



Town of Boxborough
Municipal Vulnerability Preparedness (MVP) Project
Public Listening Session



Agenda

- **MVP Program Overview**
- **Climate Projections**
- **Workshop Results**
 - Goals
 - Top Hazards, Challenges, Strengths
 - Prioritized Recommendations
- **Next Steps**



MVP Program Overview

ENVIRONMENTAL BOND 2018



- **\$2.4 billion bond bill with focus on climate change resiliency**
- **Over \$200 million for climate change adaptation**
- **Provides funding for the MVP Program**

MVP Program Overview

Obtain Planning Grant



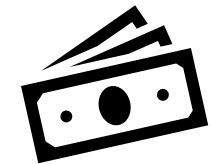
Complete Workshop

- Identify Actions to Address Vulnerabilities
- Write Report



Become Certified MVP Community

- Eligible for Grant Funding to Implement Actions





Municipal Vulnerability Preparedness (MVP) Program

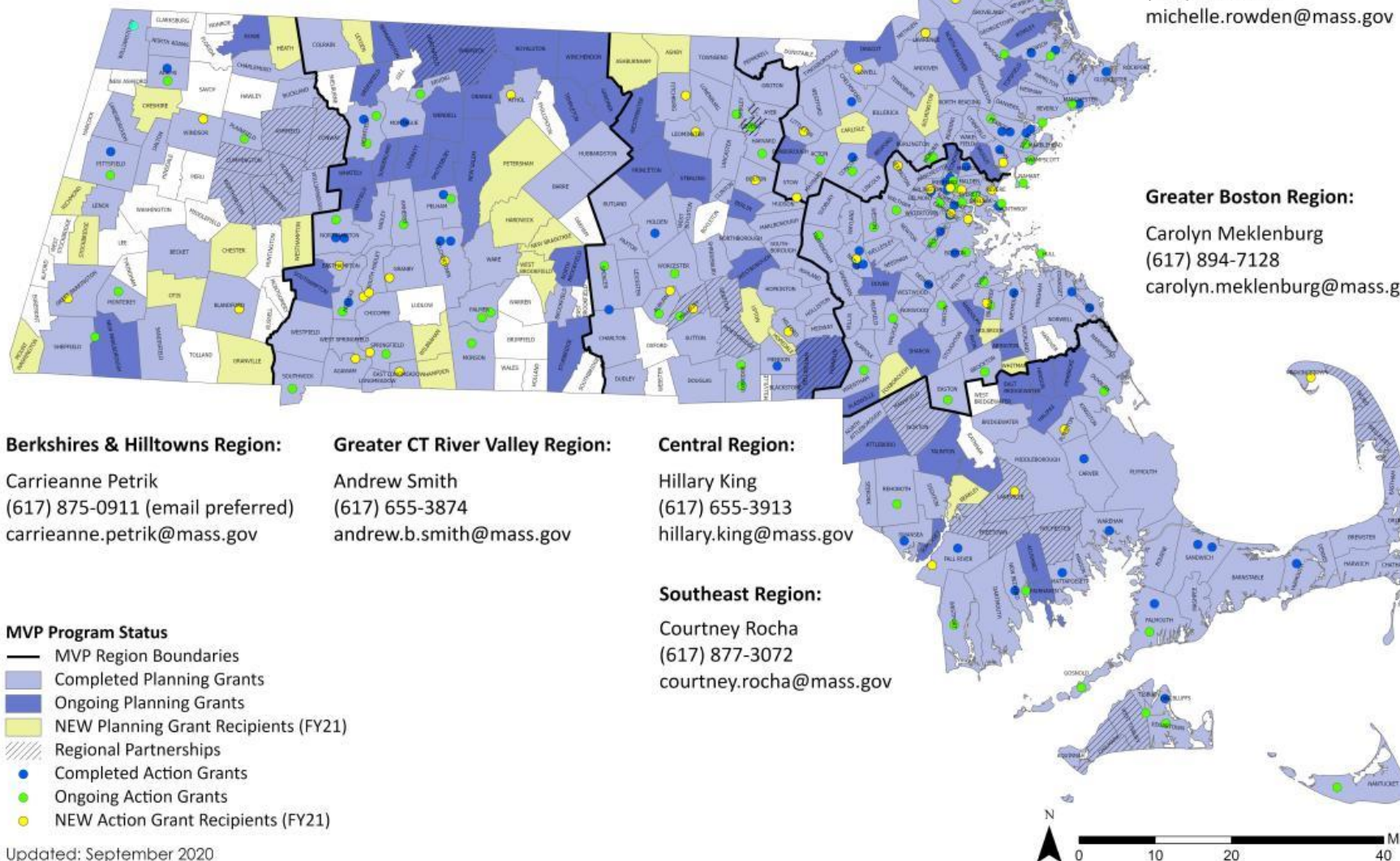
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MVP Action Grants: Project Types

