

# Town of Bedford Community Resilience Building Workshop

Presented By:



# Welcome and Introduction

- Sarah Stanton, Town Manager



2014 Microburst, Julie Loncich/WCVB-TV

# Team Members

## Town of Bedford Core Team

- Jeanette Rebecchi, AICP, Transportation Program Manager
- Adrienne St. John, Public Works Engineer
- David Grunes, Fire Chief

## Beals and Thomas, Inc. (B+T) Facilitators

- Mary Kate Schneeweis
- Nick Santangelo, EIT
- Andrew Gorman, CESSWI
- Caroline Booth

## Roundtable Stakeholder Introductions

# Municipal Vulnerability Preparedness (MVP) Program

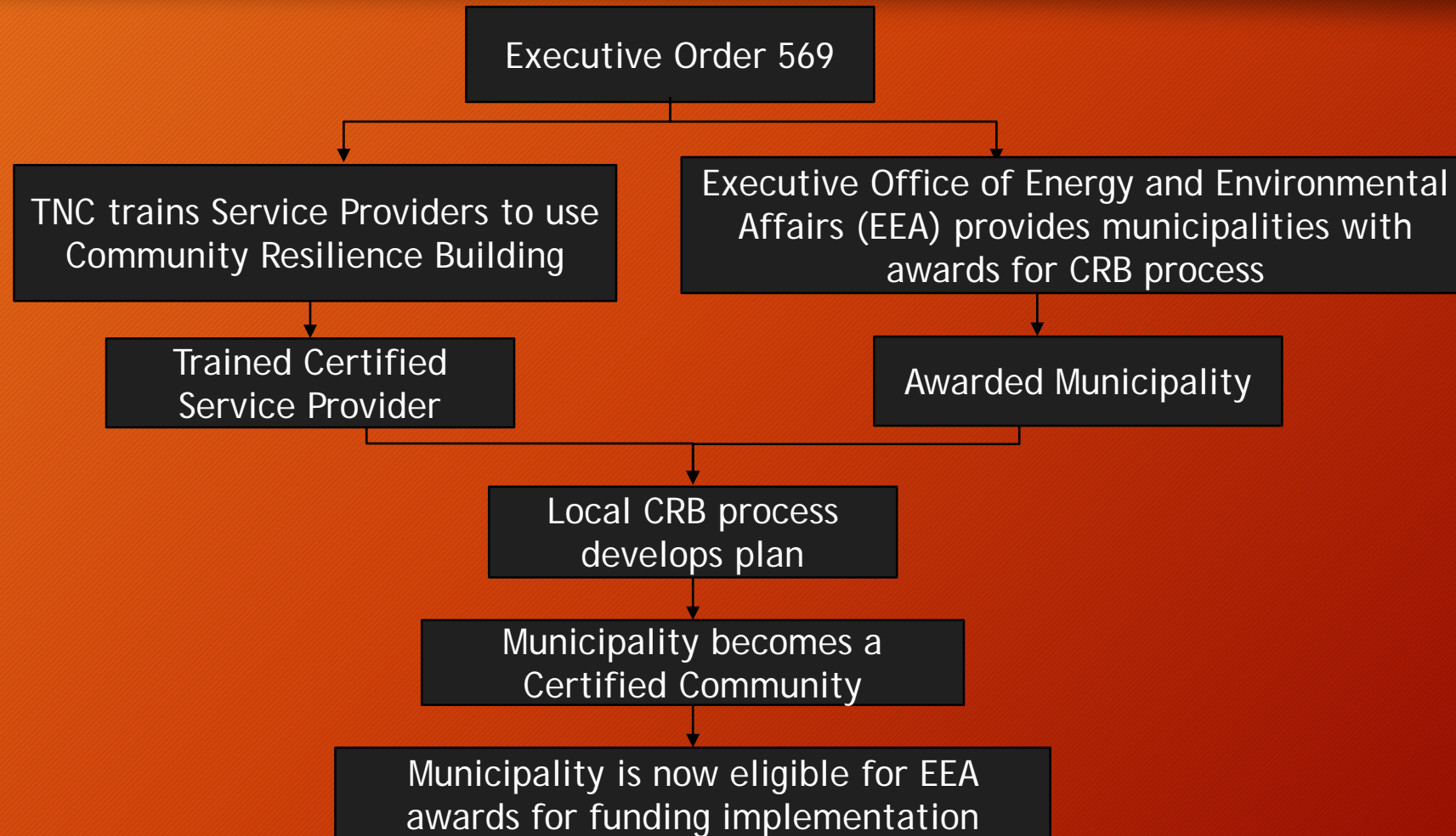


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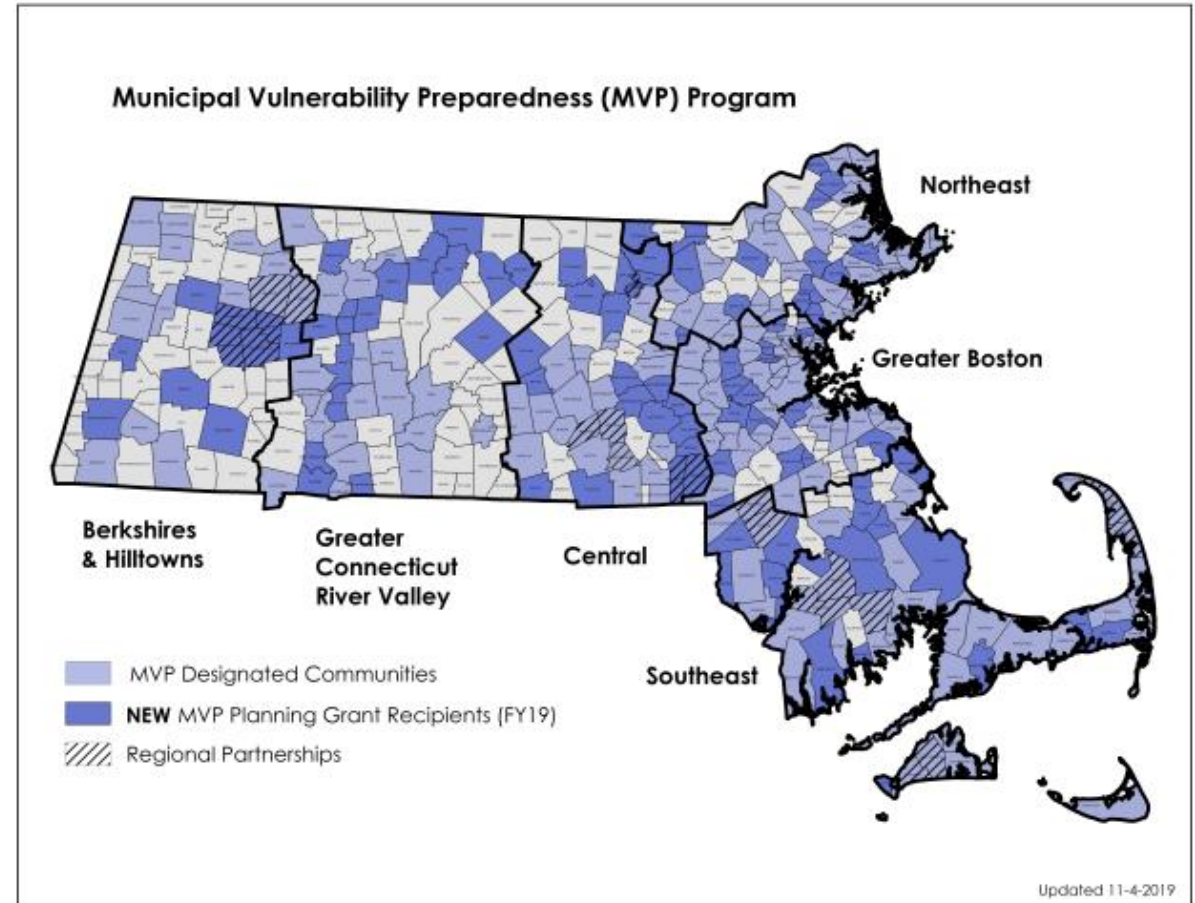
[www.CommunityResilienceBuilding.org](http://www.CommunityResilienceBuilding.org)

# MVP Overview



# State's Vision for the MVP Program

1. Engage community
2. Identify climate change impacts and hazards
3. Complete assessment of vulnerabilities and strengths
4. Develop and prioritize actions
5. Take action!



