Weston & Sampson

# COMMUNITY RESILIENCE BUILDING & HAZARD MITIGATION PLANNING STAKEHOLDER WORKSHOP 2

Dunstable, Massachusetts

*October 26, 2023*

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## AGENDA

01 Welcome, Introductions & Overview

02 Mitigation Strategies & Actions

03 Small Group Exercises: Identify & Prioritize Strategies

04 Large Group Exercise: Determine Overall Priority Actions

05 Wrap Up & Next Steps

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## INTRODUCTIONS

***Keep your phone on silent***

***Raise your hand with questions***

***We will have designated breaks for discussion***

**Janet Moonan, PE**
Project Technical Lead
Weston & Sampson

**Michelle Rowden**
MVP Regional Coordinator
EOEEA

**Nichole Davis**
Community Outreach Coordinator
Hoyle Tanner

**David Langlais, PE**
Town Engineer
Hoyle Tanner

**Also Joining Us Today:**

**Jason Silva**
Town Administrator

**Leah Basbanes**
Selectboard & Con Com

**Erik Hoar**
Police Chief

**Jon Crandall**
Emergency Management Director

**Mike Martin**
Road Commission Chair

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## WORKSHOP 1: OVERVIEW

- Town of Dunstable undertaking:
  - Community Resilience Building process through EEA's Municipal Vulnerability Preparedness (MVP) Planning Grant to obtain Community Designation
  - Preparation of a natural Hazard Mitigation Plan (HMP)

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## KEY TERMS

**NATURAL HAZARDS:** A source of harm or difficulty created by a meteorological, environmental or geological event. Natural hazards, such as flooding and earthquakes, impact the built environment, including dams and levees.

**CLIMATE ADAPTATION:** Actions taken at the individual, local, regional, state, and national levels to reduce risks from changing climate conditions and prepare for impacts from additional changes projected for the future.

**CLIMATE RESILIENCE:** The ability to prepare for, recover from, and adapt to climate change and associated impacts.

**PRIORITY POPULATIONS:** People or communities who are disproportionately impacted by climate change due to life circumstances that systemically increase their exposure to climate hazards or make it harder to respond.

**COMMUNITY ASSETS:** People, structures (buildings and facilities), systems, natural/historic/cultural resources, the economy, and activities that have value to the community.

**HAZARD MITIGATION:** Actions taken to reduce or eliminate the long-term risk to human life and property from natural hazards.

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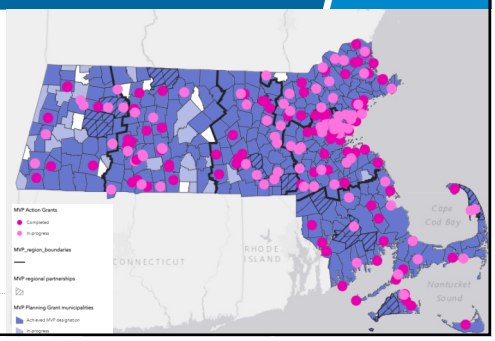
## WHAT IS MUNICIPAL VULNERABILITY PREPAREDNESS (MVP)?

- Improved resilience and preparedness
- Collaboration with stakeholders
- Increased education, planning, and implementation
- Funding for resilience-related actions




Source: Massachusetts Executive Office of Energy and Environmental Affairs Climate Grant Viewer

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## WHAT IS MVP?

### MVP Planning Grant

- Engage stakeholders
- Define climate hazards
- Identify community vulnerabilities and strengths
- Develop and prioritize mitigation actions
- Receive MVP designation

### MVP Action Grant

- Implement priority adaptation actions identified during the planning process


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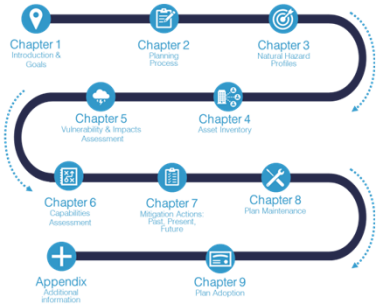
## WHAT IS A HAZARD MITIGATION PLAN (HMP)?

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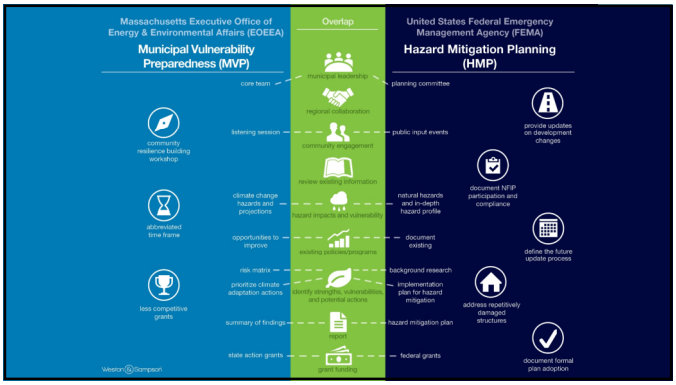