- Detailed Vulnerability and Risk Assessment*
- Community Outreach and Education
- Local Bylaws, Ordinances, Plans, and Other Management Measures
- Redesigns and Retrofits***
- Nature-Based Flood Protection, Drought Mitigation, Water Quality, and Water Infiltration Techniques**
- Nature-Based, Infrastructure and Technology Solutions to Reduce Vulnerability to Extreme Heat and Poor Air Quality



* Most common project type

** Second-most common project type

***Third-most common project type

MVP Action Grants: Project Types (cont.)

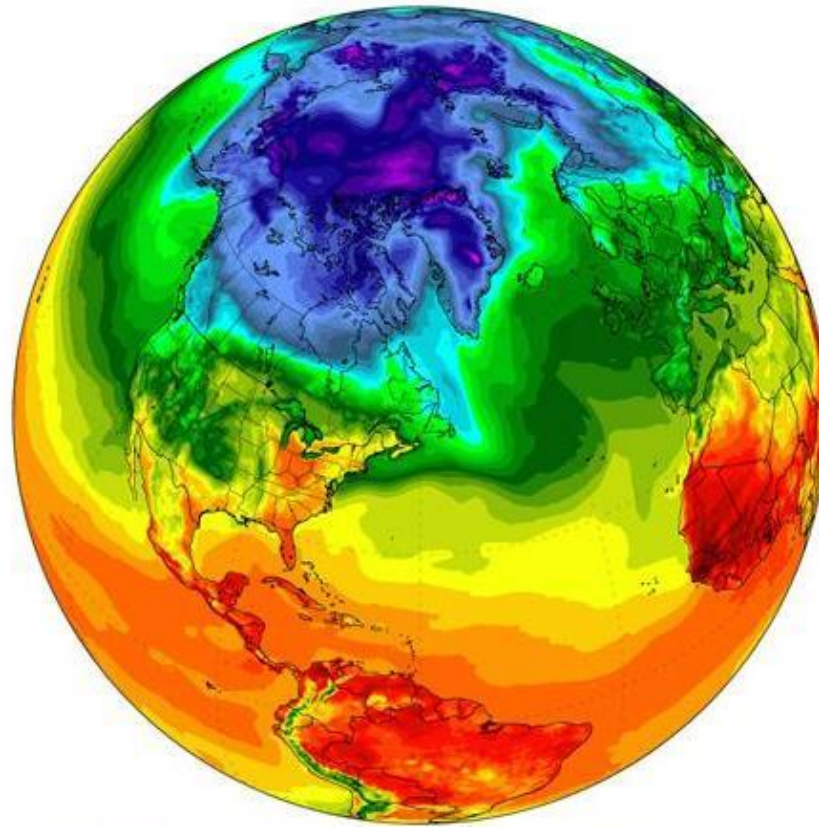


- Nature-Based Solutions to Reduce Vulnerability to other Climate Change Impacts
- Ecological Restoration and Habitat Management to Increase Resiliency