DURING WORKSHOP

**A** Prepare for the Workshop

- 1 Establish a core team with goals.
- 2 Engage stakeholders.
- 3 Prepare materials for workshop.
- 4 Decide on participant arrangements.

**B** Characterize Hazards

- 1 Identify past, current, and future impacts.
- 2 Determine the highest-priority hazards.

**C** Identify Community Vulnerabilities and Strengths

- 1 Identify infrastructural vulnerabilities and strengths.
- 2 Identify societal vulnerabilities and strengths.
- 3 Identify environmental vulnerabilities and strengths.

**D** Identify and Prioritize Community Actions

- 1 Identify and prioritize infrastructural actions.
- 2 Identify and prioritize societal actions.
- 3 Identify and prioritize environmental actions.

**E** Determine the Overall Priority Actions

- 1 Identify highest-priority actions.
- 2 Further define urgency and timing.

**F** Put It All Together

- 1 Generate final workshop products.

**G** Move Forward

- 1 Continue community outreach and engagement.
- 2 Secure additional data and information.
- 3 Inform existing planning and project activities.

**Community Components**



Infrastructural



Societal



Environmental

# Overview of the MVP Process

# Workshop Objectives

- Define extreme weather and natural and climate-related hazards
- Identify existing and future vulnerabilities and strengths
- Develop and prioritize actions for the community and broader stakeholder networks
- Identify opportunities for the community to advance actions to reduce risks and build resilience.

# Town of Bedford MVP Designation Schedule

Receipt of Planning Grant: July 18, 2019

Core Team Establishment of Approach:  
July 25, 2019

Workshop: December 11, 2019

HMP Public Review: March 2020

Public Listening Session: April 2020

Final Report: June 2020

# Mitigation Planning Benefits

- A process for communities to identify policies, activities and tools to implement mitigation actions
  - Increases awareness of vulnerabilities
  - Promotes safety and welfare of communities and citizens
  - Cultivates community commitment to mitigation
- Lack of hazard awareness and mitigation plan could lead to unnecessary losses to infrastructure and critical facilities and potential human casualties

# Hazard Mitigation Plan Update

- Required for municipalities to receive Federal Emergency Management Agency (FEMA) funding for non-emergency disaster assistance
- Updates required every 5 years
- Effective plan entitled Town of Bedford Mitigation Plan by the Metropolitan Area Planning Council in 2010
- Additional EEA funds for communities with expiring hazard mitigation plans who are undertaking MVP process
- Similar public input process to MVP program

