing community needs during disasters.
- **Weston & Sampson:** Weston & Sampson is a consulting firm that supports the city's efforts in conducting a Climate Change Vulnerability Assessment (CCVA), providing critical expertise in identifying and mitigating the impacts of climate change.

Coordination Between Government Agencies and Departments

Medford's government agencies and departments regularly coordinate and collaborate to address hazard mitigation and emergency management needs. The city operates through the Emergency Operations Centers and the Medford Emergency Management Team.

Emergency Operations Centers (EOCs): These centers are the hub of Medford's emergency management efforts, bringing together key personnel and resources to respond to crises and coordinate recovery efforts.

Medford Emergency Management Team: This team consists of representatives from various Medford departments who meet regularly to discuss hazards, evaluate risks, and ensure the city's emergency management strategies are effective.

Agreements for Administrative or Technical Assistance

Medford has established agreements with external organizations and contractors to provide ongoing administrative and technical support for various services, including:

Contracted Services: Medford contracts services such as ambulance and street maintenance. For specialized projects or extensive work, the city contracts with firms like Weston & Sampson.

Human Resources and Training: Medford utilizes external training platforms for department heads and other key staff to ensure that personnel are equipped with the necessary skills to support the city's hazard mitigation efforts.

Collaboration with Nongovernmental Organizations (NGOs): In addition to government resources, Medford works closely with several nongovernmental organizations (NGOs) to support mitigation efforts. These partnerships provide valuable resources and assistance to the community in times of need. Key partners include -

- **Mutual Aid Medford & Somerville (MAMAS):** This organization offers support for food, housing, and other critical resources during emergencies.
- **Medical Reserve Corps (MRC):** The MRC provides volunteer medical personnel who assist during emergencies and contribute to the city's resilience efforts.
- **American Red Cross:** The American Red Cross collaborates with Medford on disaster relief, sheltering, and community preparedness initiatives.

Through these administrative and technical capabilities, the City of Medford ensures a coordinated, multi-layered approach to hazard mitigation. By leveraging both internal resources and external partnerships, Medford enhances its ability to address current and future risks, while safeguarding the community's well-being.

Financial

The City of Medford's financial capabilities are vital for the successful implementation of hazard mitigation actions. These resources allow the city to prioritize projects, secure funding, and sustain long-term efforts to reduce risks and improve resilience. Medford's financial policies and available funding sources contribute to the city's ability to support mitigation projects through various mechanisms, including grants, taxes, fees, and partnerships.

Project Prioritization and Ranking

Medford uses a structured process to prioritize projects based on available funding sources, often aligning project needs with specific grant program criteria. When grant opportunities arise, the city evaluates its ongoing and proposed projects to determine the best fit with the goals and funding requirements of the grant. The most suitable projects are then prioritized, ensuring that they meet both the city's hazard mitigation goals and the specific objectives of the funding program.

This prioritization process ensures that Medford efficiently allocates its resources, maximizing the impact of each grant and funding opportunity while addressing critical mitigation needs.

How Mitigation Fits Into the Capital Improvement Plan

The City of Medford's Capital Improvement Plan (CIP) plays a critical role in addressing hazard mitigation by identifying and prioritizing infrastructure projects that enhance the city's resilience to environmental hazards and support its long-term sustainability. The CIP includes a range of capital projects, some of which are specifically focused on mitigating the impacts of natural hazards, such as flooding, storms, and other climate-related risks.

The CIP prioritizes capital projects that address vulnerabilities identified in previous hazard assessments, such as those related to flooding, stormwater management, and infrastructure resilience. Projects that upgrade critical infrastructure, such as roads, bridges, and public buildings, are designed to withstand extreme weather events, seismic activity, and other

hazards. By including hazard mitigation as a key consideration in the selection of projects, Medford ensures that infrastructure improvements contribute to the city's ability to withstand and recover from disasters.

Flood Mitigation Projects

As part of the CIP, the city allocates funding for flood mitigation initiatives, including improvements to stormwater drainage systems, the installation of flood barriers, and the enhancement of floodplain management measures. These projects help reduce the risk of property damage, protect public health and safety, and ensure that Medford's critical infrastructure remains functional during flooding events.

Climate Resilience Initiatives

In line with the city's broader climate goals, the CIP funds projects that contribute to climate resilience. This includes investing in green infrastructure, such as the creation of parks and green spaces that help absorb stormwater, reduce the urban heat island effect, and mitigate the impacts of extreme heat and other climate-related hazards. These projects also support the city's broader climate action and adaptation strategies.

Critical Facility Upgrades

The CIP supports the upgrading of critical facilities such as emergency shelters, public health infrastructure, and utility systems to make them more resilient to disruptions caused by natural hazards. For example, projects may include reinforcing buildings to withstand high winds or retrofitting water and sewer systems to improve their ability to handle extreme weather events and flooding.

Transportation Infrastructure Resilience

Transportation infrastructure, including roads, bridges, and public transit systems, is a key area of focus in the CIP. Projects aimed at improving the resilience of transportation networks ensure that essential services can continue operating during and after a hazard event. These projects may involve upgrading roads to prevent flooding, reinforcing bridges against storms, or improving accessibility during extreme weather events.

The CIP aligns with other city planning documents, such as the Comprehensive Plan, the Climate Action and Adaptation Plan, and the Emergency Management Plan. These plans provide the framework for identifying which projects should be included in the CIP to address identified vulnerabilities and build long-term resilience. By aligning capital projects with broader hazard mitigation and climate adaptation goals, Medford ensures a coordinated approach to improving the city's overall resilience.

Financial Policies and Directing Funds to Mitigation Projects

Medford has a range of financial policies and mechanisms that direct available funds to mitigation projects, including both capital and operating expenditures. Key financial policies and resources that can support hazard mitigation include:

Property, Sales, and Income Taxes

The city's budget is primarily funded by taxpayers, with revenue coming from property taxes, sales taxes, and income taxes. For example, the Engineering Department's budget is funded through local taxes, allowing the city to allocate resources toward engineering and infrastructure projects that support mitigation, such as flood control systems, stormwater management, and roadway improvements.

Water and Sewer Enterprise Fund

The city's Water and Sewer Enterprise Fund finances critical infrastructure projects related to water systems. For example, funding from water bills helps support the maintenance and improvement of the water system, including mitigation projects that ensure the city's water infrastructure can withstand extreme weather events and rising sea levels.

General Funds

General funds from local taxes are available for projects that support public safety, infrastructure, and other essential services, including hazard mitigation. These funds are flexible and can be used to match federal or state grant funds or for projects that do not meet the criteria for other specific funding sources.

Utility Service Fees

Utility service fees, such as those for water, sewer, and other city services, provide additional funding for infrastructure maintenance and improvements. These fees are typically used to maintain the city's critical infrastructure, including systems that protect against flooding and other natural hazards.

Impact Fees from New Development and Redevelopment

Medford collects impact fees from new development and redevelopment projects, particularly through the Encore development, which contributes approximately $1 million per year to the city. Additionally, the city may receive up to 3% of revenues from the cannabis industry, subject to strict guidelines. These impact fees support a variety of city initiatives, including hazard mitigation, public safety, and improvements to public spaces such as streets and sidewalks. The Planning, Development, and Sustainability (PDS) Department reviews new projects and prioritizes mitigation actions (e.g., road repaving, ADA accessibility, green space development).

General Obligation or Special Purpose Bonds

In cases where larger capital projects are required, Medford can issue general obligation or special purpose bonds to raise funds for specific mitigation initiatives. These bonds provide upfront funding for projects that are critical to enhancing the city's resilience to hazards.

Funding from Federal and State Sources

Medford actively seeks federal and state funding to support mitigation projects, including:

State Funds and Federal Grants

Medford leverages various state and federal funding programs to support engineering projects, including water system improvements, stormwater management, and flood mitigation. For example, the Municipal Vulnerability Preparedness (MVP) Grant program provides state funding for projects like Medford Connects, a network aimed at enhancing social resilience and climate adaptation.

Loans through the Massachusetts Water Resources Authority (MWRA)

Engineering projects related to water systems and infrastructure are often funded through loans and grants administered by the MWRA, ensuring that the city's critical water infrastructure is resilient and sustainable.

Private or Nonprofit Grants and Funding

Medford also pursues private and nonprofit grants to supplement its hazard mitigation efforts. Key sources include:

Community Development Block Grants (CDBG)

These federal grants are used to fund a range of community development projects, including those aimed at improving infrastructure and mitigating hazards like flooding or extreme weather impacts.

Barr Foundation

The Barr Foundation provides funding for various city initiatives related to climate resilience and mitigation, including projects that enhance sustainability, reduce environmental risks, and improve public health.

Third-Party and In-Kind Contributions

In addition to financial contributions, Medford also seeks in-kind contributions from various stakeholders, including private contractors, nonprofit organizations, and community groups. These contributions may include volunteer labor, equipment, and services that support hazard mitigation projects, helping to reduce the overall cost of projects while fostering community engagement and resilience-building.

Education and Outreach

Effective education and outreach efforts are essential to promoting hazard risk reduction and ensuring that all residents are well-informed and prepared for emergencies. The City of Medford has established a variety of programs and methods to communicate important information to the public, but there is ongoing work to enhance these efforts to reach a more diverse audience and encourage broader participation in risk reduction activities.

Outreach Programs: Medford employs several outreach programs to share critical information about hazards, emergency preparedness, and risk reduction. These programs ensure that the community has access to up-to-date information during emergencies and supports proactive mitigation measures.

Phone and Text

- **City of Medford Connect CTY (Reverse 9-1-1):** This system allows the city to send emergency alerts directly to residents via phone, email, and text message, ensuring that critical information reaches them in real-time during emergency situations.
- **2-1-1:** As the Commonwealth's primary telephone call center during emergencies, 2-1-1 is available 24/7 and offers multilingual services to provide critical information about emergency resources and services. This service is particularly important for residents who may not have access to the internet or who prefer phone-based communication.

Digital and Social Media

- **City of Medford Website & Medford Police Website:** These online platforms serve as central hubs for information about emergency preparedness, hazard mitigation, and city-wide updates, providing residents with reliable sources for risk-related content.
- **Medford Police Department X (formerly known as Twitter) Account:** The Medford Police Department regularly updates its social media channels to inform residents about ongoing incidents, public safety issues, and important risk reduction measures.
- **Massachusetts Emergency Management Agency (MEMA) X (formerly known as Twitter) Account:** MEMA uses its social media presence to share important updates about state-level emergencies, weather warnings, and resources for residents.
- **Massachusetts Alert Mobile App:** This app provides alerts on emergencies, weather events, and other critical information, helping residents stay informed wherever they are.

Television, Radio, and Billboard

- **Emergency Alert System (EAS):** The EAS delivers emergency messages via television and radio broadcasts, providing vital information during weather events or other disasters.
- **Outdoor Electronic Billboards:** These billboards are used to convey emergency alerts and public safety messages, ensuring that residents on the go are still able to access key information.
- **Medford Community Media:** Medford's local television and online platform serves as a hub for community updates, including emergency alerts, public safety announcements, and recovery information during disasters. It ensures that residents have access to timely and locally relevant information.

Venues for Outreach Activities

Medford utilizes a range of community venues to conduct outreach activities, helping to ensure that important information reaches residents in accessible locations. These venues serve as points of contact where residents can receive information, attend informational sessions, and engage with resources on risk reduction.

- **Library:** The Medford Public Library serves as a community hub for educational resources, providing space for workshops, information sessions, and distribution of hazard preparedness materials.
- **Senior Center:** The Senior Center is an important venue for reaching elderly residents, who may be more vulnerable during emergencies. Outreach efforts at this venue can include preparedness workshops, distribution of emergency kits, and information on how seniors can stay safe during natural disasters.
- **Housing Authority:** Outreach through the Medford Housing Authority helps ensure that residents in public housing have access to risk reduction information, particularly those who may face barriers to traditional forms of communication.
- **Schools:** Local schools are key venues for engaging children, parents, and teachers in risk reduction efforts. Through programs like disaster preparedness drills, emergency planning workshops, and family-focused outreach, schools can play a vital role in building community resilience.
- **Community Partners and CBOs:** Medford collaborates with community-based organizations (CBOs) to reach diverse populations, including those in underserved areas. CBOs help extend the city's outreach efforts to residents who may be harder to reach through traditional communication methods.

Potential for Promoting Risk Reduction

These venues and outreach programs are well-suited to promote risk reduction, especially if communication strategies are enhanced to ensure inclusivity and reach a wider range of residents. While Medford has effective channels in place, there is room for improvement in certain areas.

Language Access

Many residents in Medford speak languages other than English, which may hinder their access to important risk reduction information. Strengthening communication efforts to include multilingual support, both in written and verbal formats, would ensure that all residents have the information they need to prepare for hazards and emergencies.

New or Additional Outreach Efforts

To maximize public participation and support for risk reduction, Medford could implement new outreach strategies that better address the diverse needs of its population.

Targeted Social Media Campaigns

While Medford's social media platforms (including Facebook and Instagram) are valuable tools, expanding outreach through targeted campaigns that address specific cultural and linguistic groups could increase engagement. Social media platforms, especially Instagram and Facebook, are widely used by Medford residents for receiving real-time updates about hazards and weather emergencies.

Community-Based Outreach

Collaborating with community leaders and organizations to hold in-person outreach events, such as risk reduction workshops, information sessions, or emergency preparedness fairs, could help increase participation in mitigation efforts, particularly among immigrant and refugee communities.

Improved Use of Local Media

Enhancing partnerships with local TV and radio stations to air risk reduction messages, PSAs, and emergency alerts in multiple languages would ensure broader access to critical information, especially for non-English speakers.

Mobile Alerts for Vulnerable Populations

Offering customized alerts or apps for vulnerable populations (e.g., elderly, low-income, non-English-speaking) could improve the reach and effectiveness of emergency communications. These alerts could provide specific instructions and resources tailored to their needs.

Increased Collaboration with Nonprofits

Partnering with nonprofits that specialize in serving underserved populations (such as those focused on housing, food insecurity, or health) can help spread risk reduction messages to communities that may not have access to mainstream communication channels.

VII. Hazard Mitigation Goals and Actions

Status of Previous Mitigation Actions

As part of the research for this Hazard Mitigation Plan update, city staff reported on the status of actions identified in the 2017 Hazard Mitigation Plan. Relevant personnel completed surveys to track the status of the actions for which their departments are responsible. In addition, one-on-one interviews were conducted with individuals overseeing these actions to clarify specific details.

Action statuses were categorized as complete, ongoing, or deferred. Ongoing actions are those currently in progress and carried forward into this update. Deferred actions were removed from the plan, either because they have been deprioritized or the remaining work is no longer relevant. Individual actions may have multiple statuses to reflect the progress of specific components.

MITIGATION MEASURE	IMPLEM ENTATION RESPONSIBILITY	PRIORITY	POTENTIAL FUNDING SOURCES	STATUS
FLOOD HAZARD MITIGATION MEASURES				
Main Street to Mystic Avenue Drainage improvements*	Engineering/ DPW	High	Medford/ FEMA	Complete/ Ongoing Plans completed, seeking funding source to complete the work
Meetinghouse Brook Drainage Improvements	Engineering/ DPW	High	Medford/ FEMA	Complete/ Ongoing Plans completed, seeking funding source to complete the work
Implement improvements for Infiltration and Inflow in the area of the Lawrence Estates	Engineering/ DPW	High	Medford	Complete
Cradock Bridge/Cradock Locks Project	City/ MassDOT	High	MassDOT	Complete
Coordinate with Green Line extension project*	City/ MassDOT/ MBTA	High	MassDOT/ MBTA	Complete
Implement Winter Brook Drainage Improvements*	City/ Private Property Owners	Medium	Medford/ FEMA	Complete
Update the Wetlands Ordinance to meet the MS4 stormwater requirements	Energy and Environment / Conservation Commission	Medium	Medford	Deferred Conservation Commission discussing updates to existing ordinance
Implement Cranberry Brook Drainage Improvements*	DPW/ Engineering	Medium	Medford/ FEMA	Complete/ Ongoing Plans completed, seeking funding source to complete the work
South Medford to River/Winter Brook Drainage Improvements*	DPW/ Engineering	Medium	Medford/ FEMA	Complete
Provide outreach/education for Private Property Owners on Catch Basin Maintenance	Engineering/ DPW/ Building Department	Low	Private Property Owners	Complete
Implement Park Street Drainage Improvements*	DPW/ Engineering	Low	Medford/ FEMA	Complete
Floodplain Management: enforce regulations & provide public education	Building Dept; Office of Community Development / Conservation Commission	Low	Medford	Complete/ Deferred Ordinances have been updated; planning messaging campaign, education campaign, and seminar on insurance claims
Floodplain Mapping	Office of Community Development / Conservation Commission	Low	Medford	Complete

WIND HAZARD MITIGATION MEASURES				
Tree Warden Coordination with Utility Companies	Forestry Division	Medium	Medford/ Utility Companies	Complete
SNOW HAZARD MITIGATION MEASURES				
Tree Warden Coordination with Utility Companies	Forestry Division	Medium	Medford/Utility Companies	Complete
GEOLOGIC HAZARD MITIGATION MEASURES				
Provide education on liquefaction risks & distribute maps*	Building Department/ Engineering	Low	Medford	Deferred deprioritized
OTHER HAZARD MITIGATION MEASURES				
Reduce Phragmites in Wetlands	Conservation Commission / Fire Dept / DCR	Low	Medford/ DCR	Deferred deprioritized
Purchase Additional Equipment	Fire Department	Medium	Medford	Completed

* Mitigation measures carried forward from the 2008 Medford Hazard Mitigation Plan.

Updated Hazard Mitigation Goals

Mitigation

M.1: Reduce loss of life, injury, and property damage from all major natural and human-made hazards through targeted mitigation actions.
M.2: Integrate hazard mitigation planning into the operations of all relevant municipal departments, committees, and boards.
M.3: Develop Emergency Management Plans for flooding, drought, and other emergencies that account for climate changes and future concerns.

Infrastructure and Assets

IA.1: Minimize damage to public infrastructure from natural and human-made hazards by implementing risk-reduction measures, consider future hazards and risks exacerbated due to climate change.
IA.2: Ensure future development is hazard-resilient by incorporating standards for risk reduction into site plan reviews.

Buildings and Grounds

BG.1: Increase climate resilience of City-owned buildings and grounds.

Regional and State Coordination

RSC.1: Foster regional cooperation by partnering with neighboring communities, state, and federal agencies to address hazards that affect multiple jurisdictions.
RSC.2: Identify and secure funding for measures to mitigate significant natural hazards.

Local Businesses

LB.1: Encourage the business community, major institutions, and non-profits to actively contribute to the review, development, and implementation of the hazard mitigation plan.

Public Services

PS.1: Expand the capacity of public services—including health, emergency, housing, and social services—to meet growing community needs as climate change intensifies hazards
PS.2: Enhance hazard, climate, and resiliency education and outreach, ensuring that efforts are equitable and responsive to Medford's culturally and linguistically diverse communities.
PS.3: Ensure reliable, accessible information during hazards, climate emergencies, and public health crises.
PS.4: Support the creation of equitable, hazard-resilient neighborhoods by focusing on targeted initiatives that address vulnerability in under-served areas.

Prioritization of Updated Hazard Mitigation Actions

The prioritization of actions in this Hazard Mitigation Plan was guided by a cost-benefit approach that considers both city and community capacity. Each action was evaluated based on its estimated cost and benefit to determine its relative priority.

Estimated Cost estimates are informed by a combination of data from previous projects and the experience of city staff who have managed similar initiatives. Costs are categorized as:

- Small: less than $10,000
- Medium: $10,000–$50,000
- High: greater than $50,000

Estimated Benefit is assessed based on the potential impact on hazard risk, with consideration given to the specific hazards that Medford faces. Benefits are categorized as:

- High: Action will likely produce a significant, direct reduction on hazard risk
- Medium: Action will likely produce a moderate, direct reduction on hazard risk
- Low: Action will likely produce a narrowly scoped or indirect reduction on hazard risk

Prioritization was assessed by the project management team comparing the Estimated Cost and the Estimated Benefit and incorporating local knowledge of hazards. Additionally the project management team compared the actions with existing city priorities for co-benefits such as sustainability or resilience as it will increase the likelihood of finding adequate funding sources.

