

Natural Hazard Mitigation Plan Update 2023

City Council Committee December 5, 2023









Overview of Natural Hazard Mitigation Plan Development



2023 NHMP Contents Review







CITY'S PREVIOUS HMP

The work undertaken serves as an update to the previous Hazard Mitigation Plan



CITY OF CAMBRIDGE HAZARD MITIGATION PLAN 2015 UPDATE Prepared by MAPC

Adopted:3/21/2016Approved:5/24/2016

24 Mitigation Actions for 2016-2021

CITY OF CAMBRIDGE HAZARD MITIGATION PLAN 2015 UPDATE





Approved by FEMA May 24, 2016

https://www.cambridgema.gov/-/media/Files/firedepartment/emergencymanagement/cambridgehazardmitigationplan2015updatefemaapproved052415forweb.pdf

FEMA & MEMA REQUIREMENTS

"The Disaster Mitigation Act of 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (44 CFR Part 201), creating the framework for state, local, tribal and territorial governments to engage in hazard mitigation planning to receive certain types of non-emergency disaster assistance."

FEMA updated *Local Mitigation Planning Policies and Guidance* (released April 2022, effective April 2023)

FEMA updated *Location Mitigation Planning Handbook* (May 2023)

2022 Updates Include:

- Expanded list of participants required in planning process.
- ✓ Requires consideration of climate change.
- Recognizes the important role of adopting and enforcing building, land use, and development code.
- ✓ Facilitates stronger alignment with other FEMA mitigation programs.

VALUE OF HAZARD MITIGATION PLANNING



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2023 CAMBRIDGE NHMP DEVELOPMENT

	Task	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	Project Initiation										
2	Engagement										
3	Hazard Profiles										
4	Facility/Asset Inventory										
5	Vulnerability Assessment										
6	Mitigation Goals & Capabilities										
7	Develop Actions										
8	Plan Implementation										
9	Public Review										
10	Adoption										
	Meetings	К	S	S	S	PSH	HSH	S		Ρ	

Legend:

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2023 CAMBRIDGE NHMP OVERVIEW



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CH 1: INTRODUCTION & GOALS



CH 2: PLANNING PROCESS



Stakeholders



Hazard Mitigation Planning Team (HMPT)

90 stakeholders

including advocates, residents, business-owners, state and local agency representatives, and people from various other organizations.

3 Workshops

Public

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Public Engagement

Everyone

Results from public meetings and other feedback are integrated into the final report.

3 Public Meetings 150+ Survey Responses 9 Survey Responses on Mitigation Actions

CH 3: NATURAL HAZARD PROFILES





HURRICANES / TROPICAL STORMS



INLAND FLOODING



EXTREME TEMPERATURES



SEVERE WINTER WEATHER / NOR'EASTERS



COASTAL

FLOODING



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WHAT WE'VE HEARD FROM THE PUBLIC...



Summary of Public Survey Results Most concerning natural hazards

- 1. Flooding
- 2. Extreme heat
- 3. Winter Storms / Nor'easters

Most concerning impact of natural hazards

- 1. Power outages (>75%)
- 2. Damage to the home (72%)
- 3. Contaminated drinking water (69%)
- 4. Limited access to food or supplies (>50%)

CH 4: ASSET INVENTORY

Examples of assets in FEMA categories

Critical Facilities:

• Facilities within Cambridge to which Eversource prioritizes providing electrical power.

People / Community.

Populations, shelters, housing, schools, and food distribution

Structures:

• Faith community buildings, grocery stores, medical facilities, transportation infrastructure, schools, and Fresh Pond Water Treatment Plant

Systems:

• Power grid, cell towers, transit routes, MWRA facilities, and water/sewer system

Resources:

Parks, open spaces, community gardens, and arts and cultural facilities

Activities:

• Festivals, events, community-building activities that strengthen social capital and resilience



CH 5: VULNERABILITY & IMPACT ASSESSMENT



Drinking water at *...is vulnerable to...* Fresh Pond... ...saltwater intrusion from coastal flood events...