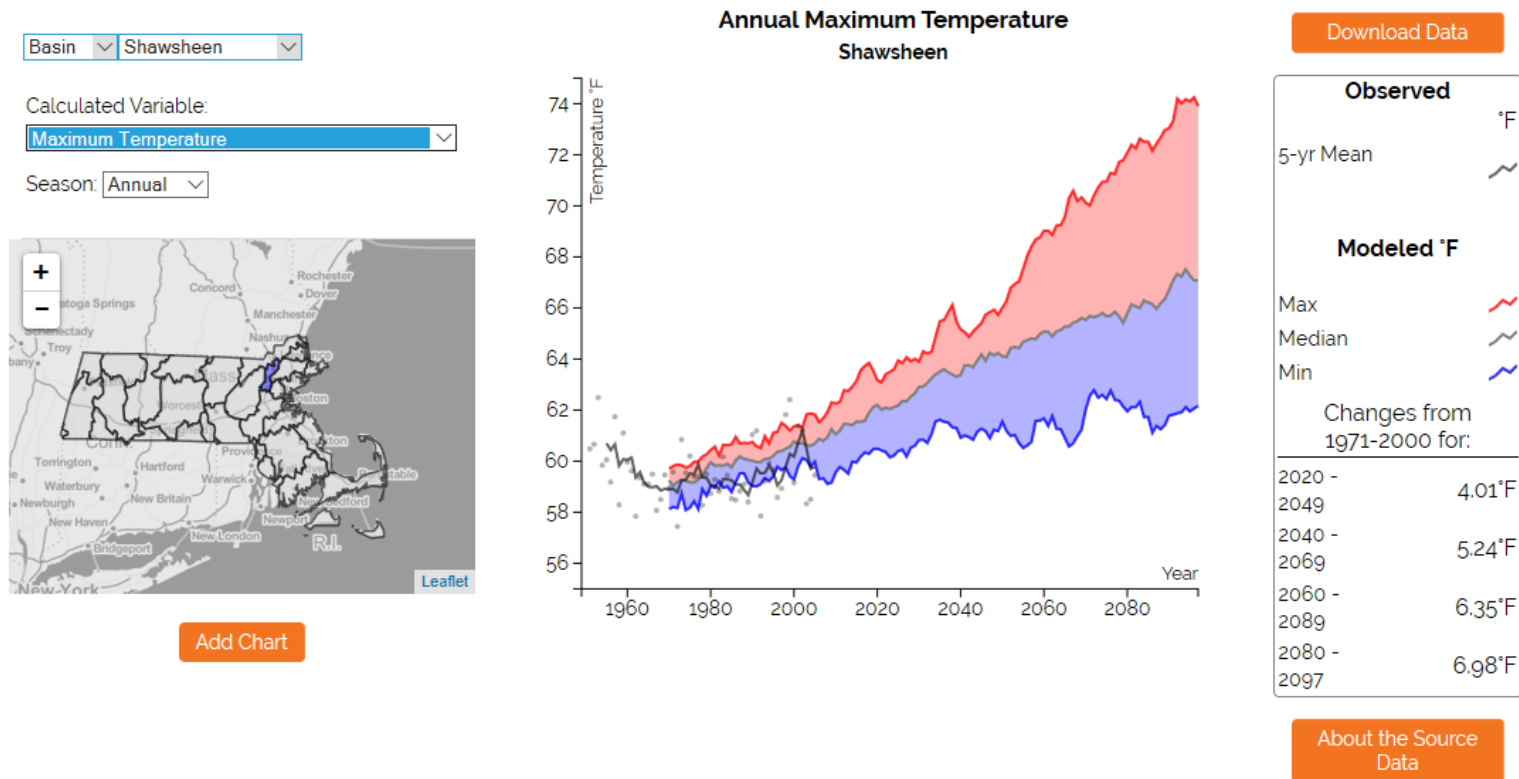
# MVP Action Grants

- Town will be eligible upon designation as MVP community
- Project categories include:
  - Detailed vulnerability/risk assessments
  - Local bylaw and ordinance improvements
  - Engineering and construction retrofits
  - Ecological restoration projects
  - Nature-based solutions to reduce vulnerability

# FY 2019 Action Grant Examples

- Boston - Climate Ready Zoning and Design Guidelines
- Natick - Tree Planting Plan to Mitigate Heat Islands and Reduce Runoff
- Salem - Sanitary Sewer Trunk Line Relocation Assessment
- Montague - City Road Flooding Protection Project: Design and Permitting

# Science and Resources



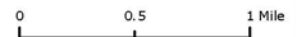
# Bedford Demographics

- Total Population (2018): 14,195
- Potential Vulnerable Populations:
  - Age 60+: 24.7% (2010 census), 27.6% (2020 projected), 29.3% (2030 projected)
  - Persons with Disabilities: 3.9%
  - Speak language other than English at home: 19.9%
  - Below poverty line: 2.5%