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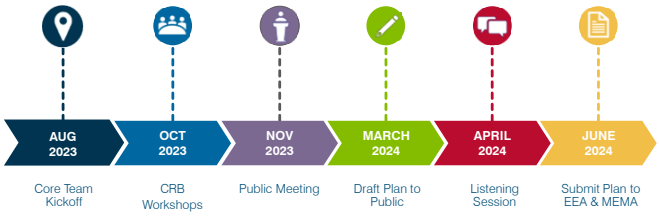
## DUNSTABLE'S MILESTONE SCHEDULE

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## WHY WE'RE HERE

**Weather projections:**

| Changes in precipitation | Rising temperatures |
|---|---|
| • 12-42% more winter precipitation by 2070.<br>• EJ and Priority Populations have a 57% higher risk of flood damage than the rest of the Commonwealth.<br>• Annual economic flood damage increase by $9.3 million by 2030 in MA. | • 23-29 high heat days expected by 2050.<br>• Annual average temperature increase of 5.9 to 7.9 F by 2050.<br>• Extreme temps will increase annual transportation infrastructure maintenance cost by over $140 million |
| **Severe Weather** | **Regional changes** |
| • Precipitation amounts from heaviest storms increased by 55% since 1958.<br>• Lightning was responsible for $20.4 million in damage between 2002 and 2022. | • Increase in frequency and magnitude of hurricanes and nor'easters<br>• More risk to experiencing tornados.<br>• Increased fire potential. |

Source: ResilientMass Plan (2023)

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## NATURAL HAZARDS IMPACTING DUNSTABLE

HURRICANES / TROPICAL STORMS
FLOODING FROM PRECIPITATION
EXTREME TEMPERATURES
SEVERE WINTER WEATHER / NOR'EASTERS
LANDSLIDES
CHANGES IN GROUNDWATER
DROUGHT
WILDFIRE / BRUSHFIRE
EARTHQUAKES
TORNADOES
INVASIVE SPECIES

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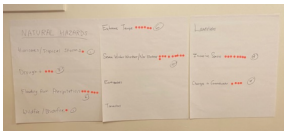
## NATURAL HAZARDS IMPACTING DUNSTABLE

1. Severe Winter Weather/Nor'easters (10)
2. Invasive Species (8)
3. Flooding from Precipitation & Extreme Temperatures (6)
4. Changes in Groundwater (4)
5. Drought (3)
6. Hurricanes/Tropical Storms & Wildfire / Brush Fire (1)

- No votes:
  - Earthquakes
  - Tornadoes
  - Landslides



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INVASIVE SPECIES

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## COMMUNITY ASSETS

People
Structures
Systems
Historic / Cultural / Natural Resources
Economic & Community Activities

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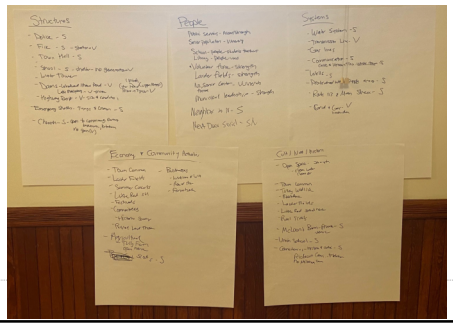
## COMMUNITY ASSETS



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## MITIGATION ACTION

A mitigation action is a measure, project, plan, or activity proposed to reduce current and future vulnerabilities to natural hazards. These actions will create resilience for Dunstable (ability to withstand and swiftly recover from an extreme event). These actions will support adaptation to climate change.

**Before an event**
Local code and regulations
Maintenance
Proactive Infrastructure Projects

**During an event**
Warnings
Protection of critical facilities
Emergency response

**Following an event**
Clean up
Restoration
Enhancement

COMMUNICATIONS

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## NATURE-BASED SOLUTIONS

Nature-Based Solutions (NBS) are adaptation measures focused on the **PROTECTION, RESTORATION,** and/or **MANAG EMENT** of ecological systems to safeguard public health, provide clean air and water, increase natural hazard resilience, and sequester carbon.

Incorporating NBS in local planning and design projects produces long-term solutions that benefit human and natural systems.

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## GREEN INFRASTRUCTURE & LID

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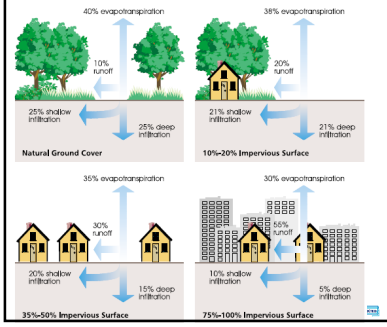
## REDUCE IMPERVIOUS COVER