ACTION CODE	FULL DESCRIPTION	ESTIMATED COST	ESTIMATED BENEFIT	PRIORITIZATION
M.2.2	Develop a Recovery Annex to the City's Comprehensive Emergency Management Plan (CEMP) that outlines priority roles, coordination structures, and funding pathways for post-disaster recovery in housing, infrastructure, and essential services.	Medium	High	High
M.2.3	Provide Incident Command System (ICS) training to 100% of relevant city staff, with annual tabletop drills for key departments (e.g., DPW, Police, Fire, Emergency Management).	Medium	High	High
IA.1.3	Collaborate with external partners to conduct a cybersecurity and physical risk assessment of the city's IT infrastructure by the end of 2027. Implement at least three prioritized hardening measures (e.g., backup power, ransomware defenses, data redundancy) by 2029, aligned with evolving threat landscapes and best practices.	Medium	High	High
BG.1.1	Require flood resilient design for new development that could see high flood risk. Overlapping action from Medford 2022 Climate Action and Adaptation Plan.	Medium	High	High
BG.1.2	Ensure all City-owned buildings and grounds are accessible, safe, and welcoming spaces that support the well-being of all community members, especially vulnerable populations.	Medium	High	High
PS.4.2	Continue exploring development of Resilience Hubs with the Medford Connects initiative in partnership between Emergency Management, PDS, and Public Health. Identify at least 3 pilot sites by 2026, and engage community partners to ensure accessibility and utility for vulnerable populations during hazard events.	Medium	High	High
IA.1.2	Coordinate with utility providers to pilot removal of abandoned or inactive overhead wires along 2 priority corridors (e.g., a school zone and a main street). Document outcomes and use findings to inform a phased citywide approach and future grant proposals.	Medium	Medium	Medium
RSC.1.1	Partner with 1 or 2 local environmental organizations and the DPW to pilot a green infrastructure project (e.g., tree plantings or permeable pavement installations) in at least two heat-vulnerable neighborhoods by 2027. Track temperature and surface runoff reductions annually and include results in the City's climate reports.	Medium	Medium	Medium
RSC.2.3	Complete final design plans for Meetinghouse Brook drainage improvements and secure project funding to implement top-priority improvements.	Medium	Medium	Medium
PS.1.3	Convene a working group with Fire, Emergency Management, housing and disability institutions to develop evacuation protocols for large non-city institutions. Disseminate to at least 10 sites (e.g., senior housing, group homes, community centers).	Medium	Medium	Medium

PS.2.9	Procure a communications or marketing consultant to support public education around emergency preparedness, hazard mitigation, and resilience initiatives. The consultant will assist with campaign strategy, messaging, design, and multilingual outreach to diverse community groups.	Medium	Medium	Medium
IA.2.3	By 2027, conduct a technical and cost analysis of police and fire department radio systems. Apply for funding by 2028 and upgrade to interoperable digital radio systems by 2029 to ensure seamless coordination during emergencies.	High	High	Medium
RSC.2.2	Apply for funding ($2M needed) to implement the shovel-ready drainage improvement project at Main Street and Mystic Avenue.	High	High	Medium
PS.1.7	Replace or rehabilitate prioritized water main infrastructure by 2029, following the Capital Improvement Plan. Use annual progress metrics (e.g., miles replaced, pressure restored) to track performance and align with the water rate study recommendations.	High	High	Medium
PS.4.1	Replace at least 50% of known lead service lines by 2029. Maintain a public-facing dashboard updated quarterly to show progress toward the 2032 mandate and prioritize vulnerable populations for early replacement.	High	High	Medium
M.1.2	Establish and track an inventory of deployable resources (e.g., cots, water, batteries) for use in emergencies. Review inventory levels annually and identify additional procurement needs before the next HMP update.	Low	Medium	Medium
M.1.3	Hold one facilitated coordination meeting between fire, police, and emergency management to draft basic evacuation guidance for 12 high-priority buildings (e.g., public housing, a senior center, or center for disability services). Share finalized guidance with city leadership and offer support for implementation at one pilot site.	Low	Medium	Medium
IA.1.1	Coordinate with National Grid and other relevant utility providers to ensure annual tree trimming is conducted along utility corridors, with a focus on at least two priority neighborhoods per year, in collaboration with DPW.	Low	Medium	Medium
PS.1.2	Pilot an opt-in registration system for facilities serving residents with access or functional needs (e.g., Walnut Street Center, Medford Housing Authority), including data-sharing protocols with Fire and Emergency Management. Aim to enroll at least 3 major sites in the first year of the pilot.	Low	Medium	Medium
PS.1.4	Formalize a forest management agreement between DPW and Fire that includes a 3-year brush removal schedule and annual review of fire-prone zones in North and West Medford.	Low	Medium	Medium

PS.2.1	Create and distribute a multilingual, high-level Emergency Preparedness 101 information sheet that outlines steps for residents, small businesses, and community-based organizations to prepare for hazards, emergencies, and evacuation. The sheet will include a checklist and a list of relevant citywide resources for different hazard types (e.g., flooding, heat, power outages), and will be made available in at least 5 languages both online and in at least 10 public locations citywide.	Low	Medium	Medium
PS.2.2	Develop a multilingual Community Resource Guide flyer translated into at least 5 languages with key emergency services, contact numbers, and city web links, and distribute at 10 Medford locations—including schools, community centers, and places of worship.	Low	Medium	Medium
PS.2.3	By each November, develop and distribute a Winter Resource Guide—available in five languages and covering snow removal rules, emergency contacts, warming centers, food access, and transit changes—to 1,000 households via schools, senior centers, and food sites, with web posting and partner feedback.	Low	Medium	Medium
PS.2.4	Adapt and launch a multilingual brush fire prevention education campaign modeled after California efforts, targeting 2,000 households in the urban-wildland interface zones.	Low	Medium	Medium
PS.2.7	Revise all standard emergency preparedness and hazard mitigation flyers and web content to meet a 5th–6th grade reading level using plain language standards and visuals. Pilot test new materials with 3 community-based partners who serve diverse literacy populations and adjust based on feedback.	Low	Medium	Medium
PS.2.8	Host at least two virtual emergency preparedness or hazard mitigation workshops annually through 2029, targeting residents, small businesses, and community-based organizations. Collect participant feedback to refine content and improve engagement.	Low	Medium	Medium
PS.3.1	Translate all public alert system messages (texts, robocalls, emails) into at least 5 languages commonly spoken in Medford and implement a citywide multilingual outreach campaign—via flyers, email, social media, and community partners—to inform residents about how to sign up, with a target of enrolling at least 500 new households.	Low	Medium	Medium
PS.3.2	Create and maintain printed emergency updates for each major hazard season (e.g., heat, snow emergency), posting them at 15 public locations and distributing 500 hard copies annually through community partners to reach digitally disconnected residents.	Low	Medium	Medium
PS.3.4	Pilot a voluntary emergency registry for seniors, people with disabilities, and those with mobility challenges. Partner with emergency services to train staff on using the registry for targeted outreach during emergencies. Conduct an annual drill to test and refine procedures.	Low	Medium	Medium

LB.1.1	Develop and launch a business outreach plan using existing city or partner outreach teams. Reach at least 75 small businesses with materials on emergency alerts, emergency preparedness, and hazard mitigation programs. Track participation and incorporate feedback into broader outreach strategies.	Low	Medium	Medium
M.1.1	Assess 3 emerging wildfire mitigation technologies (e.g., ember-resistant fencing, satellite heat mapping, fire-retardant gels) and summarize relevance in a memo for internal city use.	Low	Low	Low
M.2.1	Establish a small Hazard Mitigation Action Team composed of 3–5 key city staff and one community representative to meet twice per year. The team will identify and track progress on 2–3 priority HMP actions/strategies and provide a short summary of updates for inclusion in existing public-facing materials (e.g., newsletters or City Council meetings).	Low	Low	Low
M.3.1	Evaluate meteorological and geological hazards based on documented impacts to safety and the economy, ensuring that underestimated risks (e.g., high winds, thunderstorms) receive attention equal to more visible threats.	Low	Low	Low
M.3.2	Assess future projections of hazards to ensure worsening threats are incorporated into planning and resource allocation. Highlight future projections of hazards, emphasizing both existing hazards that are projected to worsen in the near future including currently low-risk hazards.	Low	Low	Low
IA.2.1	Conduct a feasibility study on undergrounding high-risk overhead wires in critical areas (e.g., public safety corridors), including a cost-benefit analysis to inform future grant applications.	Low	Low	Low
IA.2.2	Develop a secure database of photovoltaic (PV) solar panels and home energy storage systems (ESS) in collaboration with permitting and Fire, with annual opt-in updates from property owners.	Low	Low	Low
RSC.2.1	Identify at least 2 funding sources for urban forestry and wildfire mitigation, and submit 1 grant application by 2028 to support long-term canopy health and brush risk reduction.	Low	Low	Low
RSC.2.5	Conduct a regulatory compliance audit in coordination with EPA and MassDEP to identify priority upgrades and utilize this information to apply for funding opportunities to implement pollution-reducing BMPs in the future (e.g., sediment basins, vegetate swales near impaired waterways).	Low	Low	Low
RSC.2.6	Evaluate feasibility of establishing a stormwater utility or dedicated funding mechanism, and present findings to City Council with recommendations for next steps.	Low	Low	Low
PS.1.1	Hold an internal meeting between city staff and the MBTA (Medford's primary transit provider) to identify current barriers and low-cost options for improving transportation access during emergencies. Summarize key findings in a short internal memo.	Low	Low	Low

PS.1.5	Promote SeeClickFix for non-emergency snow and infrastructure issues through a multilingual campaign (flyers, social media, schools). Aim to increase platform use by 20% over 2 years. Include information for what to do in the case of an emergency.	Low	Low	Low
PS.1.6	Maintain ongoing rat abatement work with monthly tracking of complaints and baiting in hotspots. Review strategy annually to incorporate resident feedback and improve response time.	Low	Low	Low
PS.2.5	Develop snow responsibility guides (e.g., who clears what, timeline expectations). Distribute to 1,500 households and small businesses each winter through schools, CBOs, and utility mailers.	Low	Low	Low
PS.2.6	Implement a rat risk reduction campaign that combines city inspection data, multilingual flyers on prevention, and at least 2 community events per year in high-impact areas.	Low	Low	Low
PS.3.3	Launch a visibility campaign for the SeeClickFix platform that includes at least 1 targeted social media post/month, bi-lingual promotional flyers at 10 community locations, and a 20% increase in platform usage.	Low	Low	Low
LB.1.2	Develop a comprehensive engagement plan to collaborate with local businesses, institutions, and organizations on hazard mitigation and climate resilience.	Low	Low	Low
RSC.2.4	Develop conceptual designs for Cranberry Brook drainage improvements using existing study data. Secure funding for implementation of top-priority improvements.	Medium	Low	Low

Updated Hazard Mitigation Actions

MITIGATION

M.1 - REDUCE LOSS OF LIFE, INJURY, AND PROPERTY DAMAGE FROM ALL MAJOR NATURAL AND HUMAN-MADE HAZARDS THROUGH TARGETED MITIGATION ACTIONS.

M.1.1	Assess 3 emerging wildfire mitigation technologies (e.g., ember-resistant fencing, satellite heat mapping, fire-retardant gels) and summarize relevance in a memo for internal city use.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Fire Dept	Fire Dept Forestry/DPW, Emergency Management, MAPC	FEMA Hazard Mitigation Grant Program (HMGP); FEMA Building Resilient Infrastructure and Communities (BRIC); MVP Planning Grant; USFS Fire Prevention & Safety Grants; Massachusetts Department of Conservation and Recreation (DCR) Fire Assistance Programs	June 2026 –Dec 2026
M.1.2	Establish and track an inventory of deployable resources (e.g., cots, water, batteries) for use in emergencies. Review inventory levels annually and identify additional procurement needs before the next HMP update.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	DPW; Fire Dept; Police Dept; Public Health; Red Cross; Salvation Army; local faith-based organizations; MEMA Regional Office	FEMA Emergency Management Performance Grants (EMPG); FEMA Hazard Mitigation Grant Program (HMGP); MVP Action Grant; MEMA Technical Assistance; American Red Cross cost-share or in-kind donations; Local Emergency Planning Committee (LEPC) resources	Oct 2026 – May 2031 (annual reviews)
M.1.3	Hold one facilitated coordination meeting between fire, police, and emergency management to draft basic evacuation guidance for 1–2 high-priority buildings (e.g., public housing, or center for disability services). Share finalized guidance with city leadership and offer support for implementation at one pilot site.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	Fire Department; Public Health; Police Department; Housing Authority; Senior Services; Disability Services Organizations; Community Centers	MVP Action Grant; MEMA Planning Support/Technical Assistance; EOEEA Municipal Resilience Planning Support; MAPC	Jan 2027 – June 2027

M.2 - INTEGRATE HAZARD MITIGATION PLANNING INTO THE OPERATIONS OF ALL RELEVANT MUNICIPAL DEPARTMENTS, COMMITTEES, AND BOARDS.

M.2.1	Establish a small Hazard Mitigation Action Team composed of 3–5 key city staff and one community representative to meet twice per year. The team will identify and track progress on 2–3 priority HMP actions and provide a short summary of updates for inclusion in existing public-facing materials (e.g., newsletters or City Council meetings).			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	Fire Dept; Public Health; Police Dept; Housing Authority; Senior Services; Disability Services Organizations; Community Centers	MVP Action Grant; MEMA Planning Support (Massachusetts Emergency Management Agency); MAPC Technical Assistance Program	Aug 2026 – May 2031 (biannual, ongoing)

M.2.2	Develop a Recovery Annex to the City's Comprehensive Emergency Management Plan (CEMP) that outlines priority roles, coordination structures, and funding pathways for post-disaster recovery in housing, infrastructure, and essential services.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	MAPC, Tufts Emergency Management	FEMA Planning Grants, MVP Planning Grant	Feb 2027 – Dec 2027
M.2.3	Provide Incident Command System (ICS) training to 100% of relevant city staff, with annual tabletop drills for key departments (e.g., DPW, Police, Fire, Emergency Management).			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	DPW, Police, Fire, MEMA, FEMA Emergency Management Institute	Free MEMA/FEMA training programs	Nov 2026 – May 2031 (annual, ongoing)

M.3 DEVELOP EMERGENCY MANAGEMENT PLANS FOR FLOODING, DROUGHT, AND OTHER EMERGENCIES THAT ACCOUNT FOR CLIMATE CHANGES AND FUTURE CONCERNS.

M.3.1	Evaluate meteorological and geological hazards based on documented impacts to safety and the economy, ensuring that underestimated risks (e.g., high winds, thunderstorms) receive attention equal to more visible threats.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	MEMA, FEMA Emergency Management Institute	Free MEMA/FEMA training programs	July 2027 – Dec 2027
M.3.2	Assess future projections of hazards to ensure worsening threats are incorporated into planning and resource allocation.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	PDS, DPW, MEMA, FEMA, MAPC	MVP Action Grant; MEMA Planning Support (Massachusetts Emergency Management Agency); MAPC Technical Assistance Program; FEMA Hazard Mitigation Grant Program (HMGP)	Jan 2028 – June 2028

INFRASTRUCTURE AND ASSETS

IA.1 - MINIMIZE DAMAGE TO PUBLIC INFRASTRUCTURE FROM NATURAL AND HUMAN-MADE HAZARDS BY IMPLEMENTING RISK-REDUCTION MEASURES, CONSIDER FUTURE HAZARDS AND RISKS EXACERBATED DUE TO CLIMATE CHANGE.

IA.1.1	Coordinate with National Grid and other relevant utility providers to ensure annual tree trimming is conducted along utility corridors, with a focus on at least two priority neighborhoods per year, in collaboration with DPW.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Utility companies (e.g., Eversource), DPW	DCR Urban & Community Forestry Program, MVP Action Grant	July 2026 – May 2031 (annual ongoing)
IA.1.2	Coordinate with utility providers to pilot removal of abandoned or inactive overhead wires along 2 priority corridors (e.g., a school zone and a main street). Document outcomes and use findings to inform a phased citywide approach and future grant proposals.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Engineering/DPW	Eversource, MAPC, School Dept, PDS	FEMA Building Resilient Infrastructures and Communities (BRIC), MVP Action Grant, Eversource Grid Modernization, MassWorks	Feb 2027 – Nov 2027
IA.1.3	Collaborate with external partners to conduct a cybersecurity and physical risk assessment of the city's IT infrastructure by the end of 2027. Implement at least three prioritized hardening measures (e.g., backup power, ransomware defenses, data redundancy) by 2029, aligned with evolving threat landscapes and best practices.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	IT	External IT or cybersecurity consultants/vendors, MAPC	Department of Homeland Security Cybersecurity Grant Program (State and Local Cybersecurity Grant Program – SLCGP); MVP Action Grant; State IT/Cybersecurity Support Programs (e.g., MassCyberCenter).	Nov 2026 – Dec 2029

IA.2 - ENSURE FUTURE DEVELOPMENT IS HAZARD-RESILIENT BY INCORPORATING STANDARDS FOR RISK REDUCTION INTO SITE PLAN REVIEWS.

IA.2.1	Conduct a feasibility study on undergrounding high-risk overhead wires in critical areas (e.g., public safety corridors), including a cost-benefit analysis to inform future grant applications.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Community Development Board (Planning Board)	Engineering/DPW, Eversource, MAPC, engineering consultants	FEMA BRIC, utility resilience investment programs	July 2028 – Dec 2028
IA.2.2	Develop a secure database of PV solar panels and home energy storage systems (ESS) in collaboration with permitting and Fire, with annual opt-in updates from property owners.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Planning, Development, & Sustainability (PDS)	Building Dept, Fire Dept, solar permitting firms	DOE Resilience Grants, MVP or Clean Energy Center support	Aug 2027 – May 2028
IA.2.3	By 2027, conduct a technical and cost analysis of police and fire department radio systems. Apply for funding by 2028 and upgrade to interoperable digital radio systems by 2029 to ensure seamless coordination during emergencies.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Fire Dept; Police Dept; Communications Office	Emergency Management	State or federal public safety grant(s)	June 2026 – May 2031

BUILDINGS AND GROUNDS

BG.1 – INCREASE CLIMATE RESILIENCE OF CITY-OWNED BUILDINGS AND GROUNDS

BG.1.1	Require flood resilient design for new development that could see high flood risk. (Overlapping action from Medford 2022 Climate Action and Adaptation Plan)			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Planning, Development, & Sustainability (PDS)	Engineering/DPW	FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP); State Revolving Fund (SRF – Clean Water); MassWorks Infrastructure Program; EPA Water Infrastructure Finance and Innovation Act (WIFIA	Aug 2026 – June 2028
BG.1.2	Ensure all City-owned buildings and grounds are accessible, safe, and welcoming spaces that support the well-being of all community members, especially vulnerable populations.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Planning, Development, & Sustainability (PDS)	Public Health, Housing Authority; Senior Services; Disability Services Organizations; Community Centers	MVP Action Grant; MAPC Technical Assistance;	June 2028 – May 2031

LOCAL BUSINESSES

LB.1 – ENCOURAGE THE BUSINESS COMMUNITY, MAJOR INSTITUTIONS, AND NON-PROFITS TO ACTIVELY CONTRIBUTE TO THE REVIEW, DEVELOPMENT, AND IMPLEMENTATION OF THE HAZARD MITIGATION PLAN.