...resulting in...



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...detrimental impacts to ecosystem and drinking water quality.



HAZARD

IMPACT

WHAT WE'VE HEARD FROM THE PUBLIC...



Major blizzards have disrupted daily life and work, with power outages, mountains of snow to shovel, digging out the car, difficulty navigating on foot due to relentless ice that's never fully addressed by community.

- Survey Respondent



My basement has flooded twice when we had storms that dumped 7-8 inches in 48 hours.

- Survey Respondent



Recent wildfire smoke affected my health - - Survey Respondent



Extremes of heat and cold or heavy snow make it difficult and unpleasant for me to get around. I don't have a car, and I still have to walk to or from the bus stop or T station and wait for the bus in bad weather conditions.

-Survey Respondent

CH 6: CAPABILITIES ASSESSMENT

The City of Cambridge has a unique set of capabilities, in the form of laws, policies, programs, staff, funding and other resources, to carry out the HMP and increase resilience.



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Mitigation Actions are what the whole plan has been building up to.



A mitigation action is a measure, project, plan, or activity proposed to reduce current and future vulnerabilities.

These actions will create resilience for the City of Cambridge (ability to withstand and swiftly recover from an extreme event). These actions will support adaptation to climate change.

CH 7: PRIORITIZATION CRITERIA

Does this action contribute to regional resilience?

Is the action part of other city plans?

Does the action **positively impact residents** of Low to Moderate Income (LMI) or Environmental Justice (EJ) census block groups (based on EEA's viewer)?

Is this action a nature-based solution?

Would the action mitigate economic loss/damage?

Will the action reduce risk to life/safety?

Does the action address future climate change projections?

Does the action leverage innovation/technology?



		Timeframe to Start		Enhances Inclusion and Equity / Co-Benefits		Cost
#	Action	In Progress Less than 1 year 1-2 years 2-5 years	Hazards	Positive Impact on Priority Populations Positive Impact on Renters Positive Impact on Students Enhances Community Education Equitable Implementation	Priority	High = \$1M Medium = Over \$100k up to \$1M Low = Up to \$100k
1	Improve collection and conveyance system in the Port Neighborhood.	In progress	Precipitation Flooding	Equitable Implementation	High	High
2	Design and construct updates to metering stations for Combined Sewers	In progress	Precipitation Flooding		Medium	Medium
3	Identify areas for green stormwater infrastructure and reducing impervious surfaces	In progress	Precipitation Flooding		High	Medium
4	Undertake interventions as a regional collaboration at Charles River and Amelia Earhart Dam to reduce overtopping/flanking	In progress	Coastal Flooding	Positive Impact on Priority Populations	High	High
5	Upgrade deicing / snow removal equipment, including smaller equipment that is able to accommodate bicycle facilities and pedestrian paths	In progress	Winter Storms	Positive impact on students, positive impact on Priority Populations	High	Medium
6	Complete study to evaluate shade needs (other than trees) referred to as "The Shade Study", and implement recommendations (e.g., adding shade structures)	In progress	Extreme Heat	Positive impact on Priority Populations, Equitable implementation	High	Low
7	Install water fountains and cooling features locations along bus/bike routes	In progress	Extreme Heat	Positive Impact on Priority Populations Positive Impact on Students	High	Medium
8	Update and Improve Floodplain Mapping (Cambridge Flood Viewer)	In progress	Precipitation Flooding, Coastal Flooding	Enhances Community Education, Equitable Implementation	High	Low
9	Encourage energy efficiency in buildings through zoning requirements and community engagement and support	In progress	Extreme Heat, Extreme Cold	Positive impact on renters	Low	Low