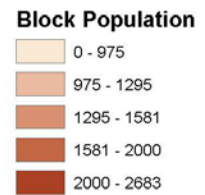
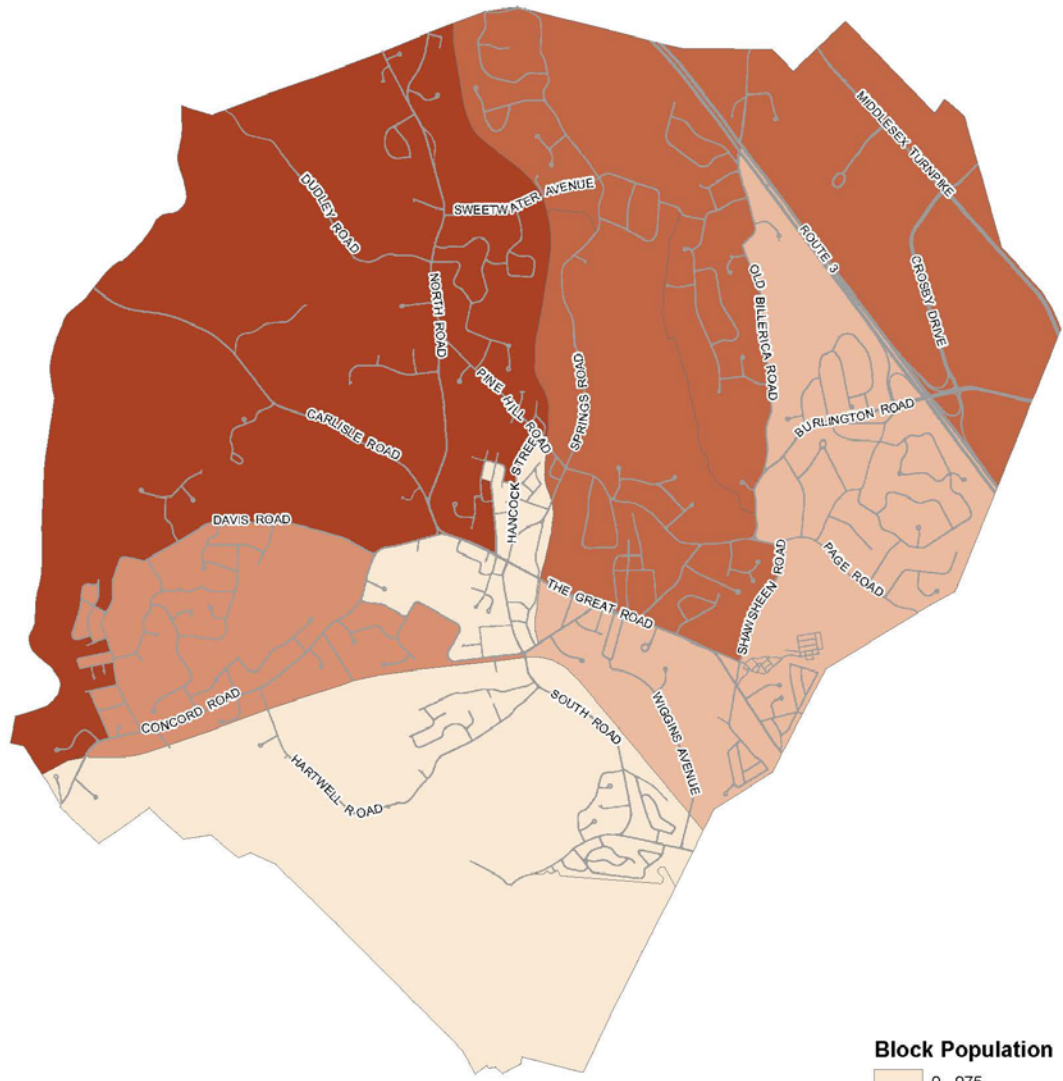
Source: Center for Social & Demographic Research, Gerontology Institute, John W. McCormack Graduate School of Policy & Global Studies, UMass Boston; United States Census Bureau; American Community Survey