LB1.1	Develop and launch a business outreach plan using existing city or partner outreach teams. Reach at least 75 small businesses with materials on emergency alerts, emergency preparedness, and hazard mitigation programs. Track participation and incorporate feedback into broader outreach strategies.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	Economic Development/ PDS, OPO/Public Health, Local Businesses, Community Centers,	Local Business Sponsorship, MVP Action Grant; MAPC Technical Assistance; MEMA	July 2026 – Mar 2027
LB.1.2	Develop a comprehensive engagement plan to collaborate with local businesses, institutions, and organizations on hazard mitigation and climate resilience.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Planning, Development, & Sustainability (PDS)	Emergency Management, OPO/Public Health, DEI Dept Local Businesses, Community Centers,	MVP Action Grant; MAPC Technical Assistance; MEMA Emergency Management Grants	Apr 2029 – Dec 2029

REGIONAL AND STATE COLLABORATION

RSC.1 – FOSTER REGIONAL COOPERATION BY PARTNERING WITH NEIGHBORING COMMUNITIES, STATE, AND FEDERAL AGENCIES TO ADDRESS HAZARDS THAT AFFECT MULTIPLE JURISDICTIONS.

RSC.1.1	Partner with 1-2 local environmental organizations and DPW to pilot a green infrastructure project (e.g., tree plantings or permeable pavement installations) in at least two heat-vulnerable neighborhoods by 2027. Track temperature and surface runoff reductions annually and include results in the City's climate reports.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Planning, Development, & Sustainability (PDS)	DPW. Regional Environmental Organizations (MyRWA)	MVP Action Grant; MassDEP Section 319 Nonpoint Source Pollution Grant; MassDOT Complete Streets Funding Program; USDA Urban & Community Forestry Program; FEMA Building Resilient Infrastructure and Communities (BRIC); EPA Environmental Justice Small Grants; Local/regional foundation grants (e.g., Barr Foundation)	July 2026 – Dec 2027

RSC.2 – IDENTIFY AND SECURE FUNDING FOR MEASURES TO MITIGATE SIGNIFICANT NATURAL HAZARDS.

RSC.2.1	Identify at least 2 funding sources for urban forestry and wildfire mitigation, and submit 1+ grant applications by 2028 to support long-term canopy health and brush risk reduction.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Engineering/DPW (Tree Warden)	MAPC, regional land trusts, forestry nonprofits	USFS Urban Forestry, FEMA Building Resilient Infrastructure and Communities (BRIC), MVP Action Grant; FEMA Pre-Disaster Mitigation (PDM) Program	Dec 2026 – Dec 2027
RSC.2.2*	Apply for funding ($2M needed) to implement the shovel-ready drainage improvement project at Main Street and Mystic Avenue.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Engineering/DPW	PDS, Public Health, MWRA< MAPC	FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP); MEMA Hazard Mitigation Assistance; MVP Action Grant; MassWorks Infrastructure Program; State Revolving Fund (SRF – Clean Water); EPA Water Infrastructure Finance and Innovation Act (WIFIA); FEMA Pre-Disaster Mitigation (PDM) Program	June 2026 – Dec 2028
RSC.2.3*	Complete final design plans for Meetinghouse Brook drainage improvements and secure project funding to implement top-priority improvements.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Engineering/DPW	PDS	Clean Water State Revolving Fund (CWSRF), EPA Section 604b Grants, Community Preservation Act (CPA); FEMA Pre-Disaster Mitigation (PDM) Program	June 2026 – Dec 2029

RSC.2.4*	Develop conceptual designs for Cranberry Brook drainage improvements using existing study data. Secure funding for implementation of top-priority improvements.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Engineering/DPW	PDS	FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP); State Revolving Fund (SRF – Clean Water); MassWorks Infrastructure Program; EPA Water Infrastructure Finance and Innovation Act (WIFIA); FEMA Pre-Disaster Mitigation (PDM) Program	June 2026 – Nov 2029
RSC.2.5	Conduct a regulatory compliance audit in coordination with EPA and MassDEP to identify priority upgrades and utilize this information to apply for funding opportunities to implement pollution-reducing BMPs in the future (e.g., sediment basins, vegetate swales) near impaired waterways.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Engineering/DPW	PDS, EPA, MassDEP	MassDEP 604(b) Water Quality Management Planning Grant; MassDEP Section 319 Nonpoint Source Pollution Grant; State Revolving Fund (SRF – Clean Water); EPA Water Quality Improvement Grants	Mar 2027 – June 2027
RSC.2.6	Evaluate feasibility of establishing a stormwater utility or dedicated funding mechanism, and present findings to City Council with recommendations for next steps.			
	MUNICIPAL LEAD	COMMUNITY PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Mayor's Office	Engineering/DPW , PDS, Finance Dept	MAPC Technical Assistance; FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP); MVP Action Grant; FEMA Pre-Disaster Mitigation (PDM) Program	July 2037 – Dec 2030

* Mitigation measures carried forward from the 2008 Medford Hazard Mitigation Plan.

PUBLIC SERVICE

PS.1 - EXPAND THE CAPACITY OF PUBLIC SERVICES—INCLUDING HEALTH, EMERGENCY, HOUSING, AND SOCIAL SERVICES—TO MEET GROWING COMMUNITY NEEDS AS CLIMATE CHANGE INTENSIFIES HAZARDS

PS.1.1	Hold an internal meeting between city staff and the MBTA to identify current barriers and low-cost options for improving transportation access during emergencies. Summarize key findings in a short internal memo.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	MBTA, DPW, PDS, OPO/ Public Health	MAPC Technical Assistance; MBTA in-kind support; Federal Transit Administration (FTA) Emergency Relief / Planning Funds; MassDOT Shared Streets and COVID-19 Relief/Resiliency Programs	Aug 2026 – Dec 2026
PS.1.2	Pilot an opt-in registration system for facilities serving residents with access or functional needs (e.g., Walnut Street Center, Medford Housing Authority), including data-sharing protocols with Fire and Emergency Management. Aim to enroll at least 3 major sites in the first year of the pilot.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	Fire Dept, Police Dept, Public Health, Housing Authority, Commission for Persons with Disabilities MEMA, Disability Services Organizations	MVP Action Grant; FEMA Hazard Mitigation Grant Program (HMGP); MEMA Emergency Management grants; CDC / HHS Public Health Emergency Preparedness (PHEP) Grants	Jan 2027 – Dec 2027
PS.1.3	Convene a working group with Fire, Emergency Management, housing and disability institutions to develop evacuation protocols for large non-city institutions. Disseminate to at least 10 sites (e.g., senior housing, group homes, community centers).			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	Fire Dept, Public Health, Police Dept, Housing Authority, Senior Services, Disability Services Organizations, Community Centers	MVP Action Grant; CDC / HHS Public Health Emergency Preparedness (PHEP) Grants; FEMA Hazard Mitigation Grant Program (HMGP); MAPC Technical Assistance Program; FEMA Pre-Disaster Mitigation (PDM) Program	July 2027 – June 2028
PS.1.4	Formalize a forest management agreement between DPW and Fire that includes a 3-year brush removal schedule and annual review of fire-prone zones in North and West Medford.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Emergency Management	DPW, Fire Dept, PDS, Conservation Commission	MEMA Hazard Mitigation Assistance;DCR fire Prevention Grants	Feb 2028 – May 2031 (annual, ongoing)
PS.1.5	Promote SeeClickFix for non-emergency snow and infrastructure issues through a multilingual campaign (flyers, social media, schools). Aim to increase platform use by 20% over 2 years. Include information for what to do in the case of an emergency.			
	MUNICIPAL LEAD	**PARTNERS**	**POTENTIAL FUNDING**	**ESTIMATED TIMEFRAME**
	Communications Office	OPO/Public Health, Schools, Library, IT Dept, Community Centers	MVP Action Grant; MAPC Technical Assistance Program; Municipal IT/Communications Budget; Cummings Foundation (Greater Boston Community Grants); Tufts University Government & Community Relations	Nov 2029 – May 2031

PS.1.6	Maintain ongoing rat abatement work with monthly tracking of complaints and baiting in hotspots. Review strategy annually to incorporate resident feedback and improve response time.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Public Health	DPW; Inspectional Services/ Public Health; local pest control companies; neighborhood associations; Tufts University Public Health students; Community-Based Organizations	MVP Action Grant; Massachusetts Department of Public Health Local Public Health Excellence Grant Program; CDC Environmental Health Capacity (EHC) grants (via state/ local partnerships); local community foundation mini-grants; municipal public health budget	Aug 2027 – May 2031 (annual, ongoing)
PS.1.7	Replace or rehabilitate prioritized water main infrastructure by 2029, following the Capital Improvement Plan. Use annual progress metrics (e.g., miles replaced, pressure restored) to track performance and align with the water rate study recommendations.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Engineering/DPW	PDS, Public Health	State Revolving Fund (SRF – Drinking Water); FEMA Building Resilient Infrastructure and Communities (BRIC); FEMA Hazard Mitigation Grant Program (HMGP); USDA Rural Development Water & Waste Disposal Loan and Grant Program; Municipal Capital Improvement Budget; MassWorks Infrastructure Program; EPA Water Infrastructure Finance and Innovation Act (WIFIA)	June 2026 – Dec 2028
PS.2 - ENHANCE HAZARD, CLIMATE, AND RESILIENCY EDUCATION AND OUTREACH, ENSURING THAT EFFORTS ARE EQUITABLE AND RESPONSIVE TO MEDFORD'S CULTURALLY AND LINGUISTICALLY DIVERSE COMMUNITIES.				
PS.2.1	Create and distribute a multilingual, high-level "Emergency Preparedness 101" information sheet that outlines steps for residents, small businesses, and community-based organizations to prepare for hazards, emergencies, and evacuation. The sheet will include a checklist and a list of relevant citywide resources for different hazard types (e.g., flooding, heat, power outages), and will be made available in at least 5 languages both online and in at least 10 public locations citywide.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office OPO/Public Health, Housing Authority, Library, Schools, Faith Centers, Community Centers	MVP Action Grant ; MAPC Technical Assistance Program	July 2026 – June 2027
PS.2.2	Develop a multilingual Community Resource Guide flyer (translated into at least 5 languages) with key emergency services, contact numbers, and city web links, and distribute it at 10+ Medford locations - including schools, community centers, and places of worship - with distribution tracked by a designated outreach lead.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office, OPO/Public Health, Housing Authority, Library, Schools, Faith Centers, Community Centers	MVP Action Grant ; MAPC Technical Assistance Program	July 2026 – June 2027

PS.2.3	By each November, develop and distribute a Winter Resource Guide – available in five languages and covering snow removal rules, emergency contacts, warming centers, food access, and transit changes – to 1,000+ households via schools, senior centers, and food sites, with web posting and feedback collection from distribution partners.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office, OPO/Public Health, Housing Authority, Library, Schools, Faith Centers, Food Pantries, Community Center	MVP Action Grant; MAPC Technical Assistance Program; Tufts University Government & Community Relations	June 2026 – May 2031 (annual, ongoing)
PS.2.4	Adapt and launch a multilingual brush fire prevention education campaign modeled after California efforts, targeting 2,000 households in the urban-wildland interface zones.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Fire Dept, Communications Office, Forestry/DPW	MVP Action Grant; MAPC Technical Assistance Program; MEMA Hazard Mitigation / Emergency Management Grants	Apr 2029 – Apr 2030
PS.2.5	Develop snow responsibility guides (e.g., who clears what, timeline expectations). Distribute to 1,500+ households and small businesses each winter through schools, CBOs, and utility mailers.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office, Schools, OPO/Public Health, Community-Based Organizations, Faith Centers, Community Centers	MVP Action Grant; MAPC Technical Assistance	Aug 2026 – May 2031 (annual, ongoing)
PS.2.6	Implement a rat risk reduction campaign that combines city inspection data, multilingual flyers on prevention, and at least 2 community events per year in high-impact areas.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Public Health	DPW, Communications Office, Inspectional Services/Public Health Local Pest Control Companies, Neighborhood Associations, Local Businesses & Property Management Companies, Schools, Community Centers	MVP Action Grant; DPH Local Public Health Excellence Grant Program; DPH Community Health & Environmental Health Grants, CDC / HHS Environmental Health or Vector Control Grants; EPA / Region 1 Environmental Justice & Healthy Communities Grants	Nov 2026 – May 2031 (annual, ongoing)
PS.2.7	Revise all standard emergency preparedness and hazard mitigation flyers and web content to meet a 5th–6th grade reading level using plain language standards and visuals. Pilot test new materials with 3 community-based partners who serve diverse literacy populations and adjust based on feedback.			
	MUNICIPAL LEAD	**PARTNERS**	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office, OPO/Public Health, Schools, Library, Community-Based Organizations	MVP Action Grant; MAPC Techncial Assitance Program	July 2026 – June 2027
PS.2.8	Host at least two virtual emergency preparedness or hazard mitigation workshops annually through 2029, targeting residents, small businesses, and community-based organizations. Collect participant feedback to refine content and improve engagement.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	OPO/Public Health, PDS, Communications Office, Schools, Library, Faith Centers, Community Centers, Community-Based Organizations, Local Small Businesses	MVP Action Grant; MAPC Technical Assistance; Cummings Foundation – Greater Boston Community Grants; EPA Environmental Justice & Healthy Communities Grants; Barr Foundation; Tufts University Community Grants or Program Support	Oct 2026 – Dec 2029 (annual)

PS.2.9	Procure a communications or marketing consultant to support public education around emergency preparedness, hazard mitigation, and resilience initiatives. The consultant will assist with campaign strategy, messaging, design, and multilingual outreach to diverse community groups.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office, OPO/Public Health	MVP Action Grant; MAPC Technical Assistance; Cummings Foundation – Greater Boston Community Grants; CDC Public Health Emergency Preparedness (PHEP); EPA Environmental Justice & Healthy Communities Grants; Barr Foundation; Tufts University Community Grants or Program Support	May 2028 – Nov 2028

PS.3 - ENSURE RELIABLE, ACCESSIBLE INFORMATION DURING HAZARDS, CLIMATE EMERGENCIES, AND PUBLIC HEALTH CRISES.

PS.3.1	Translate all public alert system messages (texts, robocalls, emails) into at least 5 languages commonly spoken in Medford, and implement a citywide multilingual outreach campaign - via flyers, email, social media, and community partners - to inform residents about how to sign up and what to expect, with a target of enrolling at least 500 new households.			
	MUNICIPAL LEAD	COMMUNITY PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office, OPO/Public Health, Housing Authority, Schools, Library, Faith Centers, Community Centers, Other Community-Based Organizations, Tufts University Language	MVP Action Grant; MAPC Technical Assistance Program; MEMA Hazard Mitigation / Emergency Management Grants; CDC Public Health Emergency Preparedness (PHEP)	July 2027 – June 2028
PS.3.2	Create and maintain printed emergency updates for each major hazard season (e.g., heat / snow emergency), posting them at 15+ public locations and distributing 500+ hard copies annually through community partners to reach digitally disconnected residents.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management	Communications Office, OPO/Public Health, Library, Schools, Senior Services, Faith Centers, Community Centers, Housing Authority, Other Community-Based Organizations	MEMA Hazard Mitigation / Emergency Management Grants; CDC Public Health Emergency Preparedness (PHEP) Grants; EPA Environmental Justice & Healthy Communities Grant	Nov 2026 – May 2031 (annual, ongoing)
PS.3.3	Launch a visibility campaign for the SeeClickFix platform that includes at least 1 targeted social media posts/month, bi-lingual promotional flyers at 10+ community locations, and a 20% increase in platform usage.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Communications Office	OPO/Public Health, Neighborhood Associations, Housing Authority, Library, Schools, Community Centers, Other Community-Based Organizations	MAPC Technical Assistance Program	May 2030 – May 2031

PS.3.4	Pilot a voluntary emergency registry for seniors, people with disabilities, and those with mobility challenges. Partner with emergency services to train staff on using the registry for targeted outreach during emergencies. Conduct an annual drill to test and refine procedures.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Emergency Management; Public Health	Fire Dept, Police Dept, OPO/ Public Health, Housing Authority, Disability Service Organizations, Senior Services Center; Faith Centers, Community Centers, Other Community- Based Organizations	MEMA Emergency Management Grants; CDC Public Health Emergency Preparedness (PHEP) Grants; MassDOT Safe Routes / Community Resilience Grants; Executive Office of Elder Affairs Grants	July 2027 – May 2031 (annual, ongoing)

PS.4 - SUPPORT THE CREATION OF EQUITABLE, HAZARD-RESILIENT NEIGHBORHOODS BY FOCUSING ON TARGETED INITIATIVES THAT ADDRESS VULNERABILITY IN UNDER-SERVED AREAS.

PS.4.1	Replace at least 50% of known lead service lines by 2029. Maintain a public-facing dashboard updated quarterly to show progress toward the 2032 mandate and prioritize vulnerable populations for early replacement.			
	MUNICIPAL LEAD	PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Engineering/DPW	Emergency Management	EPA Lead Service Line Replacement Funding (through the Bipartisan Infrastructure Law)	July 2027 – May 2031
PS.4.2	Continue exploring development of Resilience Hubs with the Medford Connects initiative in partnership between Emergency Management, PDS, and Public Health. Identify at least 3 pilot sites by 2026, and engage community partners to ensure accessibility and utility for vulnerable populations during hazard events.			
	MUNICIPAL LEAD	COMMUNITY PARTNERS	POTENTIAL FUNDING	ESTIMATED TIMEFRAME
	Public Health	Emergency Management, PDS, OPO/Public Health, Schools, Library, Housing Authority, Senior Services, Disability Service Organizations, Community Centers, Other Community-Based Organizations	Emergency Management, PDS, OPO/Public Health, Schools, Library, Housing Authority, Senior Services, Disability Service Organizations, Community Centers, Other Community-Based Organizations	June 2025 - December 2026

VIII. Implementation & Evaluation

Continuing Public Participation

The City of Medford will continue robust, equitable engagement with residents, businesses, and community partners throughout plan implementation, ensuring the plan remains a living document. Engagement will move beyond one-way information sharing to actively incorporate feedback into mitigation decisions.

(New!) Public Outreach & Engagement Team

Establish a small team of city municipal staff, community-based organizations, and community representatives to meet semi-annually (twice per year). This team will identify and track progress on 2–3 priority communication and engagement actions, and share updates with the Social Resilience Sub-Committee, and prepare short public summaries for newsletters, social media, and the city website.

Multilingual Outreach Materials

Create and distribute a multilingual Emergency Preparedness 101 sheet (five languages) with steps for residents, businesses, and community-based organizations to prepare for hazards. This will be available online and at 10+ public sites. A multilingual Community Resource Guide will also be produced and distributed at schools, community centers, and places of worship.

- **Public Meetings:** At least once annually, the City will host public meetings—either in-person or online—focused on hazard mitigation progress, upcoming projects, and emerging hazards.
- **Partner Engagement:** Community-based organizations and other stakeholders (local businesses, etc) will continue to be engaged through the Medford Connects Network.

Plan Monitoring

Monitoring will track the implementation of all hazard mitigation actions over time. Emergency Management will lead monitoring, supported by the Department of Public Works (DPW), the Office of Planning, Development & Sustainability (PDS) and other relevant municipal departments.

Frequency

Semi-annual monitoring (twice per year) of all hazard mitigation actions, with an annual summary shared publicly, to keep residents informed and maintain transparency.

Monitoring Process:

Departments will submit quarterly progress reports on action items.

- Pilot tracking systems (e.g., Drainage Response Tracker reviewing 311 complaints, Adopt-a-Drain recruitment, SeeClickFix usage increases) will provide measurable data points.
- Seasonal emergency updates and Winter Resource Guides will be used to check reach into vulnerable populations.
- Metrics will be reviewed through an equity lens to assess recognition, procedural, and distributional equity.

Plan Evaluation

Evaluation will assess whether the HMP's actions are effective at reducing risk, improving preparedness, and advancing equity. Emergency Management will coordinate with the Mayor's Office and other stakeholders for evaluation.

Frequency

A formal annual evaluation meeting will be held to review the HMP in its entirety and ensure alignment with updated data and community priorities.

Evaluation Process

- Measure progress against climate exposure, climate sensitivity, adaptive capacity, and equity metrics.
- Review outcomes from specific HMP actions
- Collect feedback through community and partner engagement.
- Adjust HMP actions where implementation is lagging or outcomes are inequitable.