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10	Identify recommendations for municipal facility improvements for resiliency, including an updated flood duration study using MC-FRM	In progress	Extreme Heat, Precipitation Flooding, Coastal Flooding		Medium	Low
11	Implement actions of Cambridge Urban Forest Master Plan	In progress	Extreme Heat, Precipitation Flooding, Drought	Positive impact on Priority Populations	High	Low
12	Continue to engage with the Charles River Climate Compact and Mystic River Watershed Association on regional collaboration	In progress	Precipitation Flooding, Coastal Flooding, Extreme Heat		Medium	Low
13	Prioritize clean energy solutions for power such as solar, battery, geothermal, etc. where feasible	In progress	All		Low	Low
14	Begin to develop a central emergency response plan and centralize emergency response within the city	Less than 1 year	All	Positive Impact on Priority Populations, Equitable implementation	Medium	Low
15	Coordinate with the MBTA their efforts to protect critical regional transit infrastructure in Cambridge	Less than 1 year	All		High	Low
16	Collaborate with energy providers to protect critical community infrastructure	Less than 1 year	All	Positive impact on Priority Populations, equitable implementation	High	Medium

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17	Extend swimming pool operational hours and season	1-2 years	Extreme Heat	Positive impact on Priority Populations, Equitable implementation	Low	Low
18	Perform a study to evaluate the replacement of manually operated components with remote operated components, including the evaluation of cybersecurity vulnerability of the public water supply system	1-2 years	Loss of Water Supply		Medium	High
19	Conduct maintenance activities to monitor and reduce brushfire risks	1-2 years	Brushfire		Low	Low
20	Update the climate change vulnerability assessment to include up-to-date climate information	1-2 years	Extreme Heat, Precipitation Flooding, Coastal Flooding		Medium	Low
21	Integrate resiliency strategies and considerations into implementation of open space projects.	1-2 years	Extreme Heat, Precipitation Flooding, Drought	Positive impact on Priority Populations	Medium	Low
22	Develop an operations plan for DPW and Police on how to respond to flooding in the roadway	1-2 years	Precipitation Flooding, Coastal Flooding	Equitable implementation	Medium	Low
23	Succession planning should be integrated into the City's Continuity of Operations Plan (COOP) and revisited on a yearly basis by June 30 of every year and updated to reflect staff changes and required trainings for staff identified as part of the planning process	1-2 years	All		Medium	Low

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24	Develop an emergency community support reference guide which provides a list of health services which are operational during extreme events for community reference(i.e. dialysis centers)	1-2 years	All	Enhances community education	Low	Low
25	Collaborate with Cambridge public housing authority and community centers to identify community rooms to use as cooling centers and shelters during storms	1-2 years	All	Positive impact on Priority Populations, Positive impact on renters, Equitable implementation	Low	Low
26	Coordinating with adjacent communities for hazard preparation and response	1-2 years	All		Medium	Low
27	Create an emergency response higher education and city collaboration plan	1-2 years	All	Positive impact on Priority Populations, Positive impact on students, equitable implementation	Low	Low
28	Conduct study to identify how to engage with the disability community during an emergency.	1-2 years	All	Positive Impact on Priority Populations, Enhances Community Education	Low	Low
29	Develop an annual media campaign about signing up for code red notifications	1-2 years	All	Enhances Community Education, Equitable implementation	Medium	Low
30	Provide a central location on the City's website to provide up-to-date notification and items such as extreme weather, air quality alerts, etc.	1-2 years	All	Enhances Community Education	Medium	Low

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31	Purchase emergency radios for critical staff to utilize when an emergency event is expected where power and cell phone service may be compromised. Develop a plan for distribution and use.	1-2 years	All		Medium	Medium
32	Each department shall ensure identified staff have been trained in ICS and NIMS and continuing education and training shall be determined by each department head or training division	1-2 years	All		High	Low
33	Design and construct sewer separation work for the Baldwin neighborhood	2-5 years	Precipitation Flooding		Low	Medium
34	Update and improve the City's HeatViewer with best available information	2-5 years	Extreme Heat	Enhances Community Education, Equitable Implementation	Medium	Low
35	Perform a study to identify how to best protect Fresh Pond reservoir from saltwater intrusion	2-5 years	Coastal Flooding	Equitable Implementation	Low	Low
36	Prepare an Earthquake Emergency Plan	2-5 years	Earthquake	Positive Impact on Renters, Positive Impact on Students, Equitable Implementation	Low	Low
37	Prepare a Pest Vulnerability Matrix using the most recent tree inventory and develop a management options report	2-5 years	Invasive Species		Low	Low