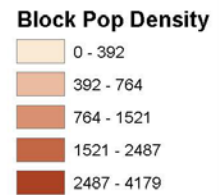
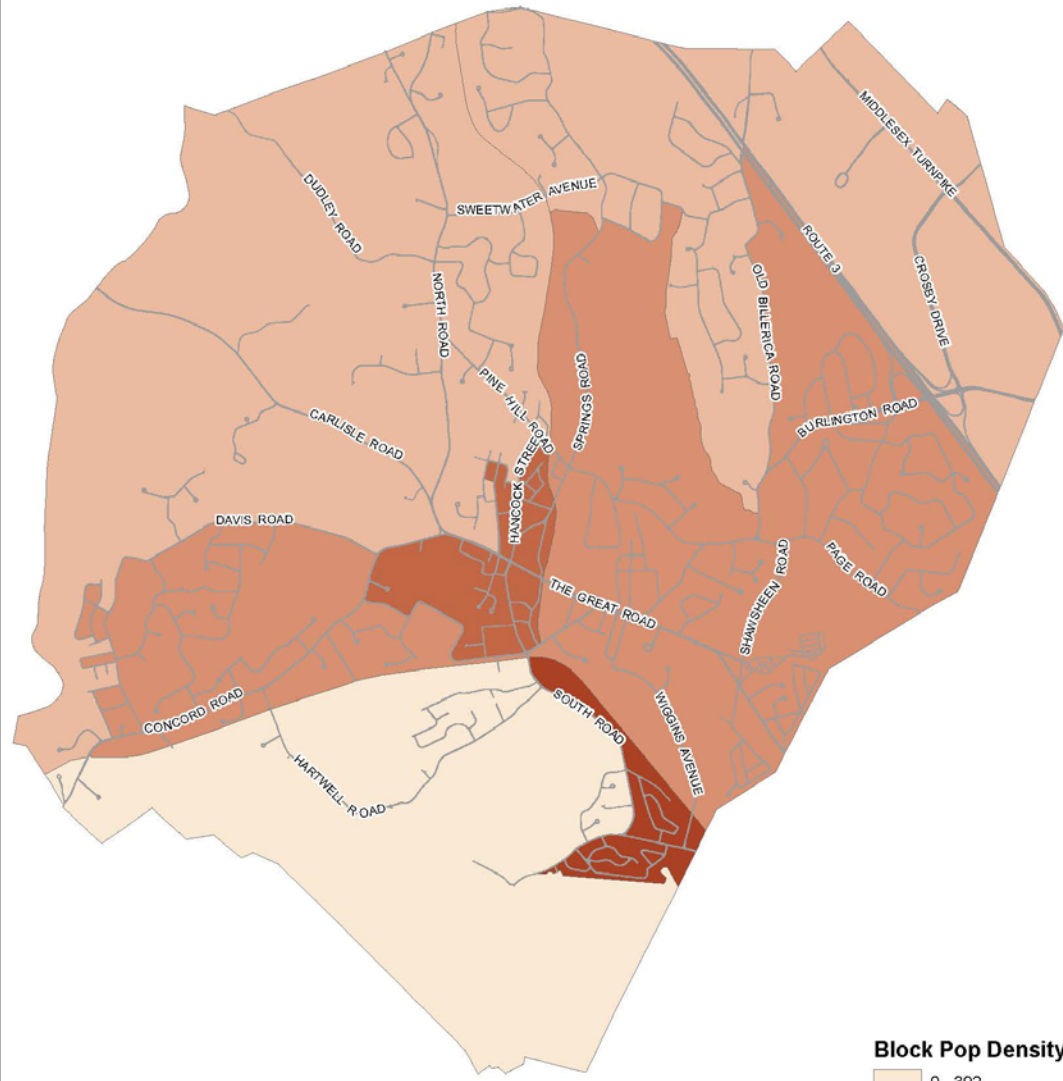
# Bedford Population by Census Block Group



### Population Total per Block




### Population Density Per Block



# Bedford Hazard Mitigation Plan

- Updated and adopted in 2010
- Recommendations to address natural hazards
- Prioritized mitigation based on anticipated area of hazard impact, expected benefit, and cost

Hazard	Statewide Frequency of Occurrence	Severity	Risk to Bedford
Flooding	High	Serious to Extensive	Same as state
Dam Failures	Low	Extensive	Three dams registered in Bedford with DCR
Hurricanes	Medium	Extensive to Catastrophic	Same as state
Severe Storms (wind, hail, lightning)	Medium	Serious	Same as state
Tornadoes	Medium	Extensive to Catastrophic	Not a major issue in Bedford
Winter Storms	High	Serious	Same as state
Earthquakes	Low	Catastrophic	Same as state
Landslides	Low	Minor	Not a major issue in Bedford
Brush Fires	Medium	Serious	Not a major issue in Bedford

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- A photograph of a person wearing a wetsuit and a beanie, wading through a flooded residential street. The water is deep, reaching up to the person's chest. In the background, there are rows of brick houses and parked cars partially submerged in the water. The entire image has a reddish-orange tint.
- Most prevalent natural hazard identified in 2015 HMP
  - Riverine floodplain associated with following
    - Great Meadows Wildlife Refuge
    - Concord River - largest area of flooding
    - Elm Brook
    - Shawsheen River
    - Springs Brook
    - Vine Brook
  - Drainage-related flooding issues from stormwater capacity

# Flooding

# Severe Storms, Winter Storms, and Hurricanes

- Severe Storms: wind, hail, lightning
  - 2014 microburst downed 50 - 70 trees
- Hurricanes: heavy rain, high winds
  - 39 hurricanes with significant wind or rain impacts in New England since 1938
  - Most recent was Hurricane Sandy in 2012
- Winter Storms: heavy snow, freezing rain, extreme wind, extreme cold
  - Severe Winter Storm defined as 6 inches or more of snow in 24 hours
  - Regional record for winter snowfall: 126.5 inches in 1995