Evaluation Metrics

- **Climate Exposure:** Track drainage complaints, Adopt-a-Drain participation, and infrastructure improvements.
- **Climate Sensitivity:** Assess outreach to seniors, renters, people with disabilities, non-English speakers, and other vulnerable populations.
- **Adaptive Capacity:** Monitor enrollment in multilingual alert systems, implementation of forest management agreements, and staff ICS training rates.
- **Recognitional Equity:** Document acknowledgement of historic inequities in outreach and resource allocation.
- **Procedural Equity:** Evaluate inclusiveness of engagement methods (Connector/Liaison reach, translated materials, meeting accessibility).

Plan Update 2030

The Hazard Mitigation Plan will be updated at least once every five years. The Medford Emergency Management Team will lead this process, supported by a contracted vendor selected by the Emergency Manager.

Timeline

Begin update process by year four to ensure adequate engagement and FEMA review before the five-year mark.

Anticipated Update Process

1. Re-engage stakeholders through the planning committee, multilingual surveys, focus groups, and public meetings.
2. Incorporate new data from action updates (e.g., drainage tracking, wildfire prevention, evacuation protocols, and climate equity initiatives).
3. Update the mitigation actions to reflect emerging hazards, funding opportunities, and community-identified priorities.
4. This update will be submitted to MEMA and FEMA for review and approval to maintain plan eligibility.

IX. Appendix

Appendix Table of Contents

Introduction

Previous Federal Disaster Declarations

APPENDIX A: FEDERAL DISASTER DECLARATIONS FEMA ASSISTANCE AMOUNTS

DISASTER NAME (DECLARATION CODE)	DISASTER DECLARATION DATE	DECLARED COUNTIES	TOTAL INDIVIDUAL & HOUSEHOLDS PROGRAM DOLLARS APPROVED	TOTAL PUBLIC ASSISTANCE GRANTS DOLLARS OBLIGATED	HAZARD MITIGATION GRANT PROGRAM (HMGP) - DOLLARS OBLIGATED
Massachusetts Severe Storms and Flooding (DR-4780-MA)	5/15/2024	Worcester, Bristol	7668196.92		
`Massachusetts Severe Winter Storm and Snowstorm (DR-4651-MA)	4/18/2022	Suffolk, Norfolk, Plymouth, Bristol		$24,777,585.58	$886,888.95
Massachusetts Covid-19 Pandemic (DR-4496-MA)	3/27/2020	Statewide	68404437.79	$2,924,623,966.29	$6,322,445.73
Massachusetts Severe Winter Storm and Snowstorm (DR-4379-MA)	7/19/2018	Essex, Middlesex, Worcester, Suffolk, Norfolk		$39,177,793.01	$1,560,781.12
Massachusetts Severe Winter Storm and Flooding (DR-4372-MA)	6/25/2018	Essex, Middlesex, Worcester, Suffolk, Norfolk, Bristol, Plymouth, Barnstable, Dukes, Nantucket		$29,351,639.53	$1,707,469.50
Massachusetts Severe Winter Storm, Snowstorm, and Flooding (DR-4214-MA)	4/13/2015	Worcester, Essex, Middlesex, Suffolk, Norfolk, Plymouth, Bristol, Barnstable, Dukes, Nantucket		$84,641,473.10	
Massachusetts Severe Winter Storm, Snowstorm, and Flooding (DR-4110-MA)	4/19/2013	Statewide		$61,728,615.78	

Massachusetts Hurricane Sandy (DR-4097-MA)	12/19/2012	Suffolk, Plymouth, Bristol, Barnstable, Dukes, Nantucket		$9,579,110.34	
Massachusetts Severe Storm and Snowstorm (DR-4051-MA)	1/6/2012	Berkshire, Franklin, Hampshire, Hampden, Worcester, Middlesex		$71,284,694.56	
Massachusetts Tropical Storm Irene (DR-4028-MA)	9/3/2011	Berkshire, Franklin, Hampshire, Hampden, Suffolk, Norfolk, Bristol, Plymouth, Barnstable, Dukes	5559369.2	$30,293,577.35	
Massachusetts Severe Storms and Tornadoes (DR-1994-MA)	6/15/2011	Hampden, Worcester	4922798.7	$75,804,370.72	
Massachusetts Severe Winter Storm and Snowstorm (DR-1959-MA)	3/7/2011	Berkshire, Hampshire, Hampden, Essex, Middlesex, Suffolk, Norfolk		$25,955,715.57	
Massachusetts Severe Storm and Flooding (DR-1895-MA)	3/29/2010	Worcester, Essex, Middlesex, Suffolk, Norfolk, Plymouth, Bristol	58954565.86	$25,820,705.01	
Massachusetts Severe Winter Storm and Flooding (DR-1813-MA)	1/5/2009	Berkshire, Essex, Franklin, Hampden, Hampshire, Middlesex, Worcester		$51,847,902.76	
Massachusetts Severe Storms and Inland and Coastal Flooding (DR-1701-MA)	5/16/2007	Berkshire, Franklin, Hampshire, Hampden, Essex, Plymouth, Barnstable, Dukes		$8,293,666.78	

Massachusetts Severe Storms and Flooding (DR-1642-MA)	5/25/2006	Essex, Middlesex, Suffolk	18613563.29	$18,874,930.28	
Massachusetts Severe Storms and Flooding (DR-1614-MA)	11/10/2005	Berkshire, Bristol, Franklin, Hampden, Hampshire, Middlesex, Norfolk, Plymouth, Worcester	3640862.23	$7,207,478.21	
Massachusetts Flooding (DR-1512-MA)	4/21/2004	Worcester, Essex, Middlesex, Suffolk, Norfolk	2728345.06		

Community Assets

Community Assets: Structures and Economy

Recent and Future Developments

APPENDIX B: ALL RELEVANT INFRASTRUCTURAL SITES IN MEDFORD

FACILITY CATEGORY	FACILITY TYPE	NAME	ADDRESS	COMMENTS
Public Safety Infrastructure	Police Stations	Medford Police Department	100 Main St	PoliceHQ
Public Safety Infrastructure	Fire Stations	Medford Fire Department	120 Main Street	
Public Safety Infrastructure	EOC Locations	Department of Public Works Building	21 James St	Alternate
Public Safety Infrastructure	EOC Locations	Medford Police Dept Community Room	100 Main St.	Primary
Public Safety Infrastructure	Fire Stations	Fire Dept Headquarters	120 Main St.	FireHQ
Public Safety Infrastructure	Fire Stations	Engine 6	2 Ames Street	
Public Safety Infrastructure	Fire Stations	Engine 3	278 Salem Street	
Public Safety Infrastructure	Fire Stations	Engine 4	437 Riverside Avenue	
Public Safety Infrastructure	Fire Stations	Engine 5	0 Medford Street	
Public Safety Infrastructure	Fire Stations	Engine 2	26 Harvard Avenue	
Public Safety Infrastructure	Police Stations	State Police	520 Fellsway	State Police Barrack
Public Safety Infrastructure	Traffic Control Points	TCP 1	Boston Ave and Arlington St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 2	Boston Ave and College Ave	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 3	Boston Ave and Harvard Ave	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 4	Boston Ave and Harvard Ave	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 5	Boston Ave and North St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 6	Boston Ave and Winthrop St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 7	Harvard St and Willis St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 8	Lawrence Rd and Forest St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 9	Lawrence Rd and Governor Ave	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 10	Main St and Harvard St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 11	Main St and Medford Sq	Owned by City of Medford

Public Safety Infrastructure	Traffic Control Points	TCP 12	Rivers Edge Drive and Cabot Road	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 13	Rivers Edge Drive and Cooper St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 14	Riverside Ave and Clippership Drive	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 15	Riverside Ave and Commercial St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 16	Riverside Ave and Locust St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 17	Riverside Ave and Spring St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 18	Salem St and City Hall Mall/ Oakland St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 19	Salem St and Park St	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 20	Spring St and Central Ave	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 21	Winthrop St and Lawrence Road	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 22	Winthrop St and Medford High School	Owned by City of Medford
Public Safety Infrastructure	Traffic Control Points	TCP 301	RT 28 Fellsway and 4th Street	Owned by DCR
Public Safety Infrastructure	Traffic Control Points	TCP 302	RT 28 Fellsway and Riverside Ave	Owned by DCR
Public Safety Infrastructure	Traffic Control Points	TCP 303	Rt 28 Fellsway and Fellsway Plaza	Owned by DCR
Public Safety Infrastructure	Traffic Control Points	TCP 309	Rt 16 (Mystic Valley Pkwy) and Auburn St (North and South)	Owned by DCR
Public Safety Infrastructure	Traffic Control Points	TCP 319	Rt 28 (Fellsway West) and Fulton St	Owned by DCR
Public Safety Infrastructure	Traffic Control Points	TCP 320	Rt 28 (Fellsway West) and Salem St (RT 60)	Owned by DCR
Public Safety Infrastructure	Traffic Control Points	TCP 330	Rt 16 (Mystic Valley Parkway) and Winthrop St	Owned by DCR
Public Safety Infrastructure	Traffic Control Points	TCP 40144	RT 28 (Mystic Ave) and Harvard St/Rte 16 (Mystic Valley Pkwy)	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41134	Rt 16 (Mystic Valley Pkwy) East and I-93 SB Exit 31 Off Ramp/ Rt 16	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41818	Middlesex Ave and Riverside Ave/Fifth st	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41819	Middlesex Ave and 2nd St	Owned by MassDOT

Public Safety Infrastructure	Traffic Control Points	TCP 41853	Middlesex Ave and 9th St (North of Wellington Circle)	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41901	Main Street and 16 EB Off ramp/ South St/Rt 16 WB Off-ramp	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41902	Rte 16 (Mystic Valley Pkwy) and Locust St (North and South)	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41903	Rt 16 (Mystic Valley Pkwy) and Commercial St	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41904	Rt 16 (Mystic Valley Pkwy) and Rt 16 Mystic Valley Pkway/ fellways East/ Middlesex Ave NB	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41905	Rt 16 (Mystic Valley Pkway) and Rt 16 Revere Beach Pkway/Fellsway East/ Middlesex Ave NB Wellington Circle	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41906	Rt 28 (Fellsway) and Middlesex Ave SB (Wellington Circle North)	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41928	Rt 28 (Fellsway) and Presidents Landing	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	TCP 41931	Rivers Edge Drive and Rt 16 (West) Ramp	Owned by MassDOT
Public Safety Infrastructure	Traffic Control Points	Traffic Signal Location ID-100	Fulton St and Amnes St	Flasher or Fire Operation Only- Owned by the City of Medford
Public Safety Infrastructure	Traffic Control Points	Traffic Signal Location ID-110	Fulton St and Winslow Ave	Flasher or Fire Operation Only- Owned by the City of Medford
Public Safety Infrastructure	Traffic Control Points	Traffic Signal Location ID-120	Main St and George St	Flasher or Fire Operation Only- Owned by the City of Medford
Public Safety Infrastructure	Traffic Control Points	Traffic Signal Location ID 130	Main St and Mystic Ave	Flasher or Fire Operation Only- Owned by the City of Medford
Public Safety Infrastructure	Traffic Control Points	Traffic Signal Location ID-140	Riverside Ave and Park St	Flasher or Fire Operation Only- Owned by the City of Medford
Public Safety Infrastructure	Traffic Control Points	Traffic Signal Location ID-150	Salem St and Fire Station (Engine #3)	Flasher or Fire Operation Only- Owned by the City of Medford
Medical Infrastructure	Hospitals/Clinics	Arbour Medford Counseling Services	100 George P. Hassett Drive	
Medical Infrastructure	Other	Community Family (The) - Medford Ct	121 Washington Street	
Medical Infrastructure	Long Term Care Facilities	Courtyard Nursing Care Center	200 Governors Avenue	
Medical Infrastructure	Hospitals/Clinics	Dcs Mental Health Inc	151 Mystic Avenue #6	

Medical Infrastructure	Hospitals/Clinics	Family Medical Associates	Southside Pl 101 Main St Ste213-215	
Medical Infrastructure	Long Term Care Facilities	Glen Ridge Nursing Care Center	120 Murray Street	
Medical Infrastructure	Other	Global Home Care Services Llc	5 High Street	
Medical Infrastructure	Hospitals/Clinics	Harvard Van Med Asso-Medford Practice	26 City Hall Mall	
Medical Infrastructure	Other	Innovive Health	10 Cabot Road, Suite 201	
Medical Infrastructure	Other	Medford Adult Day Health Center	101 Mystic Avenue	
Medical Infrastructure	Hospitals/Clinics	Medford Dialysis Center	305 Mystic Avenue	
Medical Infrastructure	Hospitals/Clinics	Melrosewakefield Healthcare @ 101 Main	101 Main Street 1St Fl Suite 112	
Medical Infrastructure	Hospitals/Clinics	Melrosewakekfield Htlthcre Lawrence Memorial	170 Governors Avenue	
Medical Infrastructure	Hospitals/Clinics	Minuteclinic	85 High Street	
Medical Infrastructure	Hospitals/Clinics	Mystic River Home Training	712 Fellsway, First Floor	
Medical Infrastructure	Other	Rite Time Home Care Services Inc	10 Lewis Street, Rear Suite	
Medical Infrastructure	Hospitals/Clinics	Shields Surgery Center	170 Governors Avenue	
Medical Infrastructure	Hospitals/Clinics	Spaulding Outpatient Ctr - Medford	101 Main Street Suites 101	
Medical Infrastructure	Hospitals/Clinics	Tufts Medical Center - Medford	170 Governors Avenue, Ste 120 & 258	
Medical Infrastructure	Urgent Care	Urgi-Care Center	100 Hospital Rd Floors 1-3	
Medical Infrastructure	Other	Wellington Circle Dialysis Center	10 Cabot Road Suite 103B	
Medical Infrastructure	Hospitals/Clinics	Winchester Hosp Wound Healing Ctr	75 Riverside Avenue, First Fl Ste 4	
Medical Infrastructure	Elderly Housing	Saltinstall Senior	121 Riverside Ave.	
Medical Infrastructure	Elderly Housing	Tempone Manor	22 Alston St.	
Medical Infrastructure	Elderly Housing	Walking Court Elderly Housing	North Main St.	
Medical Infrastructure	Elderly Housing	Weldon Manor	35 Bradley Rd.	
Medical Infrastructure	Doctor's Office	Courtyard Nursing Care Center	200 Governor's Ave.	MedFacility
Medical Infrastructure	Doctor's Office	Medford Visiting Nurse	278 Mystic Ave.	
Medical Infrastructure	Long Term Care Facilities	Medford Rehabilitation and Nursing Center	300 Winthrop	MedFacility
Medical Infrastructure	Doctor's Office	Glen Ridge Nursing	Hospital Rd.	
Medical Infrastructure	Hospitals/Clinics	Lawrence Mem Hosp Of Medford	170 Governors Avenue	Emergency Care
Medical Infrastructure	Other	Tufts University Main Campus	Packard Ave	MedFacility
Medical Infrastructure	Elderly Housing	Saltinstall Senior	121 Riverside Ave.	MassCare
Medical Infrastructure	Elderly Housing	Weldon Manor	35 Bradley Rd.	
Medical Infrastructure	Elderly Housing	Tempone Manor	22 Alston St.	

Medical Infrastructure	Elderly Housing	Walking Court Elderly Housing	North Main St.	
Medical Infrastructure	Elderly Housing	Canal St Dev Housing	15 Canal St.	
Medical Infrastructure	Other	Aspen Dental	690 Fellsway	Dental Care
Medical Infrastructure	Other	Medford Dental Associates	101 Main St Ste 206	Dental Care
Medical Infrastructure	Other	Giamberardino	84 High St Ste 304	Dental Care
Medical Infrastructure	Other	Cancado Dental Digital	0 Governors Ave #20-21	Dental Care
Medical Infrastructure	Other	Dental Delights	84 High St Ste 203	Dental Care
Medical Infrastructure	Other	The Medford Center for Orthodontics	82 Forest St	Dental Care
Medical Infrastructure	Other	First Dental	366 Salem St	Dental Care
Medical Infrastructure	Other	Element Dental	3860 Mystic Valley Parkway	Dental Care
Medical Infrastructure	Other	Gio Dental at Station Landing	8 Earhart Landing	Dental Care
Medical Infrastructure	Other	Cancado Dental Digital	0 Govenors Ave #20-21	Dental Care
Medical Infrastructure	Other	Omnidentix and Associates	289 Middlesex Ave	Dental Care
Medical Infrastructure	Other	Giamberardino Dental Care	84 High St Ste 304	Dental Care
Medical Infrastructure	Other	Limited to Endodontics	1 City Hall Mall Ste 1	Dental Care
Medical Infrastructure	Other	Medford Pet Clinic	391 Main St	Pet Care
Medical Infrastructure	Other	Vetco Total Care	3850 Mystic Valley Parkway	Pet Care
Medical Infrastructure	Other	Thrive Pet Healthcare	637 High St	Pet Care
Medical Infrastructure	Other	Wellington Circle Veterinary	4110 Mystic Valley Pkwy	Pet Care
Medical Infrastructure	Doctor's Office	Beth Israel Lahey Health Primary Care	75 Riverside Avenue, First Fl Ste 2	
Medical Infrastructure	Drug Store/ Pharmacy	CVS Pharmacy	590 Fellsway	
Medical Infrastructure	Drug Store/ Pharmacy	CVS Pharmacy	55 Riverside Ave	
Medical Infrastructure	Drug Store/ Pharmacy	CVS Pharmacy	85 High Street	
Medical Infrastructure	Drug Store/ Pharmacy	Walgreens	491 High St	
Medical Infrastructure	Drug Store/ Pharmacy	CVS Pharmacy	471 Salem St	
Medical Infrastructure	Urgent Care	Urgent Care at Lawrence Memorial Hospital of Medford	170 Govenors Ave	
Medical Infrastructure	Rehab Hospitals	Inpatient Drug Detox and Rehabilitation	101 Main St Ste 198	
Medical Infrastructure	Rehab Hospitals	Community Rehab Care Inc	84 High St	
Medical Infrastructure	Doctor's Office	Atrius Health	26 City Hall Mall	
Community Infrastructure	Cemetery	Oak Grove Cemetery	230 Playstead Rd.	
Community Infrastructure	Library	Charlotte & William Bloomberg Public Library	111 High Street	
Community Infrastructure	Post Office	Medford Post Office	20 Forest St	
Community Infrastructure	Church	Temple Shalom	475 Winthrop St.	
Community Infrastructure	Cultural Resources	Cradock House	350 Riverside Ave.	