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38	Create a program that offers support to property owners located in the 2070 10% flood area, as determined by the City's flood viewer, to help them make improvements that increase the resiliency of their properties against flooding.	2-5 years	Precipitation Flooding, Coastal Flooding	Positive impact on Priority Populations, positive impact on renters	Low	Medium
39	Perform a vulnerability assessment of vaults where hard copy records are kept	2-5 years	Precipitation Flooding, Coastal Flooding		Low	Low
40	Develop flood protection and operations planning for historic and critical facilities.	2-5 years	Precipitation Flooding, Coastal Flooding, Extreme Heat		Medium	Low
41	Develop and update materials to support homeowners in completing retrofits related to flooding & heat (e.g., trainings, & educational materials on funding assistance)	2-5 years	Extreme Heat, Precipitation Flooding, Coastal Flooding	Positive impact on Priority Populations, Equitable implementation	Low	Low
42	Evaluate use of Microgrid(s) for critical facilities and implement recommendations	2-5 years	All		Medium	Medium
43	Develop an enhanced communication plan and program related to natural hazards in collaboration with community groups	2-5 years	All	Positive Impact on Priority Populations, Enhances Community Education, Equitable implementation	Low	Low

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CH 8: PLAN MAINTENANCE





MONITORING THE PLAN

The City will monitor the mitigation actions to ensure that they are going according to plan.

EVALUATING THE PLAN

The City will meet regularly, and after major natural hazard events, to evaluate how well the plan is working.

UPDATING THE PLAN

The City will continue to update the Plan every 5 years.



INTEGRATING THE PLAN

The City will integrate data, information, and actions from the HMP into other City plans and initiatives.



PUBLIC PARTICIPATION THROUGHOUT PLAN MAINTENANCE

The City is committed to conducting equitable and impactful public participation. Public engagement activities will align with the evaluation, monitoring, and plan update meetings as well as with large natural hazard events.



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CH 9: PLAN ADOPTION





City of Cambridge

IN CITY COUNCIL

CITY OF CAMBRIDGE, MASSACHUSETTS RESOLUTION NO.

A RESOLUTION OF THE CITY OF CAMBRIDGE ADOPTING THE 2023 HAZARD MITIGATION PLAN UPDATE

MAYOR SIDDIQUI

WHEREAS the City Council recognizes the threat that natural hazards pose to people and property within the City of Cambridge; and

WHEREAS the City of Cambridge has prepared a multi-hazard mitigation plan, hereby known as the City of Cambridge 2023 Hazard Mitigation Plan Update, in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS the City of Cambridge 2023 Hazard Mitigation Plan Update identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the City of Cambridge from the impacts of future hazards and disasters; and

WHEREAS <u>duly-noticed</u> public meetings on the 2023 Hazard Mitigation Plan Update were held by the City on June 13, <u>2023</u> and two on September 13, 2023; and

WHEREAS the City Council authorizes Departments to executive their responsibilities demonstrated in the 2023 Hazard Mitigation Plan Update; and

WHEREAS adoption by the City Council demonstrates its commitment to hazard mitigation and achieving the goals outlined in the City of Cambridge 2023 Hazard Mitigation Plan Update; now therefore be it

Resolved: That in accordance with M.G.L. 40 §4 or the charter and ordinances of the City of Cambridge, the City Council adopts the City of Cambridge 2023 Hazard Mitigation Plan Update. While content related to the City of Cambridge may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Cambridge to readopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Step 1

City approves NHMP, allowing for potential updates due to MEMA/FEMA Review. Resolution language leaves room for any required NHMP revisions that occur after adoption is approved

Step 2

Submit plan to MEMA following state guidance (issued in Feb. 2023).

NEXT STEPS AFTER SUBMITTAL TO MEMA





Questions or Comments?



Natural Hazard Mitigation Plan Update 2023 Thank You!