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## STREAM RESTORATION

BANK RESTORATION & STABILIZATION


Live Crib Wall


Vegetated Retaining Wall


Joint Planting


Gabions

CULVERT WIDENING TO IMPROVE HABITAT & FLOW

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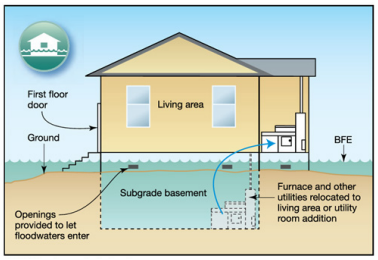
## FLOODING STRATEGIES

- Require new structures to build/protect to future flooding elevations
- Elevate or protect vulnerable utilities, such as fuel storage, furnaces, and electrical panels above future flooding elevation
- Avoid using finished basements as living space if at risk of flooding
- Retreat
- Flood insurance

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## ROOF STRATEGIES

- Design buildings with passive strategies including building orientation, high-performance insulation and windows, shading, and natural ventilation, and cool or green roofs
- Design buildings with a high-performance building envelope
- Install cool, high solar reflectivity roofs
- Maximize opportunities for natural ventilation, upgrade building mechanical systems, and install ceiling fans (where applicable) for improved passive survivability

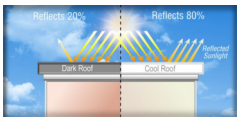


Figure 1: Dark vs. Cool Roof Surface Temperatures

A dark roof (left) becomes much hotter than a cool white roof (right) on a sunny afternoon.

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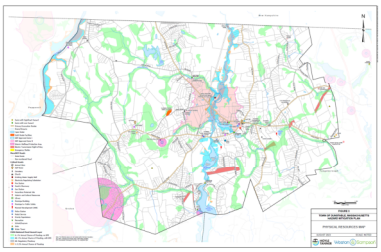
## LOSS OF USE STRATEGIES

- Enhance Resilient Public Amenities
- Support Business and Organizational Preparedness
- Protect Community Buildings
- Enhance Emergency Response Plans
- Provide For Healthcare Continuity and Access



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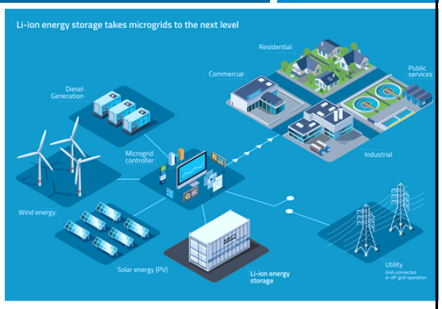
## RENEWABLE ENERGY STRATEGIES

- Encourage the Resiliency of the Electrical Distribution System
- Enhance the Resiliency of Transportation Systems
- Support Sustainable Energy Infrastructure
- Support a Resilient Telecommunication Network

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## COMMUNITY STRATEGIES

- Enhance Outdoor Thermal Comfort
- Seek Green Infrastructure Opportunities
- Expand and Improve Open Spaces
- Elevate or retrofit historic and culturally important buildings
- Protect environmental corridors or areas of connected greenspace

Source: Town of Dunstable Website

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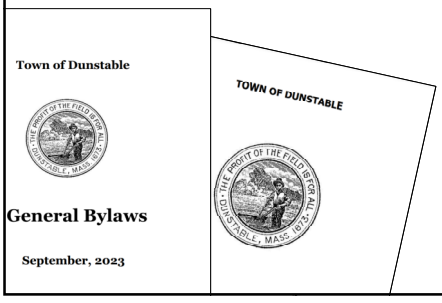
## RE-EVALUATE LOCAL REGULATIONS & POLICIES







- Encourage green space
- Require groundwater recharge
- Improve water quality
- Manage flooding
- Native species and biodiversity
- Climate resilient zoning

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## RISK MATRIX: STRATEGIES


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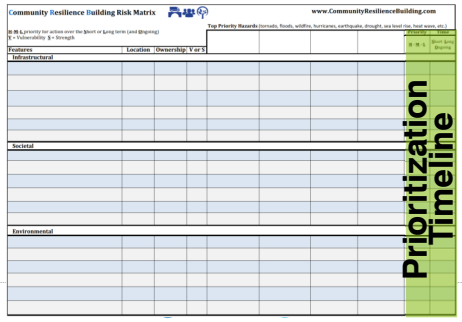
## RISK MATRIX: PRIORITY & TIMEFRAME

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## RISK MATRIX: Priorities and Timeline

| PRIORITIES | Considerations for Priorities | TIMELINE |
|---|---|---|
| High | Will the action reduce life/safety risk or mitigate economic loss? | Short (1 – 5 years) |
| Medium | Is the action part of other plans supported/vetted by the community? | Long (over 5 years) |
| Low | Is the action a nature-based solution? | Ongoing (e.g., annual) |
| | Does the action address present and future natural hazard risks (including those from climate change)? | |
| | Does the action positively impact Priority Populations? | |

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## REPORT OUT

**Choose a speaker for your table to report out actions**

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## SUMMARY & WRAP UP

- Questions?
- Next Steps
- Ways to stay involved
  - Public Meeting:  November 2023
  - Review Draft Plan:  Spring 2024
  - Listening Session:  Spring 2024

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# thank you

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