Community Infrastructure	Cultural Resources	Brooks Estate	275 Grove st	
Community Infrastructure	Cultural Resources	Royal House	15 George St.	
Community Infrastructure	Cultural Resources	City Hall	85 George P Hassett Dr	
Community Infrastructure	Library	Tisch Library	35 Professors Row	
Community Infrastructure	Church	Impact Church	3001 Freedom Way	
Community Infrastructure	Church	Unitarian Universalist Church	147 High Street	
Community Infrastructure	Church	Grace Episcopal Church	160 High Street	
Community Infrastructure	Church	St Francis of Assisi	441 Fellsway W	
Community Infrastructure	Church	The First Baptist Church of Medford	34 Oakland St	
Community Infrastructure	Church	Sanctuary United Church of Christ	458 High St	
Community Infrastructure	Church	First Community United Methodist Church	55 Otis St	
Community Infrastructure	Church	New England Baptist Church	30 Salem St	
Community Infrastructure	Church	Wesley United Methodist Church	100 Winthrop St	
Community Infrastructure	Church	The Growing Church	320 Boston Ave	
Community Infrastructure	Church	Hillside Community Church	144 North St	
Community Infrastructure	Church	Harvest Field Church Boston	407 Mystic Ave Ste 32	
Community Infrastructure	Church	Community Baptist Church	470 Fulton St	
Community Infrastructure	Church	Shiloh Baptist Church	1 Holton St	
Community Infrastructure	Church	Venture Church Boston	98 George P Hassett	
Community Infrastructure	Church	St Clement Rectory	71 Warner St	
Community Infrastructure	Church	Assembly of God New Life in Medford	39 Commercial St	
Community Infrastructure	Post Office	United States Postal Service	470 Boston Ave	
Community Infrastructure	Post Office	United States Postal Service	485 High Street	
Community Infrastructure	Historical Society	Medford Historical Society	10 Governors Ave	
Community Infrastructure	Historical Site	Isaac Royall House	15 George St.	
Public Venue	Park	Carr Park	Winslow Avenue	
Public Venue	Park	Hickey Park	Brogan Road	
Public Venue	Park	Prescott Park	James Road	
Public Venue	Park	Harris Park	Second Street	
Public Venue	Park	Morrison Park	Central Avenue	
Public Venue	Park	Magoun Park	Pembroke Street	
Public Venue	Park	Logan Park	Otis Street	
Public Venue	Park	McNally Park	Webster Street	
Public Venue	Park	Victory Park	Winthrop Street	
Public Venue	Park	Hastings Heights	Allston Street	
Public Venue	Park	Playstead Park	Playstead Road	
Public Venue	Park	Thomas Brooks Park	Grove Street	

Public Venue	Park	Dugger Park	Mystic River Road	
Public Venue	Park	Capen Park	Capen Street	
Public Venue	Park	Grant Park	Boston Avenue	
Public Venue	Park	Cummings Park	Cotting Street	
Public Venue	Park	Memorial Park	Winthrop Street	
Public Venue	Park	Barry Park	Summer Street	
Public Venue	Park	Royall Park	George Street	
Public Venue	Park	Brook Park	Main Street	
Public Venue	Park	Tufts Park	Main Street	
Public Venue	Park	Columbus Park	Hicks Avenue	
Public Venue	Park	Hormel Stadium Facility and Riverbend Park	Locust Street	
Public Venue	Beach/Public Parks	Wright's Pond	Elm Street	
Public Venue	Playground	Barry Playground	74 Summer Street	
Public Venue	Museum	Medford Historical Society and Museum	10 Governors Ave	
Public Venue	Meeting Hall	West Medford Community Center	111 Arlington St	
Public Venue	Athletic Fields	Spicer Field	160G College Ave	
Public Venue	Other	Condon Shell	2501 Mystic Valley Parkway	
Public Venue	Other	Tufts Pool Medford Community Pool	449 Main St	

APPENDIX C: LIST OF RECENT DEVELOPMENTS IN MEDFORD (2007-2021)

NAME	ADDRESS	YEAR OF COMPLETION (PROJECTED)	DESCRIPTION OF PROPERTY
Tulloug Reelly	435 Riverside Ave	2007	19 small multi-family residential units
Wendys Restaurant	8 9th St	2007	
Gibson St/Beyani Cu.	299 Riverside Ave	2007	27 single family home units
Wellington Place	37-69 Brainard Ave	2007	147 large multi-family units
Belle Ar/Danerpusli	2 Webber St	2007	Several single and large multi-family residential units
Ship Avenue	3960 Mystic Valley Pkwy	2007	18 small multi-family residential units
24-30 High Street	24-30 High Street	2007	Office
Brods Park	Mystic Valley Pkwy	2007	8 small multi-family units
Hillside School	7 Capen St	2007	
Central Bank	337 Mystic Ave	2007	
Osgood School	106 3rd St	2007	
224 Salon Street	224 Salon Street	2007	Retail and residential mixed use, 12 small multi-family units
Ballys	1 Highland Ave	2007	
Dwlier D	435 Riverside Ave	2007	
High Street	East Dam Road	2007	Mix of single and small multi-family units
S.C.	Mystic Valley Pkwy	2007	
Station Landing	50 Station Landing	2009	Residential and commercial mixed use development, developed in 5 phases, phase 1 and 2 probably completed before 2007, Phase 1 - 290 apartments and 30 retail stores (65,000 sf retail/restaurant) l Phase II - 137 luxury condos, Phase III - Health Club (50,000 sf), Phase IV - Parking garage, Phase V - 168 loft style apts+ 8500 sf restaurant. Total 595 multi-family units
Swan School	22 Benmor St	2010	
Hervey School	122 Holton St	2010	
St. James Church Medford	118-142 4th St	2010	
Lincoln Kennedy School	215 Harvard St	2010	Residential, 50 large multi-family units
Franklin School	68 Central Ave	2010	Residential, 20 large multi-family units
Gleason School	160 Playstead Rd	2010	Residential. 2 single family and 8 large multi-family units
Amaranth Avenue	42 Amaranth Ave	2010	Residential, 41 multi-family units
Rivers Edge Medford	100 Rivers Edge Dr	2010	Mixed use development. The first office building was completed and partially occupied. Marriott International took a 7 year lease on 32,000 sf of the building , bringing approximately 100 jobs. As of June 30, 2010 the 222 unit apartment building at River's Edge was 90% lease and 75% occupied.
AC Hotel Boston North - Station Landing	70 Station Landing	2015	Located adjacent to WellingtonCircle in Medford, Station Landing already consists of 165,000 sf of office space, 700 residential units, and 100,000 sf of retail/restaurant. This development will add a 152-room hotel on the property.
Medford Mews	10 Cabot Rd	2016	Residential buildings, 347 large multi-family units
200 Boston Avenue	200 Boston Avenue	2016	Newly built office, incubator, and turn-key labs

150 River's Edge Drive	150 Rivers Edge Drive	2017	282-unit luxury apartment residential development
Wegman's Supermarket	3850 Mystic Valley Parkway, Medford, MA, United States	2017	New Wegman's supermarket within the Meadow Glen Mall
Modera Medford	20 Cabot Road	2017	297 apartment homes constructed in a four- and five-story wrap-style development surrounding a six-story parking garage
Sphere Luxury Apartments	640 Boston Avenue	2018	Mixed use residential and commercial space. Sphere is a transit oriented development connecting Medford, Somerville, Cambridge and Boston. Located adjacent to the Ball Square Green Line Station, in Medford/Somerville.
236-240 Salem Street	240 Salem Street	2018	Re-use / Infill Project Low rise apartment building with an affordable housing component
Tufts University Central Energy Plant	419 Boston Ave	2018	Tufts University's new Central Energy Plant will replace the university's existing 60 year old energy plant and will contain updated and efficient technology next to Dowling Hall on its Medford Campus
The Residences at Vinnin Square	224 Salem Street	2018	New 84-unit senior living community offering independent, assisted and memory care living. Features 22 memory care units and 62 independent and assisted living units, with studio, one-bedroom and two-bedroom configuration
New Medford Police Headquarters	Main Street	2021	Current police training academy at 90 Main St. has been announced as the site for a new state-of-the-art police headquarters
61 Locust Street/ Windsor Mystic River Apartments	61 Locust Street	2021	Proposed mixed-use development project that would construct approximately 562,508 square feet of new space across three new buildings. The project would contain 490 residential units, 10% of which would be designated affordable, as well as 3,000 square feet of retail and 16,000 square feet of resident amenities and flex space.***As of Feb. 2021 the project is in the last stages of the construction process.

Appendix D: Planning Committee Meeting Agendas

Three planning committee meetings held with each of the three subcommittees:

	ENVIRONMENTAL MANAGEMENT	SOCIAL RESILIENCE	COMMUNITY ENGAGEMENT
Kick Off November 6, 2024	1:00 PM	11:00 AM	5:30 PM
Meeting 2 February 19, 2025	1:00 PM	11:00 AM	5:30 PM
Meeting 3 May 21, 2025	1:00 PM	11:00 AM	5:30 PM

City of Medford Health Department

ACBC CONSULTING (Primary Vendor)

CITY OF MEDFORD HAZARD MITIGATION PLANNING COMMITTEE

HAZARD MITIGATION PLANNING COMMITTEE
Sub-Committee Kick-Off Meeting

Wednesday, November 6, 2024

Hazard Mitigation Plan Background

Hazard Mitigation Planning (HMP) aims to reduce loss of life and property, breaking the cycle of disaster damage and reconstruction. HMP achieves this by first identifying risks and vulnerabilities, and then developing long-term protective strategies.

The Medford HMP Planning Committee will work together to update the city of Medford's HMP through thoughtful and strategic planning that prioritizes safety, resilience, and community well-being. This committee will be divided into three sub-committees, each playing a critical role in shaping a plan that is responsive to the needs of Medford's diverse population

Meeting Objectives

- Introduce Hazard Mitigation Planning
- Review Medford's HMP sub-committee structure, schedule, and steps
- Engage with sub-committee members to
    - Understand initial hazard concerns
    - Brainstorm mission statement
    - Identify outreach strategies

Meeting Agenda

Item	*Time*
Welcome & Introductions	5 minutes
What is an HMP? Why an update?	3 minutes
Medford's HMP Structure, Schedule, and Steps	10 minutes
Questions: Hazard Concerns	10 minutes
Brainstorm chat: Mission Statement	10 minutes
Brainstorm chat: Outreach & Engagement Plan	10 minutes
Closing	2 minutes

City of Medford Health Department

ACBC CONSULTING (Primary Vendor)

CITY OF MEDFORD HAZARD MITIGATION PLANNING COMMITTEE

HAZARD MITIGATION PLANNING COMMITTEE
Sub-Committee Meeting #2

Wednesday, February 19, 2025

Hazard Mitigation Plan Background

A Hazard Mitigation Plan (HMP) helps reduce loss of life and property by identifying risks and implementing long-term strategies to minimize disaster impacts.

The Medford HMP Planning Committee is updating the city's plan with a focus on safety, resilience, and community well-being. To ensure a well-rounded approach, the committee is divided into three sub-committees:

- Emergency Management: Strengthens preparedness and response strategies.
- Social Resilience: Supports vulnerable populations and community networks.
- Community Engagement: Ensures inclusive participation and outreach.

Together, these groups will shape a plan that reflects Medford's diverse needs and enhances the city's ability to withstand future hazards.

Meeting Objectives

- Review community input from the first public meeting
- Present the community engagement plan
- Review and discuss high-level goals

Meeting Agenda

Item	*Time*
Welcome & Introductions	5 minutes
Input from Public Meeting #1	5 minutes
Community Engagement Plan	10 minutes
Discussion on High-Level Goals	35 minutes
Closing	5 minutes

To review the 2017 Hazard Mitigation Plan High-Level Goals:

Hazards mitigation plan 2017 FEMA_APA_HAZARD MITIGATION GOALS.pdf

HAZARD MITIGATION PLANNING COMMITTEE
Sub-Committee Meeting #3

Wednesday, May 21, 2025

Hazard Mitigation Plan Background

A Hazard Mitigation Plan (HMP) helps reduce loss of life and property by identifying risks and implementing long-term strategies to minimize disaster impacts.

The Medford HMP Planning Committee is updating the city's plan with a focus on safety, resilience, and community well-being. To ensure a well-rounded approach, the committee is divided into three sub-committees:

- Emergency Management: Strengthens preparedness and response strategies.
- Social Resilience: Supports vulnerable populations and community networks.
- Community Engagement: Ensures inclusive participation and outreach.

Together, these groups will shape a plan that reflects Medford's diverse needs and enhances the city's ability to withstand future hazards.

Meeting Objectives

- Review compilation of high-level goals from Meeting #2
- Review and brainstorm relevant 5-year strategies to match high-level goals

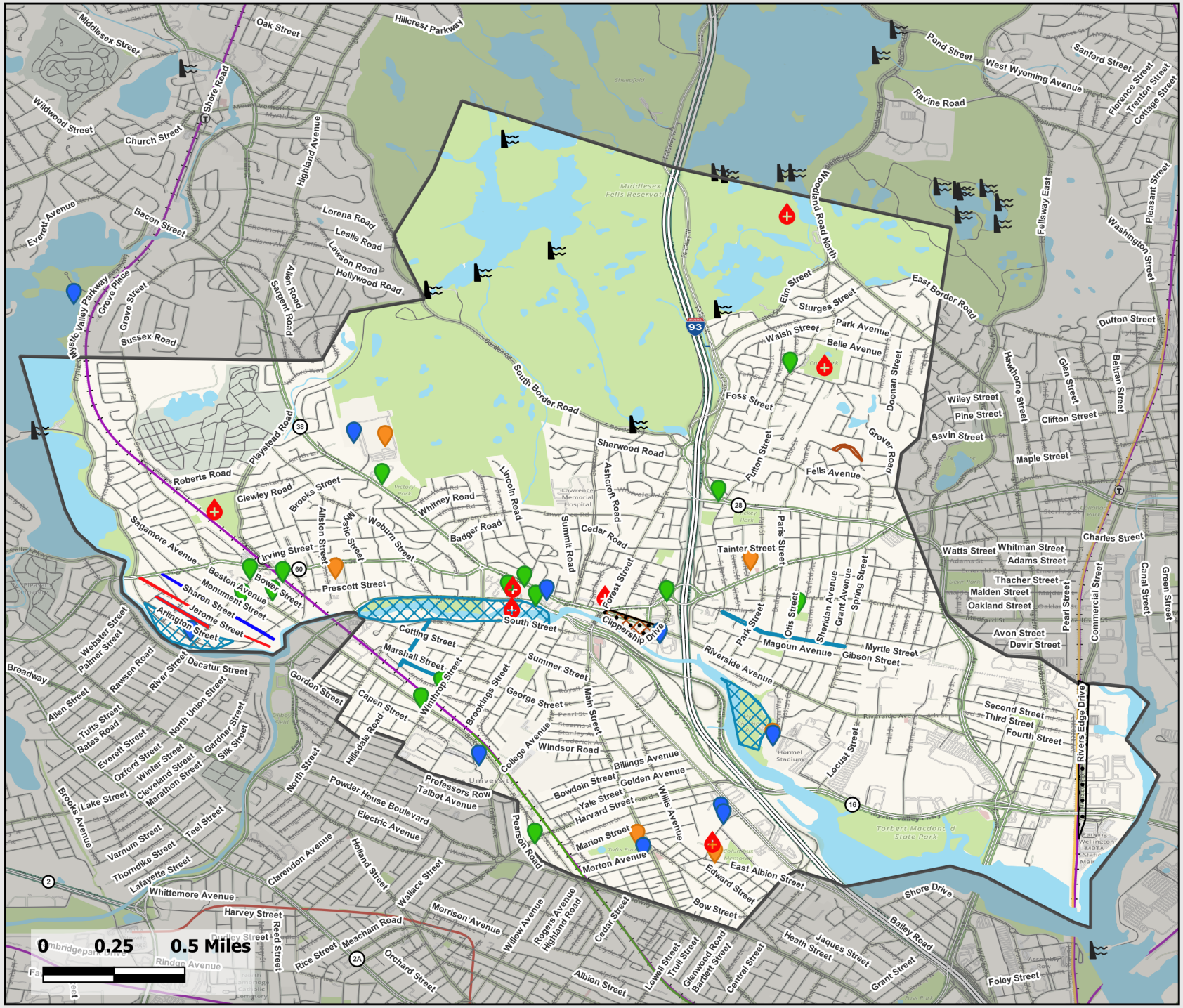
Meeting Agenda

Item	*Time*
Welcome & Introductions - Andreanne	5 minutes
Review Compilation of High-Level Goals - Kiara	5 minutes
Review Example Strategies (USDN) - Kiara introduce	5 minutes
Brainstorm Relevant 5-Year Strategies - Andreanne/Kiara	35 minutes
Next Steps	5 minutes
Adjourn	–

Appendix E: Hazard Mapping

The map series consists of 12 maps as follows:

Map 1	Population Density
Map 2	Developable Land
Map 3.1	Flood Zones
Map 3.2	Modeled Flood Zones
Map 4	Earthquakes and Landslides
Map 5	Hurricanes and Tornadoes
Map 6	Average Snowfall
Map 7.1	Composite Natural Hazards
Map 7.2	Composite Natural Hazards (with EJI)
Map 8	CDC Environmental Justice Index (EJI)
Map 9	Massachusetts Environmental Justice Blocks
Map 10	Community Engagement Map



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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

COMMUNITY ENGAGEMENT MAP 01

Sites

- Parks and Green Spaces
- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

Subway Lines

- Blue
- Green
- Orange
- Red
- Silver

All Roads

- Interstate
- U.S. Highway
- State Route
- Street

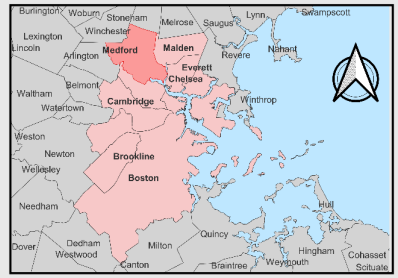
Community Inputs

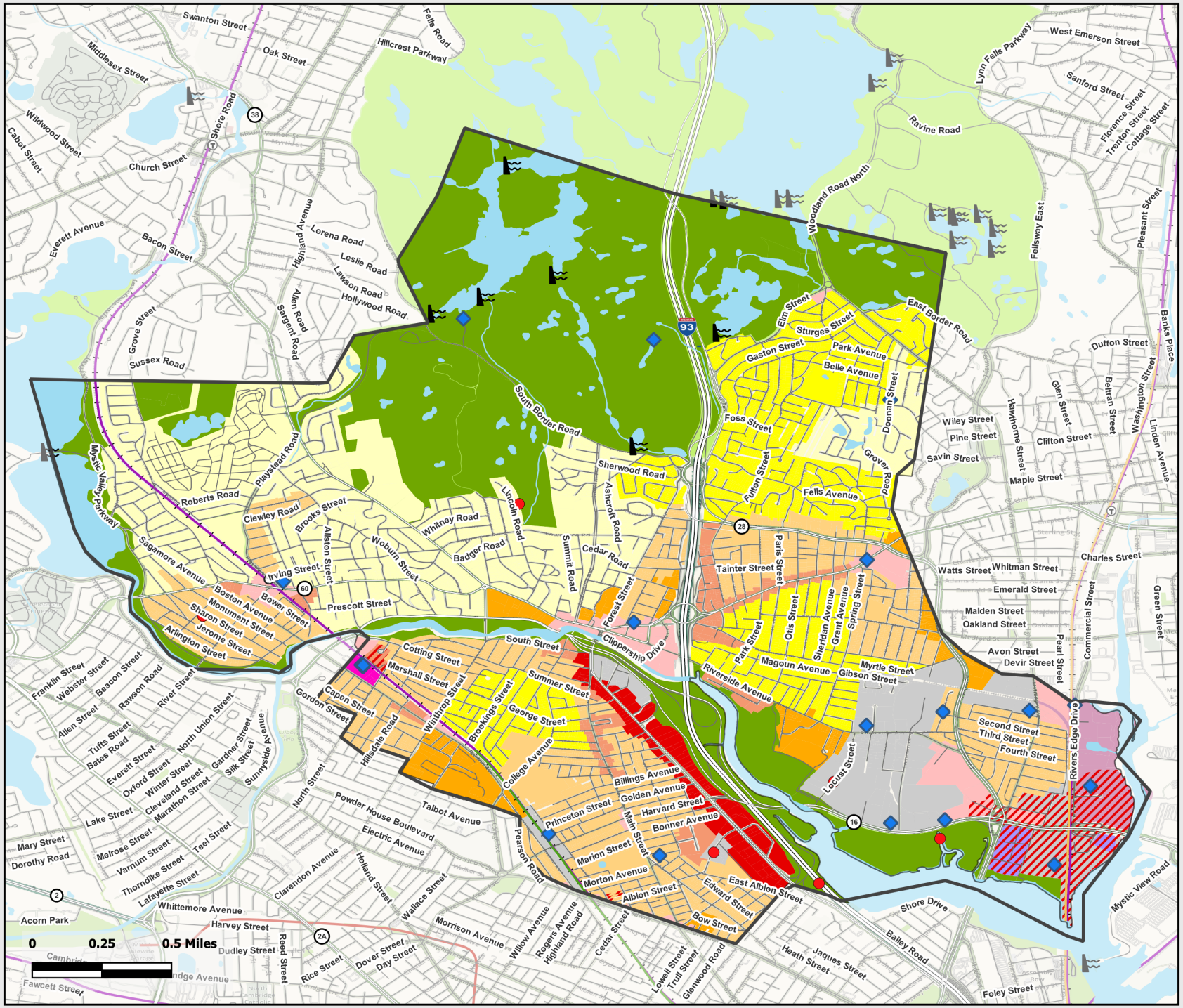
Community Assets, Evacuation and Emergency Resources