# Massachusetts Climate Change Projections (Shawsheen Basin)

- Temperature
  - Increased average temperatures and number of days with maximum temperature above 90°F
    - Annually - 10 to 32 more days with temperatures above 90°F by 2050s
  - Decrease in number of days with minimum temperature below 32°F
    - Winter - 4 to 14 fewer days with temperatures below 32°F by 2050s
- Precipitation
  - Increase in number of days with greater than 1" precipitation and total precipitation
    - Annually - approximately 1 to 3 more days with precipitation greater than 1" by 2050s
- Drought
  - Increase in consecutive dry days
    - Summer - potential increase of 1 to 2 more consecutive days with less than 1mm of precipitation

# 10-Minute Break

- When you return, please sit at the table that corresponds to your nametag color

# Workshop Exercises



# Summary of Workshop Exercises

- Develop and prioritize list of Hazards
- Identify community Strengths and Vulnerabilities
  - Infrastructural
  - Societal
  - Environmental
- Determine and prioritize Actions
  - Identify the actions needed to reduce the vulnerability or reinforce the strength represented by each feature/asset.
  - Priority (high, medium, low)
  - Timeframe (ongoing, short-term, long-term)

# Definitions

- Hazard - cause of negative impacts to community
- Risk - potential result from hazard
- Vulnerability - feature (societal, environmental, or infrastructural) that is susceptible to risk
- Action - addresses vulnerability

# Hazards vs. Vulnerabilities

## Hazards

Flooding

Drought

Wind

Wildfire

## Vulnerabilities

Residences in flood zone

Water supply

Overhead power lines

Dry vegetation





# Risk Matrix Columns 1-4

- List top hazards for community in top row
- For each sector (infrastructural, societal, environmental)
  - Identify vulnerabilities and strengths
    - Determine location
      - List on Risk Matrix
      - Mark on Base Map
    - Identify ownership of issue or place.
    - Identify if feature/asset is a strength and/or vulnerability

# Lunch Break

- Please help yourself to the lunch provided.

# Risk Matrix Columns 5-10

- Determine actions
  - Identify the actions needed to reduce the vulnerability or reinforce the strength represented by each feature/asset.
- Prioritize
  - Priority (High, Medium, Low)
  - Timeframe (ongoing, short-term, long-term)

# If Possible: Use Nature Based Solutions

- Use or mimic natural systems to address hazards
  - Ecological Restoration
  - Green Infrastructure
  - Low-Impact Development (LID)



# Examples of Ecological Restoration

- Dam Removal

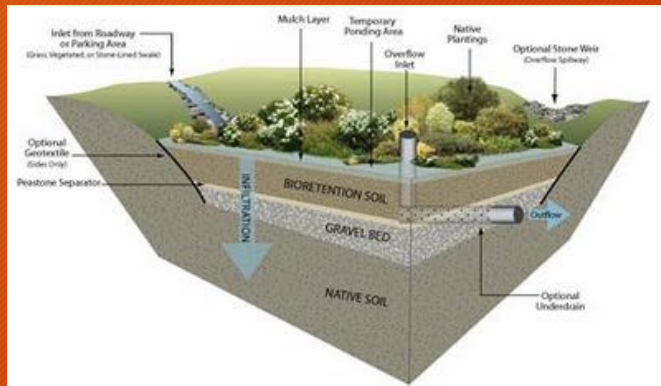


# Examples of Green Infrastructure/LID

- Stormwater Management with Green Roofs



- Stormwater Management with Bioretention Areas and Rain Gardens



# Small Group Report Out

- Small group spokesperson
  - 3-5 minute summary to present completed matrices
    - What Risks were identified?
    - What were the top priority Hazards identified?
    - Were there any other items of discussion worth noting?

# Large Group Discussion

- Identify top 3-5 priority actions
- Further refine timeframe(s)

# Next Steps

- Town and B+T to compile results of workshop into summary report and updated HMP
- Provide draft summary report/HMP for public review
- Hold listening session to present list of priority actions and how to implement
- Submit final summary report/HMP to EEA to receive MVP designation, and to MEMA and FEMA for review and comment
- Incorporate MEMA/FEMA comments on HMP
- Final HMP approval from Board of Selectmen