- Community Asset
- Schools
- Places of Worship
- Evacuation and Emergency Resoirces

Hazards

- Tree Canopy Loss
- Pollution Zones
- Flooding Zones
- Poor Road Conditions
- Snow/Winter Weather





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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

DRAFT

Map 2: Developable Land

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

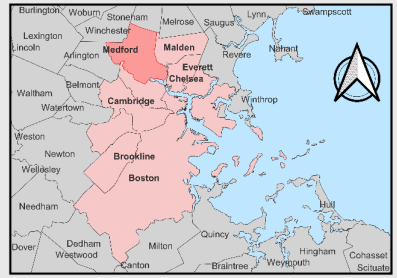
*See details in separate table

- Parks and Green Areas
- Water Bodies
- Dams and Dikes
- Development areas
- Trains Stations
- Trains
- Commuter Rail Lines

Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

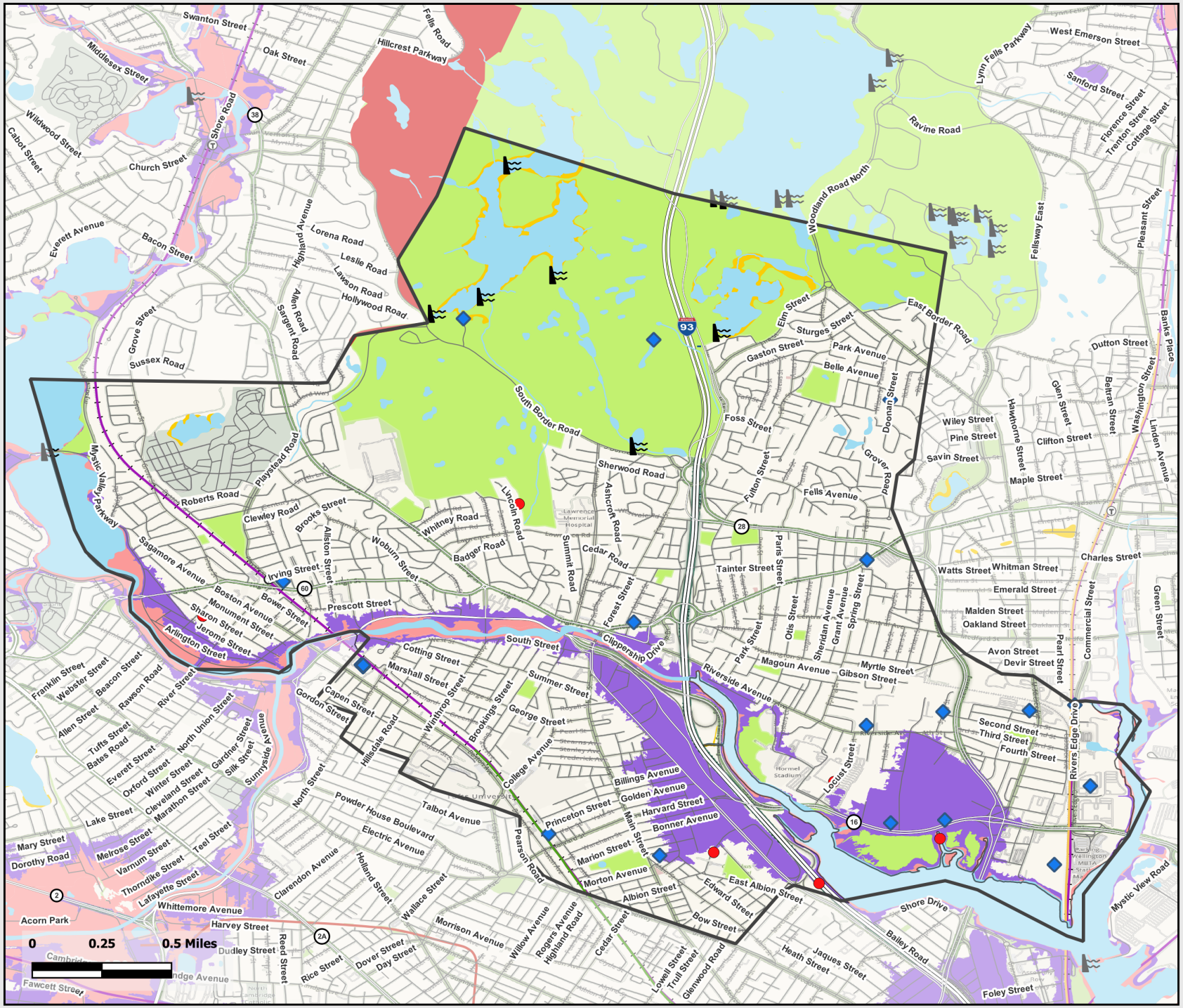
All Roads
- Interstate
- U.S. Highway
- State Route
- Street

Land Use
- Apartment 1
- Apartment 2
- Commercial 1
- Commercial 2
- General Residential
- Industrial
- Mixed Use
- Office
- Office 2
- Recreational Open Space
- Single Family 1
- Single Family 2



Data Sources

·Massachusetts Geograpchic Information System (MassGIS)
·Federal Emergency Management Agency (FEMA)
·United States Geological Survey (USGS)
·Kleinfelder
·MEDFORD City Council, MA



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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

Map 3.1: FEMA Flood Zones

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

*See details in separate table

- Green Areas and Parks
- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

All Roads
- Interstate
- U.S. Highway
- State Route
- Street

Subway Lines
- BLUE
- GREEN
- ORANGE
- RED
- SILVER

Flood Zones (Annual Chance)
- Zone A: 1%
- Zone AE: 1%
- Zone AO: 1%
- 0.2% Annual Chance

Surface type
- Pervious
- Impervious

FEMA Flood Zones Definitions

Zone A: undetermined Base Flood Elevations

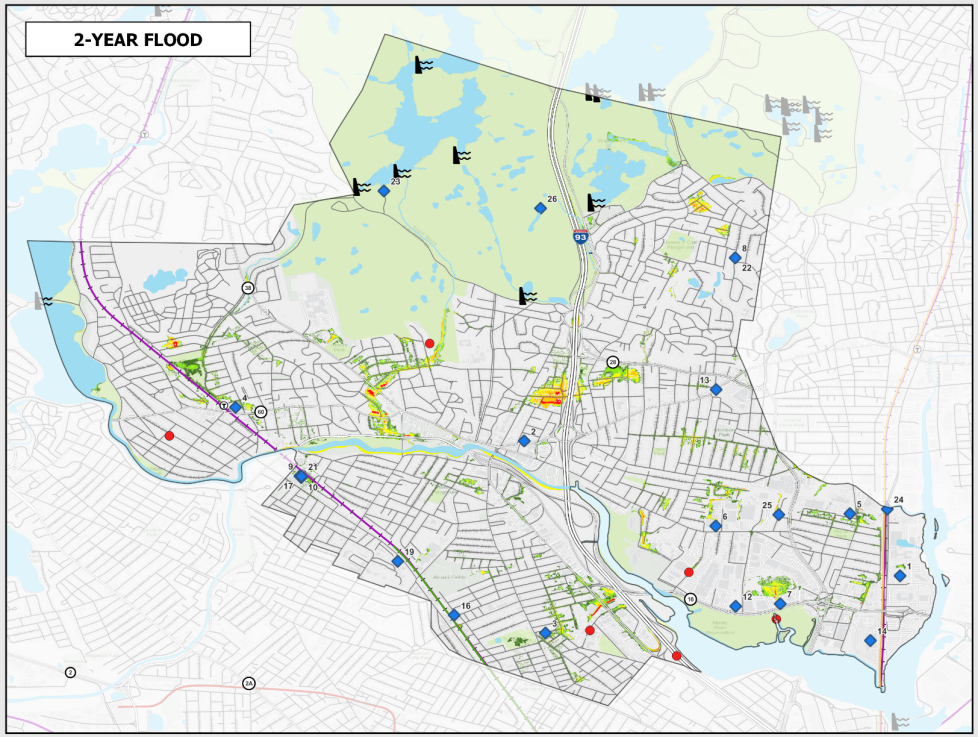
Zone AE: determined Base Flood Elevations

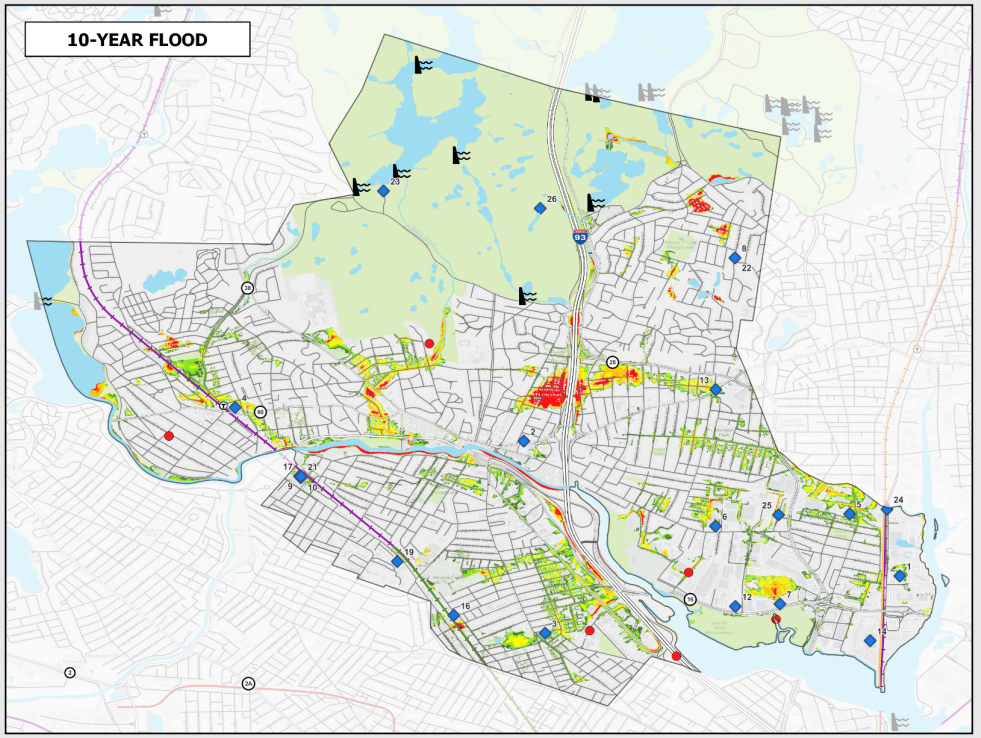
Zone AO: sheet flow area, average flood depths from 1 to 3 feet

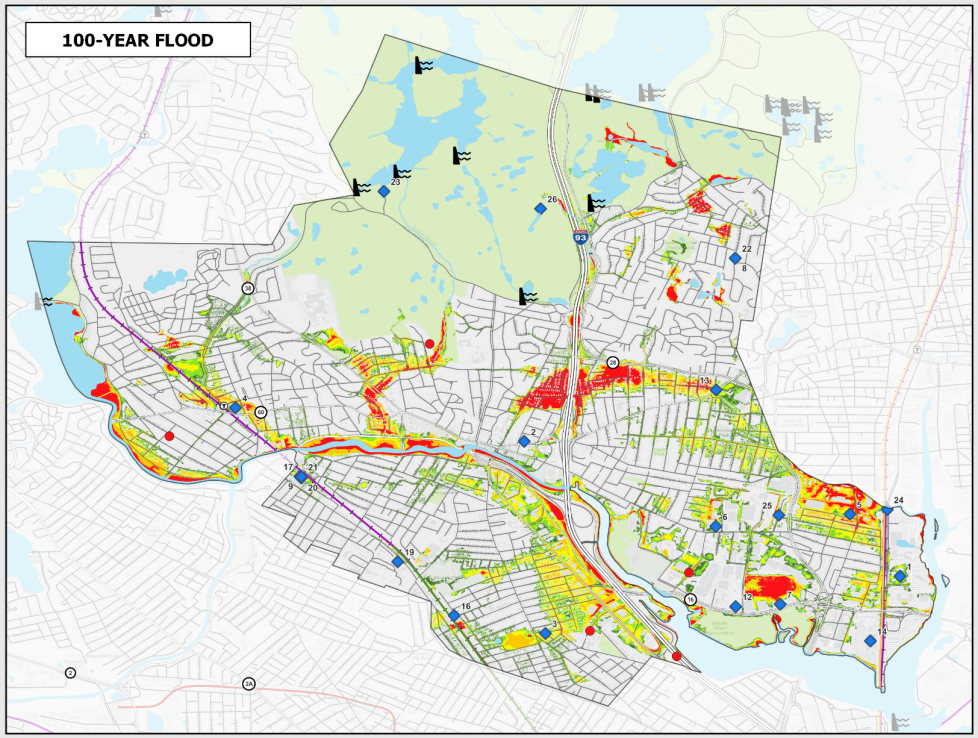
Zone VE: coastal flood area

Data Sources

- Massachusetts Geograpchic Information System (MassGIS)
- Federal Emergency Management Agency (FEMA)
- United States Geological Survey (USGS)
- Kleinfelder
- MEDFORD City Council, MA







Sites

- Critical Infrastructure Sites*
- Repetitive Loss Sites

*See details in separate table

- Parks and Green Areas
- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

All Roads

- Interstate
- U.S. Highway
- State Route
- Street

Subway Lines

- BLUE
- GREEN
- ORANGE
- RED
- SILVER

Modeled Flood Depth (2070, 24h)

- <0.5' depth
- 0.5'-1' depth
- 1'-2' depth
- 2'-3' depth
- 3'+ depth

FLOOD ZONES: Each map shows different flood scenarios based on the propability of occurrence.

- 2-YEAR FLOOD refers to a flood event that has a 50% of chance of ocurring in any given year.

- 10-YEAR FLOOD refers to a flood event that has a 10% of chance of ocurring in any given year.

- 100-YEAR FLOOD refers to a flood event that has 1% of chance of ocurring in any given year.

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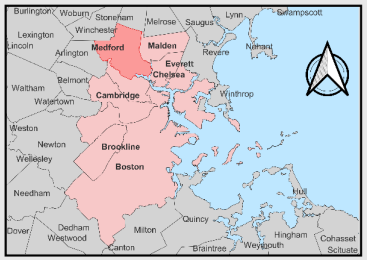
FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

Map 3.2: Modeled Flood Zones for 2070



Data Sources

- Massachusetts Geograpchic Information System (MassGIS)
- Federal Emergency Management Agency (FEMA)
- United States Geological Survey (USGS)
- Kleinfelder
- MEDFORD City Council, MA

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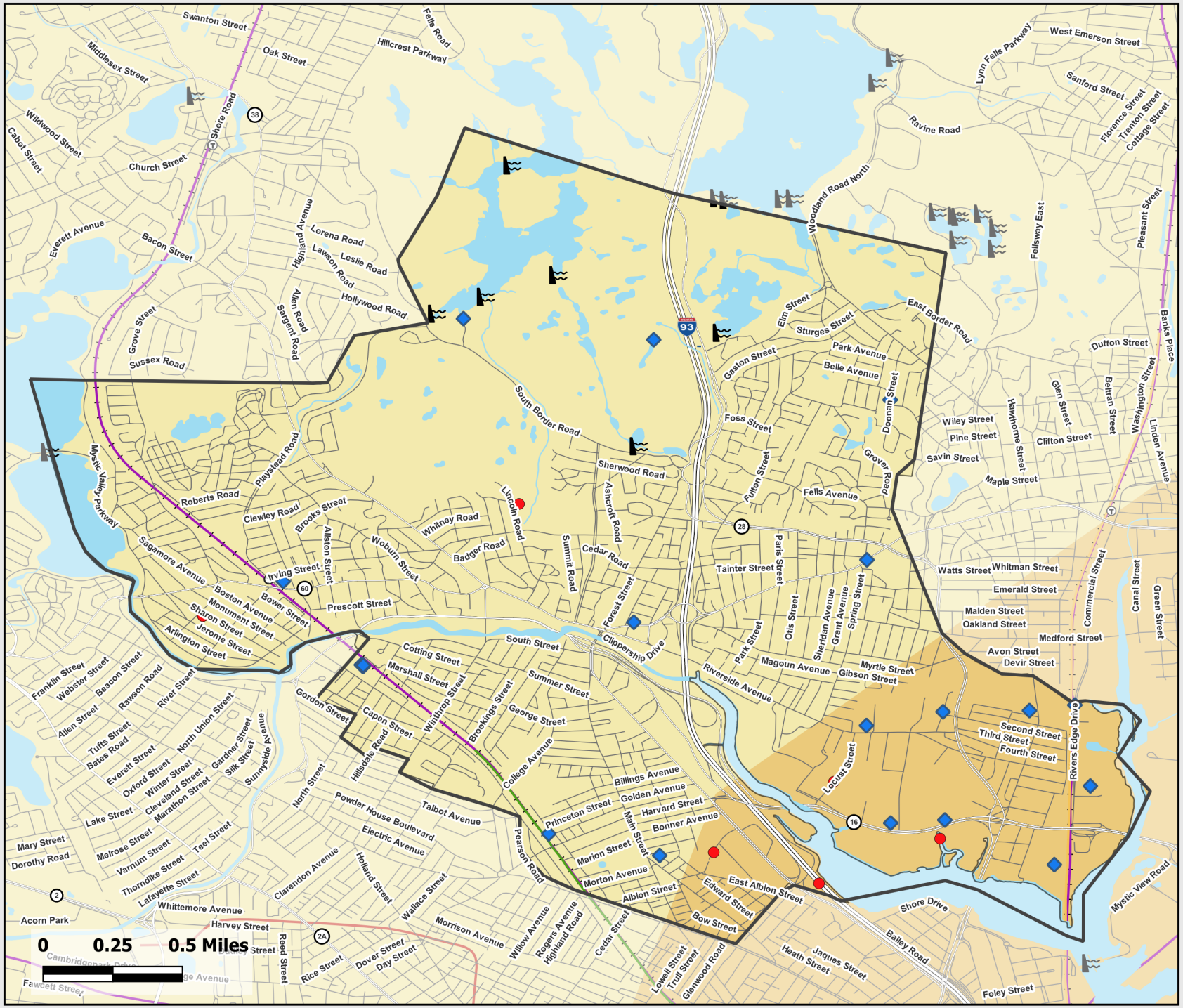

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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

Map 4: Landslides

DRAFT

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

*See details in separate table

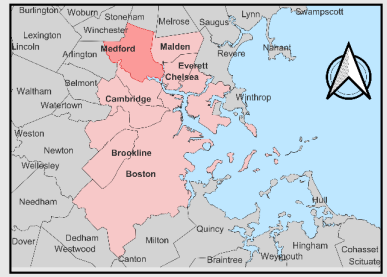
- Parks and Green Areas
- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

Earthquakes
- Epicenter

Landslides
- Low landslide incidence (less than 1.5 % of the area is involved in landsliding)
- Moderate susceptibility to landsliding and low incidence

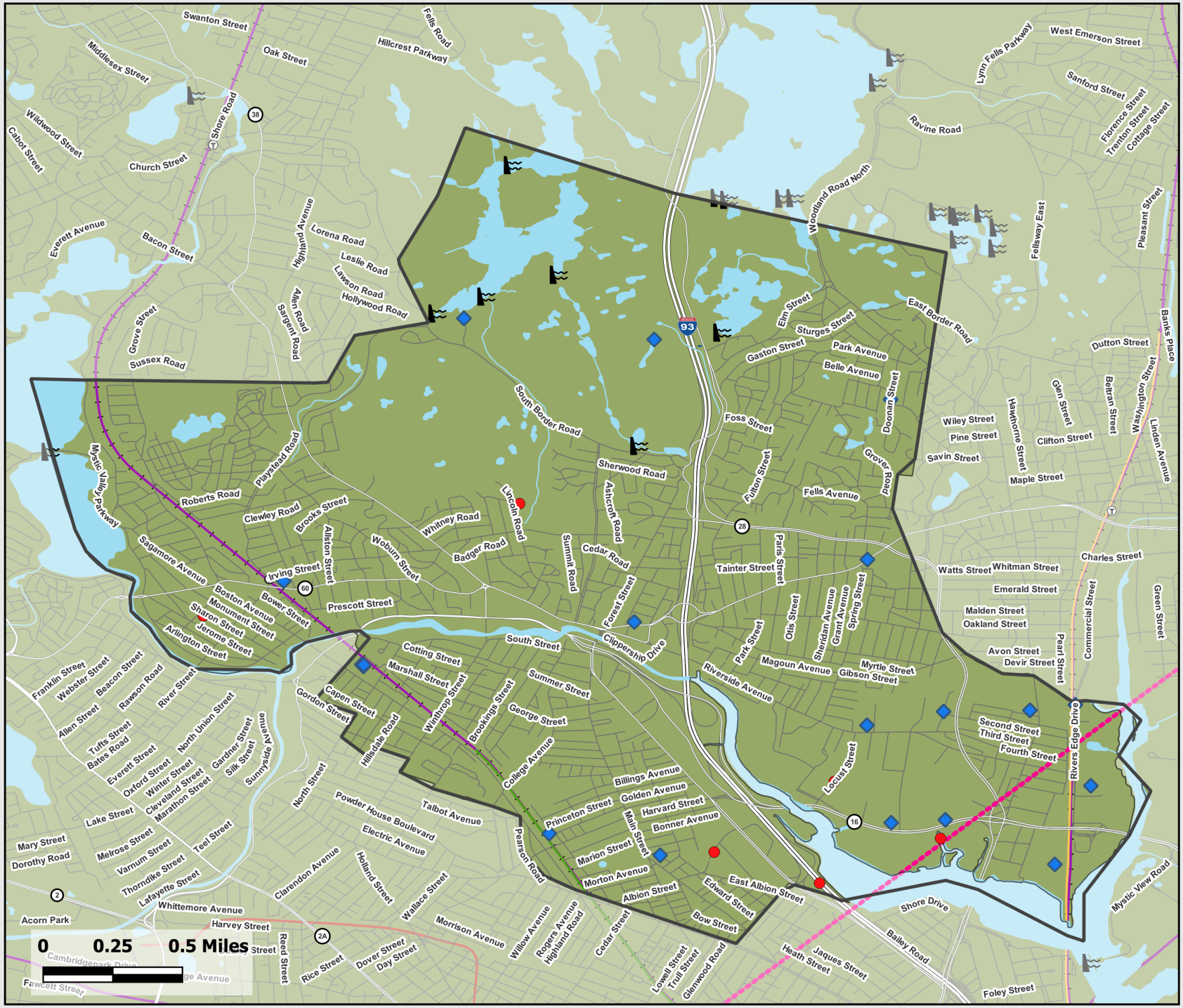
Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

All Roads
- Interstate
- U.S. Highway
- State Route
- Street



Data Sources

- Massachusetts Geograpchic Information System (MassGIS)
- Federal Emergency Management Agency (FEMA)
- United States Geological Survey (USGS)
- Kleinfelder
- MEDFORD City Council, MA



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MEDFORD, MA

Map 5: Hurricanes / Tornadoes

DRAFT

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

*See details in separate table

- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

Tornadoes
- Tornado

Storms
- Tropical Storm
- Tropical Depression
- Category 1 Hurricane
- Category 2 Hurricane
- Category 3 Hurricane

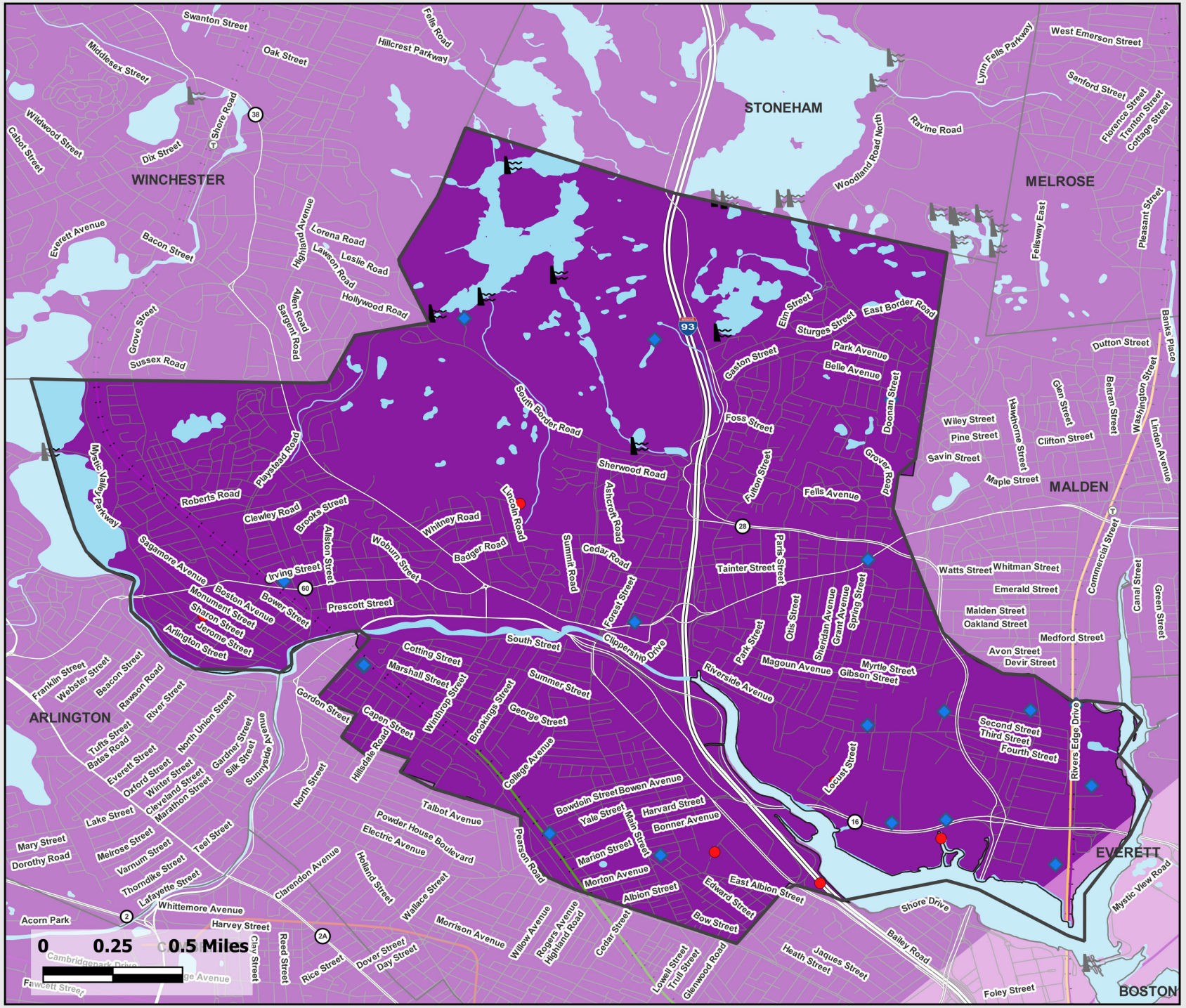
Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

All Roads
- Interstate
- U.S. Highway
- State Route
- Street

100 Year Wind Speeds (Miles Per Hour)
- 90 MPH
- 100 MPH
- 110 MPH
- 120 MPH
- 130 MPH

Data Sources

- Massachusetts Geograpchic Information System (MassGIS)
- Federal Emergency Management Agency (FEMA)
- United States Geological Survey (USGS)
- Kleinfelder
- MEDFORD City Council, MA



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MEDFORD, MA

Map 6: Average Snowfall

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

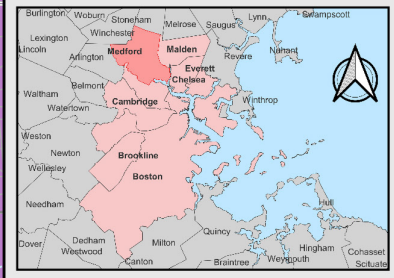
*See details in separate table

- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

Average Annual Snowfall
- 36.1 to 48.0 inches
- 48.1 to 72.0 inches

Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

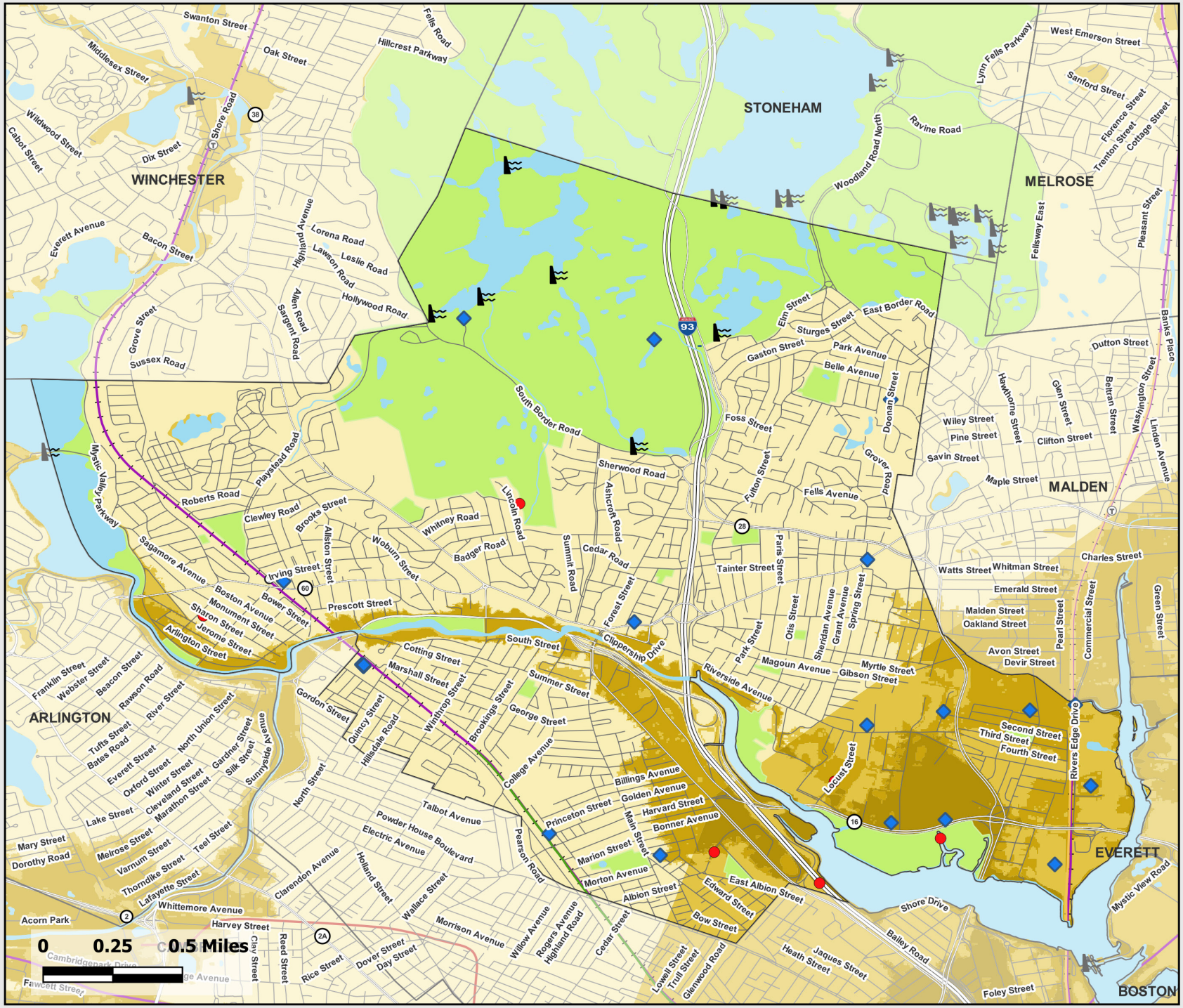
All Roads
- Interstate
- U.S. Highway
- State Route
- Street



DRAFT

Data Sources

·Massachusetts Geograpchic Information System (MassGIS)
·Federal Emergency Management Agency (FEMA)
·United States Geological Survey (USGS)
·Kleinfelder
·MEDFORD City Council, MA



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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

Map 7.1: Composite Natural Hazards

without CDC Environmental Justice Index

DRAFT

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

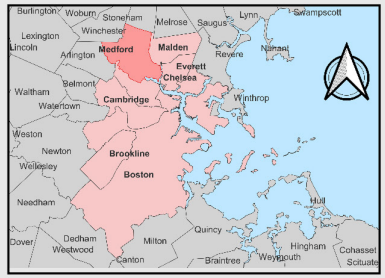
*See details in separate table

- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

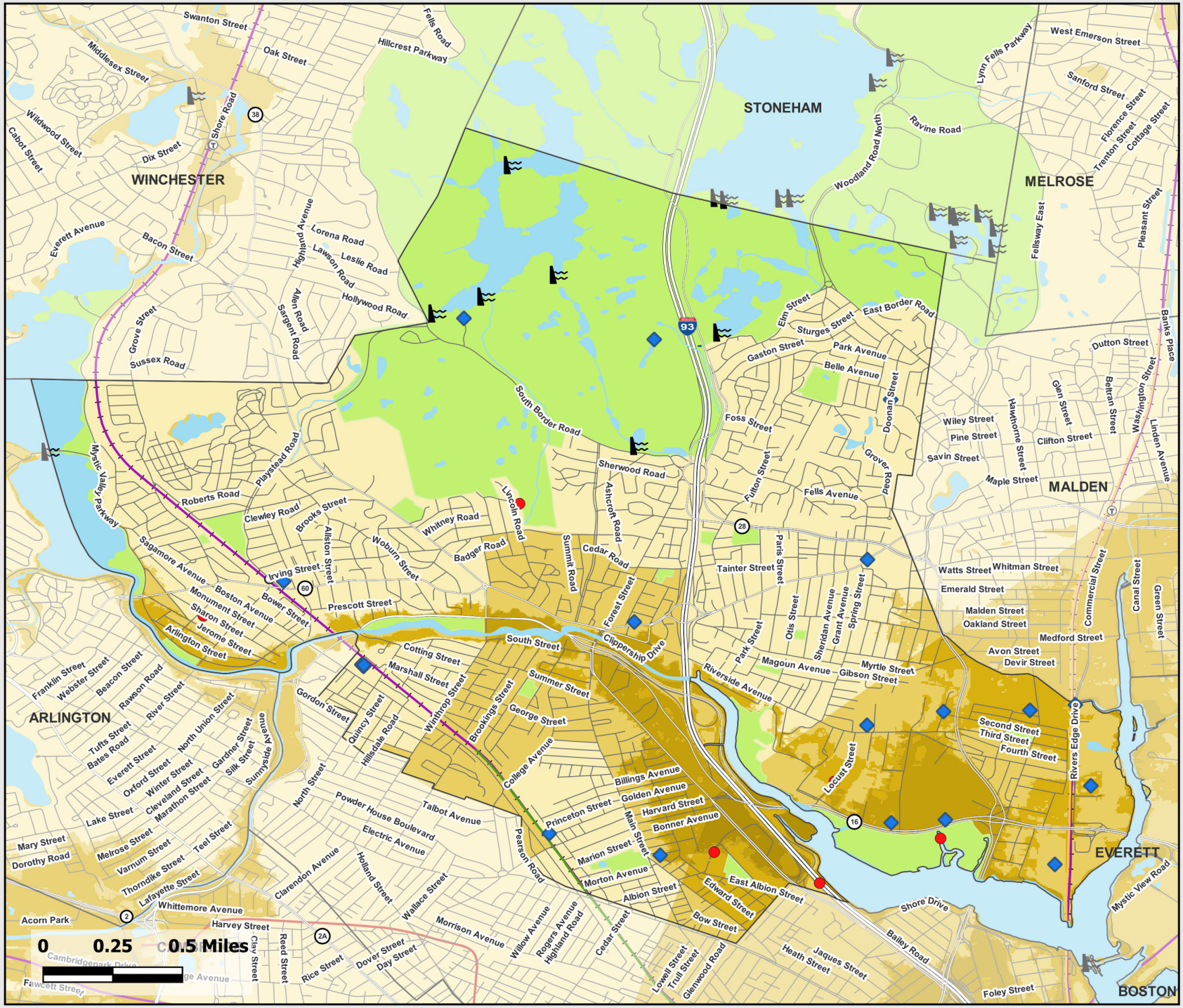
All Roads
- Interstate
- U.S. Highway
- State Route
- Street

Composite Natural Hazards
- Low (1 Hazard)
- Moderate (2 Hazards)
- High (3 Hazards)
- Very high (4 Hazards)



Composite natural hazards composed of areas for:

- 100 year wind speed of 110 MPH or higher
- Moderate landslide risk
- FEMA Q3 flooz zones
- Hurricane surge innundation areas



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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

Map 7.2: Composite Natural Hazards

with CDC Environmental Justice Index

DRAFT

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

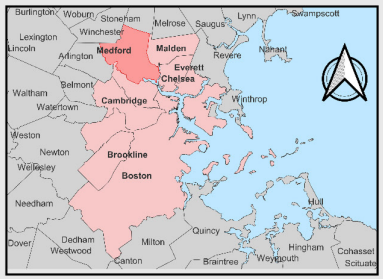
*See details in separate table

- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

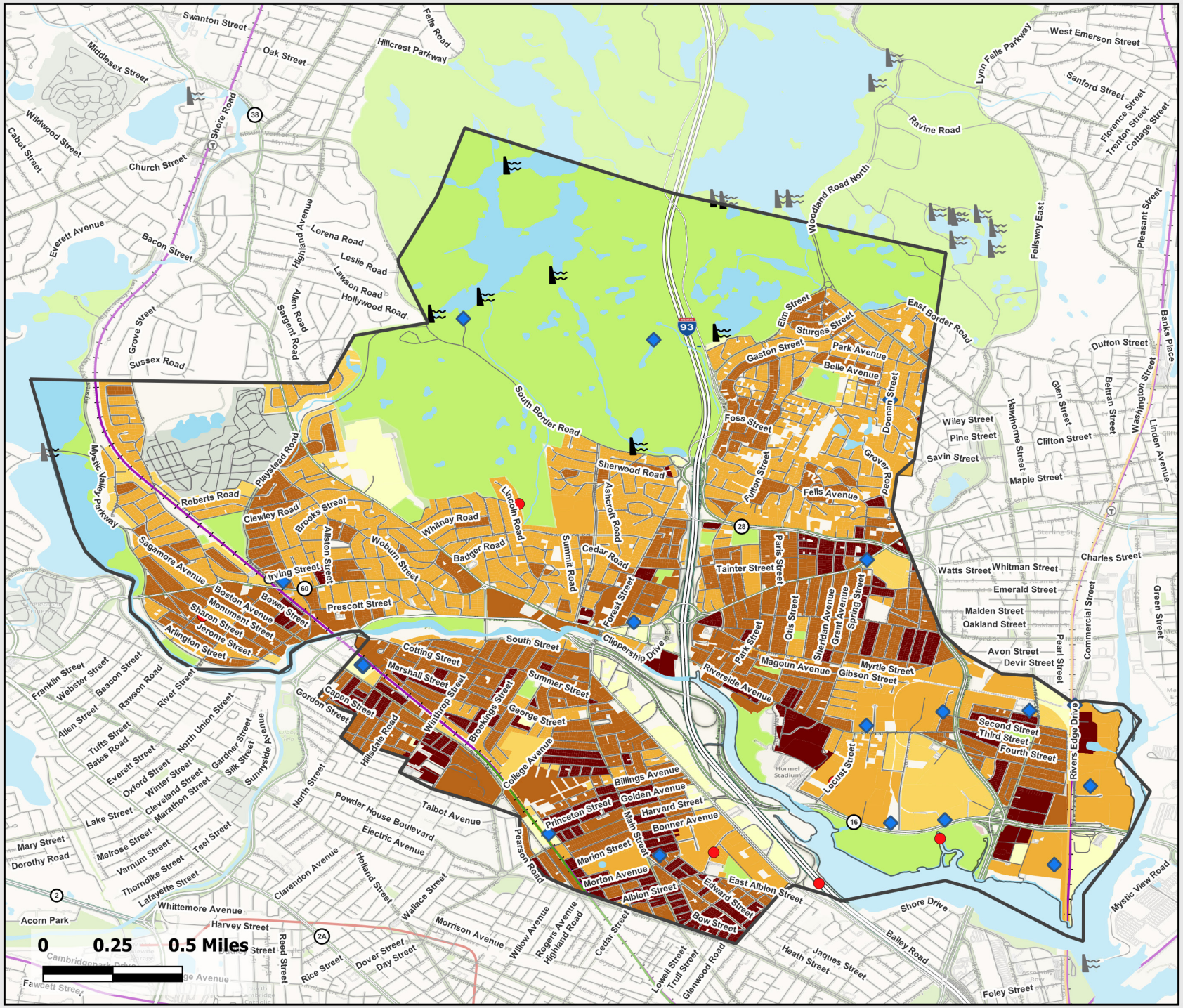
Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

All Roads
- Interstate
- U.S. Highway
- State Route
- Street

Composite Natural Hazards
- Low (1 Hazard)
- Low - Moderate (2 Hazards)
- Moderate (3 Hazards)
- Moderate - High (4 Hazards)
- High (5 Hazards)



Composite natural hazards composed of areas for:
- Moderate to High Environmental Justice Index
- 100 year wind speed of 110 MPH or higher
- Moderate landslide risk
- FEMA Q3 flooz zones
- Hurricane surge innundation areas



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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

Map 8: Population Density

DRAFT

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

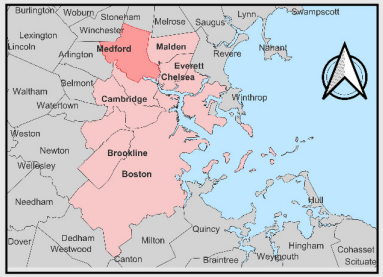
*See details in separate table

- Parks and Green Areas
- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

All Roads
- Interstate
- U.S. Highway
- State Route
- Street

Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

Population Density 2020 Census Blocks People Per Area
- 0 or No Data
- 0.1 - 5.0
- 5.1 - 15.0
- 15.1 - 30.0
- More than 30



Data Sources

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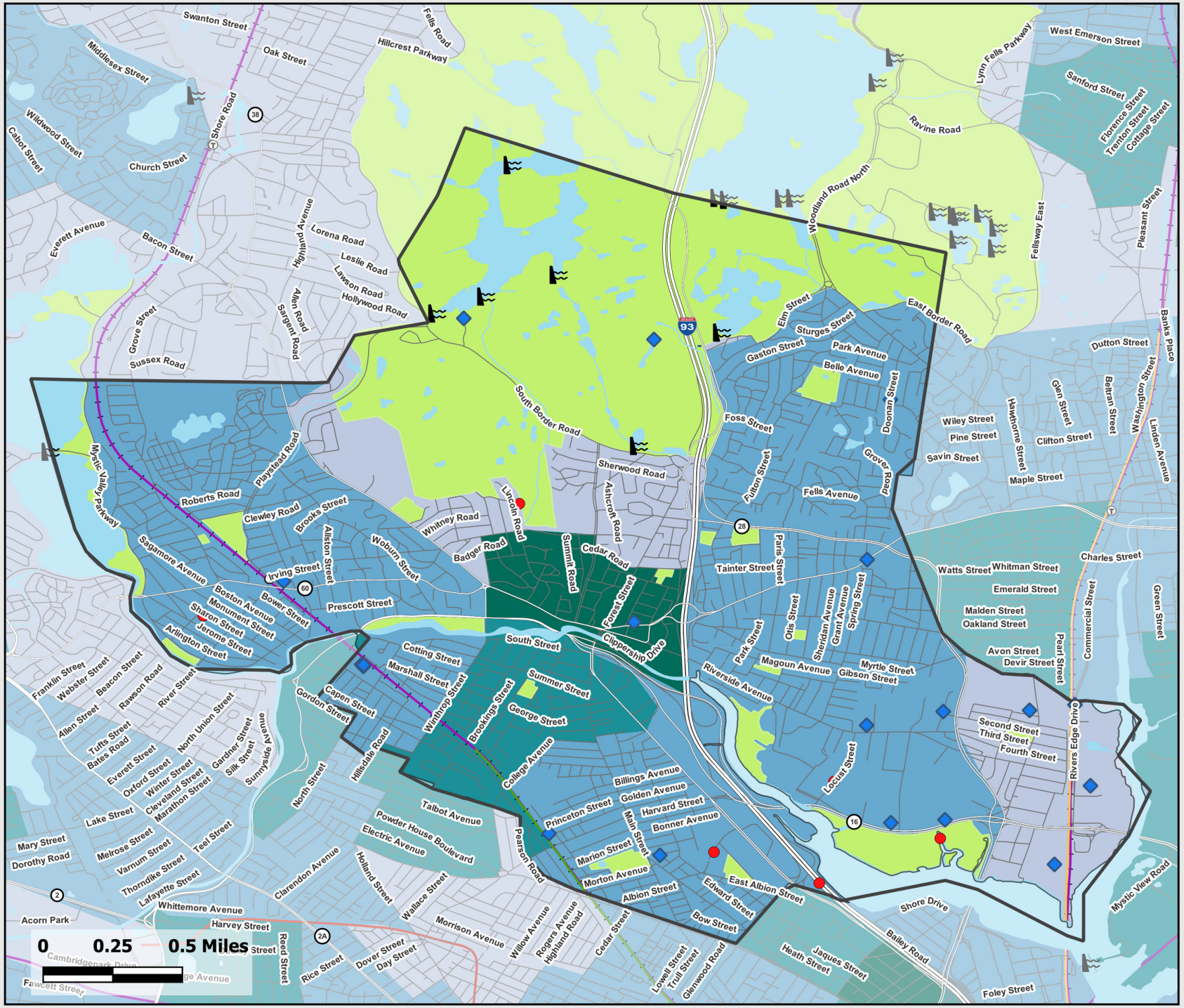
·Federal Emergency Management Agency (FEMA)
·United States Geological Survey (USGS)
·Kleinfelder
·MEDFORD City Council, MA



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FEMA Pre-Disaster Mitigation Planning Grant

MEDFORD, MA

Map 9: CDC Environmental Justice Index

DRAFT

https://www.atsdr.cdc.gov/place-health/php/eji/index.html

Sites
- Critical Infrastructure Sites*
- Repetitive Loss Sites

*See details in separate table

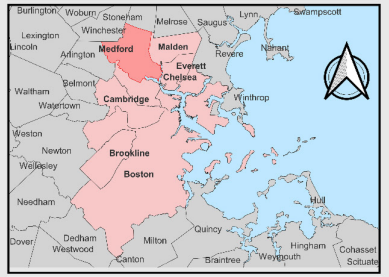
- Parks and Green Areas
- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

All Roads
- Interstate
- U.S. Highway
- State Route
- Street

Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

Environmental Justice Index**
- No Data
- Low
- Low-Moderate
- Moderate-High
- High

**Environmental Justice Index is composed of a variety of indicators of social and health vulnerability and environmental and climate burden



Data Sources

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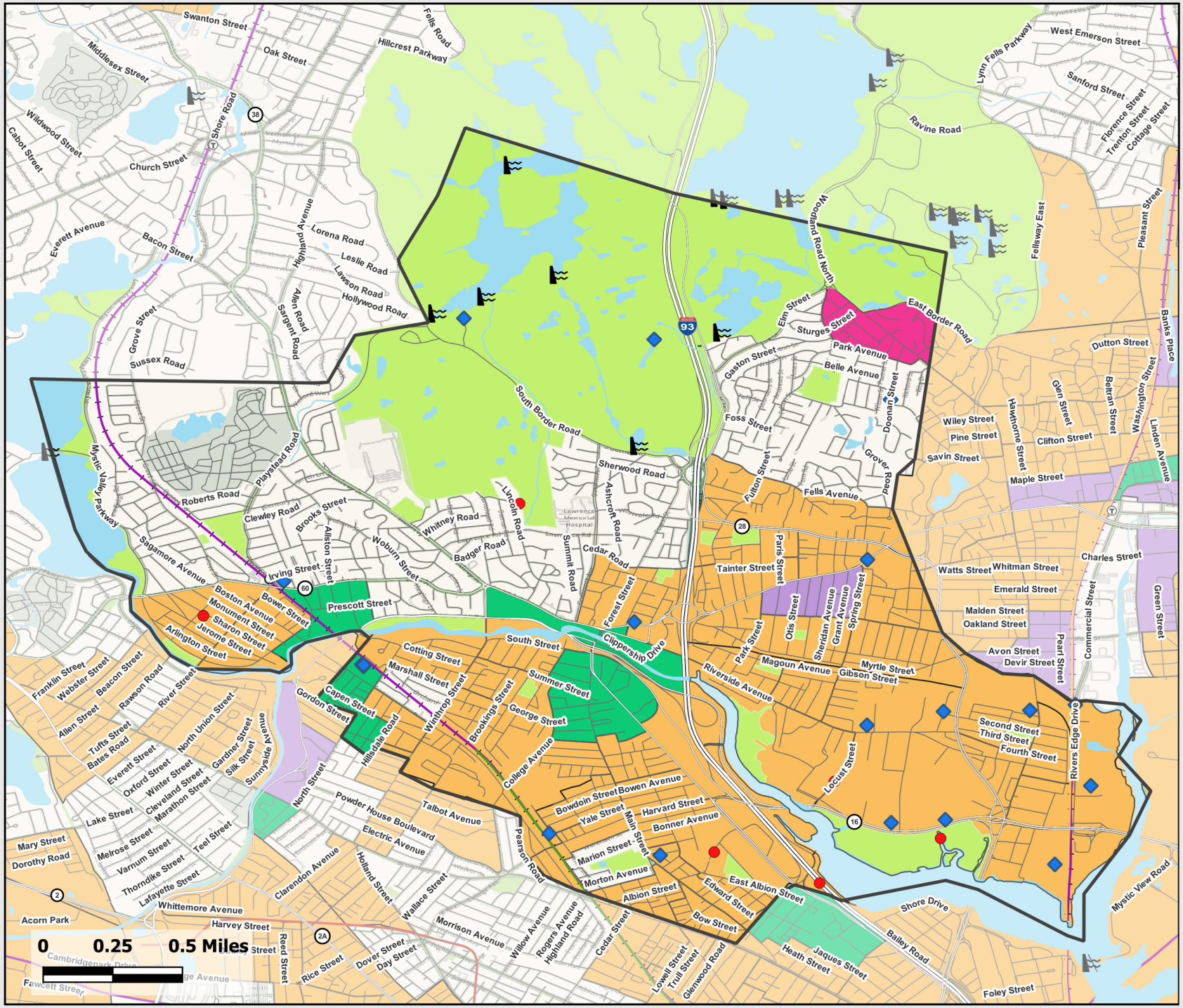
- Federal Emergency Management Agency (FEMA)
- United States Geological Survey (USGS)
- Kleinfelder
- MEDFORD City Council, MA



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MEDFORD, MA

Map 10: Massachusetts Environmental Justice Population Blocks

https://www.mass.gov/info-details/massgis-data-2020-environmental-justice-populations

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Sites
- Critical Infrastructure Sites *
- Repetitive Loss Sites

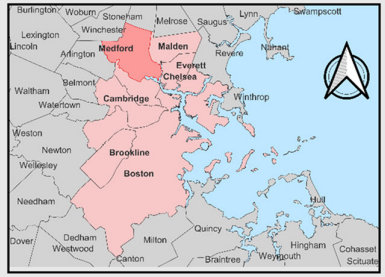
*See details in separate table

- Parks and Green Areas
- Water Bodies
- Dams and Dikes
- Trains Stations
- Trains
- Commuter Rail Lines

All Roads
- Interstate
- U.S. Highway
- State Route
- Street

Subway Lines
- Blue
- Green
- Orange
- Red
- Silver

Environmental Justice Population Blocks
- English isolation
- Minority
- Minority and English isolation
- Minority and income



Data Sources
- Massachusetts Geograpchic Information System (MassGIS)
- Federal Emergency Management Agency (FEMA)
- United States Geological Survey (USGS)
- Kleinfelder
- MEDFORD City Council, MA

Appendix F: Documentation of Public Participation

City of Medford
Emergency Management

MEDFORD'S HAZARD MITIGATION PLAN UPDATE

PUBLIC MEETING #1

Medford's resilience depends on collaboration with community members like you. Your insights and lived experiences can help identify ways to protect our city from future risks and ensure resources are directed to areas and communities that need them most.

Learn About Local Risks

Discover the hazards affecting Medford and how they might impact your neighborhood.

Have a Say in Safety

Share your ideas and priorities for making Medford safer to hazards and more resilient.

Help Shape Public Participation

Help shape the strategies and actions that engage more community members.

For more information contact MaryAnn O'Connor at moconnor@medford-ma.gov

5:45 - 6:45 PM

27

JANUARY

MEDFORD PUBLIC LIBRARY

BONSIGNORE HALL

111 HIGH STREET

ACBC CONSULTING

memo

TO: Hazard Mitigation Plan (HMP) Public Meeting #1 Attendees

FROM: ACBC Consulting (A. Breton-Carbonneau, H. Zhao, K. Tanta-Quidgeon, & M. Gabra)

CC: MaryAnn O'Connor, City of Medford Health Director & Emergency Manager

DATE: 24 February 2025

RE: Response to Public Comment from HMP Public Meeting #1

Overview: Medford is updating its Hazard Mitigation Plan and responding to public comments from the first meeting:

- **Flooding**: People are concerned about flood risk and severity. Updated maps will show important buildings (critical infrastructure) and areas that flood often (repetitive loss sites), using FEMA data.
- **Dam Safety**: The risk is low, but people have concerns. A list of Middlesex County dams and their relative risk is included in this response.
- **Brush Fires**: The risk is low now but may increase due to climate change.

Resources, including FEMA flood maps and national hazard databases, are available for more information.

Flooding

Community members identified flooding as a key concern. Past data shows that flooding is one of the most serious hazards affecting Medford.

Question: What do we have a plan for? Do we have maps and models?

- Yes! Flooding is identified as a serious hazard for Medford. Past plans include models of flood-prone areas and show which locations would be most affected. We are currently working to strengthen and update this information.
- The Planning Committee for our newest update includes the city's Engineering Department and Building Department.
- You can take a look at some of the maps and models we are using here. The "View in MassMapper" tool allows you to see the mapping of flood risk for your community. The tool also shows cultural resources and infrastructural sites, geographic features, and more.

Question: The maps presented at the Public Meeting show the likelihood of risk but not the severity of risk. Are we using the best data?

- Our maps use the best data available to us. We mainly use data from the Flood Insurance Rate Maps of the Federal Emergency Management Agency. This is the official source for the United State's government. For example, this information is also used by the National Flood Insurance Program.
- Flood maps usually show the likelihood of flooding which is based on historical and environmental data
- Likelihood is also more important for planning and risk management. Likelihood allows communities to plan based on where floods are most likely to happen in the future.
- The severity of floods and their community impacts depends on factors that are difficult to predict like rainfall. By showing likelihood, flood maps avoid making potentially false claims.
    - You can learn more about FEMA flood maps here.
- The maps presented at Public Meeting 1 have been changed to address the concerns of community members on flood severity. The maps now include critical infrastructure and repetitive loss sites.

- "Critical infrastructure" is defined as essential places and systems. Examples of critical infrastructure include healthcare facilities and public safety systems.
- "Repetitive loss sites" are defined as structures with at least two paid flood losses of more than $1,000 in any ten-year period.
- We have identified sites of community concern based on both current and past community discussions.
    - For example, the areas on Main Street and Salem Street have been identified as sites of concern for heavy rain.
    - This concern was brought up by the Climate Equity Council and has been included in the updated plan.

Comment: Dam failure and associated collateral risks are a concern among community members.

- The risk of dam failure in Medford and surrounding areas is low.
- Our update will include a list of all Middlesex County dams, with their risk of failure and hazard potential.
    - You can browse the inventory of Middlesex County dams here, including sites of concern such as the Amelia Earhart Dam and Horn Pond Dam.
- Many dams in Medford are labeled as having "high" hazard potential. This grading tells us the potential consequence of a dam failure and not the likelihood of dam failure. This grading is called the Hazard Potential classification. This assessment tests for safety issues to show the risk of dam failure. In Medford, the South Reservoir Dam has a higher risk in comparison to other dams.
    - You can browse the full list of dam inventory terms here.
- The newest Hazard Mitigation Plan will include environmental concerns such as sewage overflow and water contamination.

Brush Fires

- The risk of brush fires in Medford and surrounding areas is low.

    - You can check your community or location's risk of brush fires and related damages here.
- Yet, the number and severity of brush fires are expected to increase due to climate change. Brush fires causing climate change include rising temperatures, precipitation changes, and prolonged drought.
- We are working with the Medford Fire Department. Our updated Hazard Mitigation Plan update will include data from federal and local-level climate data and projections.

Summary of Resources

- You can check out the 2023 State of Massachusetts Hazard Mitigation and Climate Adaptation Plan here. This guide describes and identifies key hazards, impacts, and areas of risk.
    - The link also includes a summary of findings in seven languages: English, Spanish, Portuguese, Cape Verdean Creole, Haitian Creole, Mandarin Chinese, and Vietnamese.
- You can access the federal National Risk Index for hazards here, this includes descriptions of common hazards across the United States and region-specific information.
- Federal storm events database. You can browse by county, state, and event.

Flooding

- FEMA Flood maps and models.
- How to read a flood map.

Dams

- National Inventory of dams: Middlesex County locations.
- Dam Inventory data dictionary

Brush Fires

- Check your risk of brush fires and related damages here.

City of Medford
Emergency Management

MEDFORD'S HAZARD MITIGATION PLAN UPDATE

PUBLIC MEETING #2

Medford's resilience depends on collaboration with community members like you. Your insights and lived experiences can help identify ways to protect our city from future risks and ensure resources are directed to areas and communities that need them most.

Hear Your Neighbors Ideas

Learn more about the ideas and priorities you've shared for making Medford more resilient to hazards

Review New Strategies

Learn how we've translated your ideas and priorities into actions and next steps

Share Your Thoughts

Share feedback on presented information and strategies, ask questions, and voice any concerns

For more information contact MaryAnn O'Connor at moconnor@medford-ma.gov

5:30 - 7:00 PM

30

JUNE

VIRTUAL ZOOM MEETING

blank page for ACBC team to add City Council meeting notice

Appendix G: Documentation of Plan Adoption

<CITY LETTERHEAD>

CERTIFICATE OF ADOPTION
CITY COUNCIL
CITY OF MEDFORD, MASSACHUSETTS

A RESOLUTION ADOPTING THE CITY OF MEDFORD
HAZARD MITIGATION PLAN 2025 UPDATE

WHEREAS, the City of Medford, MA established a Committee to prepare the Hazard Mitigation Plan Update; and

WHEREAS, the City of Medford Hazard Mitigation Plan 2025 Update contains several potential future projects to mitigate potential impacts from natural hazards in the City of Medford, and

WHEREAS, a duly-noticed public meeting was held by the City Council Committee of the Whole on November 18, 2025, and

WHEREAS, the City of Medford authorizes responsible departments and/or agencies to execute their responsibilities demonstrated in the plan,

NOW, THEREFORE BE IT RESOLVED that the Medford City Council adopts the City of Medford Hazard Mitigation Plan 2025 Update, in accordance with M.G.L. 40 §4 or the charter and ordinances of the City of Medford.

ADOPTED AND SIGNED this Date. _____

Name(s) / Title(s) Signature(s)

ATTEST