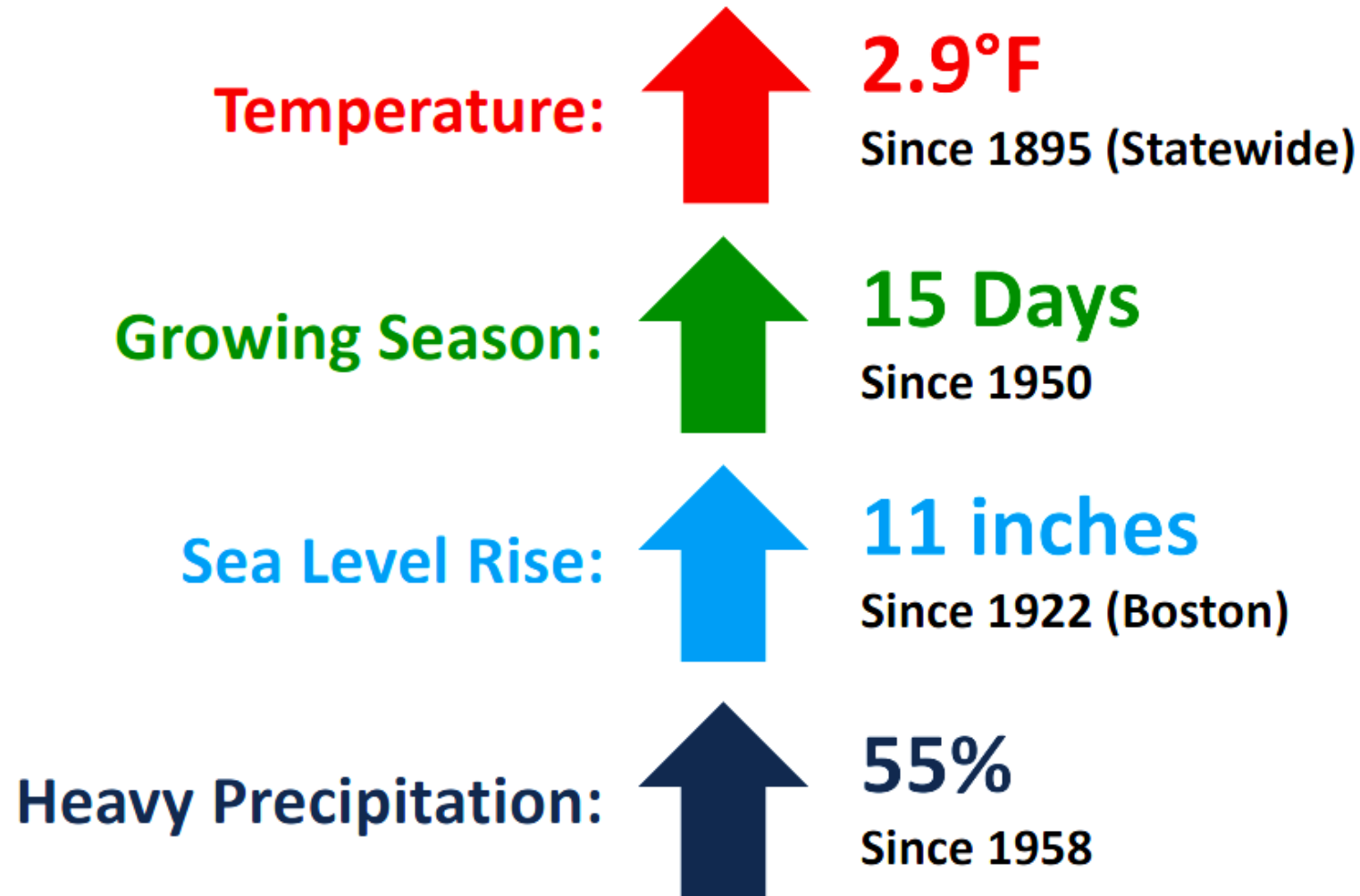
NEW IN 2019

- Energy Resilience
- Chemical Safety
- Land Acquisition for Resilience
- Subsidized Low-Income Housing Resilience Strategies
- Mosquito Control Districts
- + Expanded eligibility of project location

Climate Projections



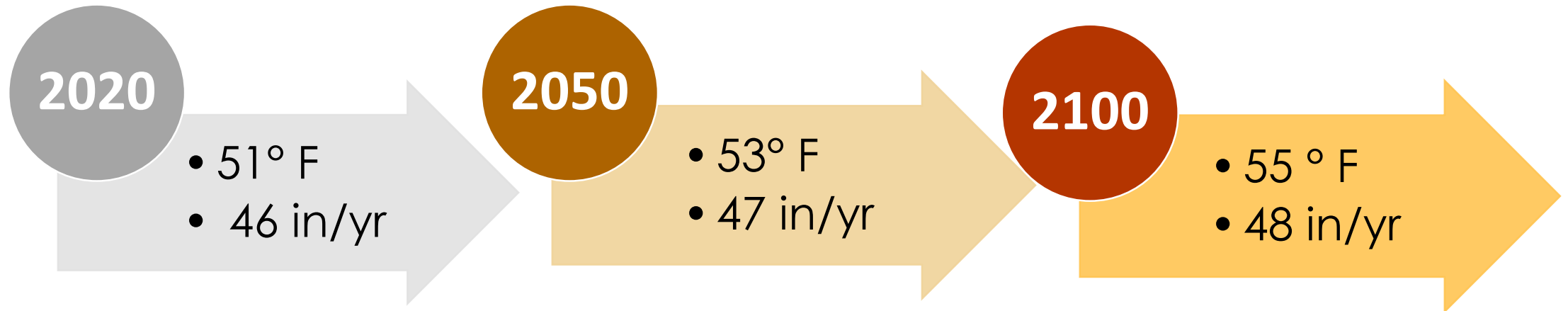
Massachusetts Observed Climate



Source: Climate Science Special Report, 2017; NOAA NCEI nClimDiv; NOAA Ocean Service

Boxborough Projected Climate

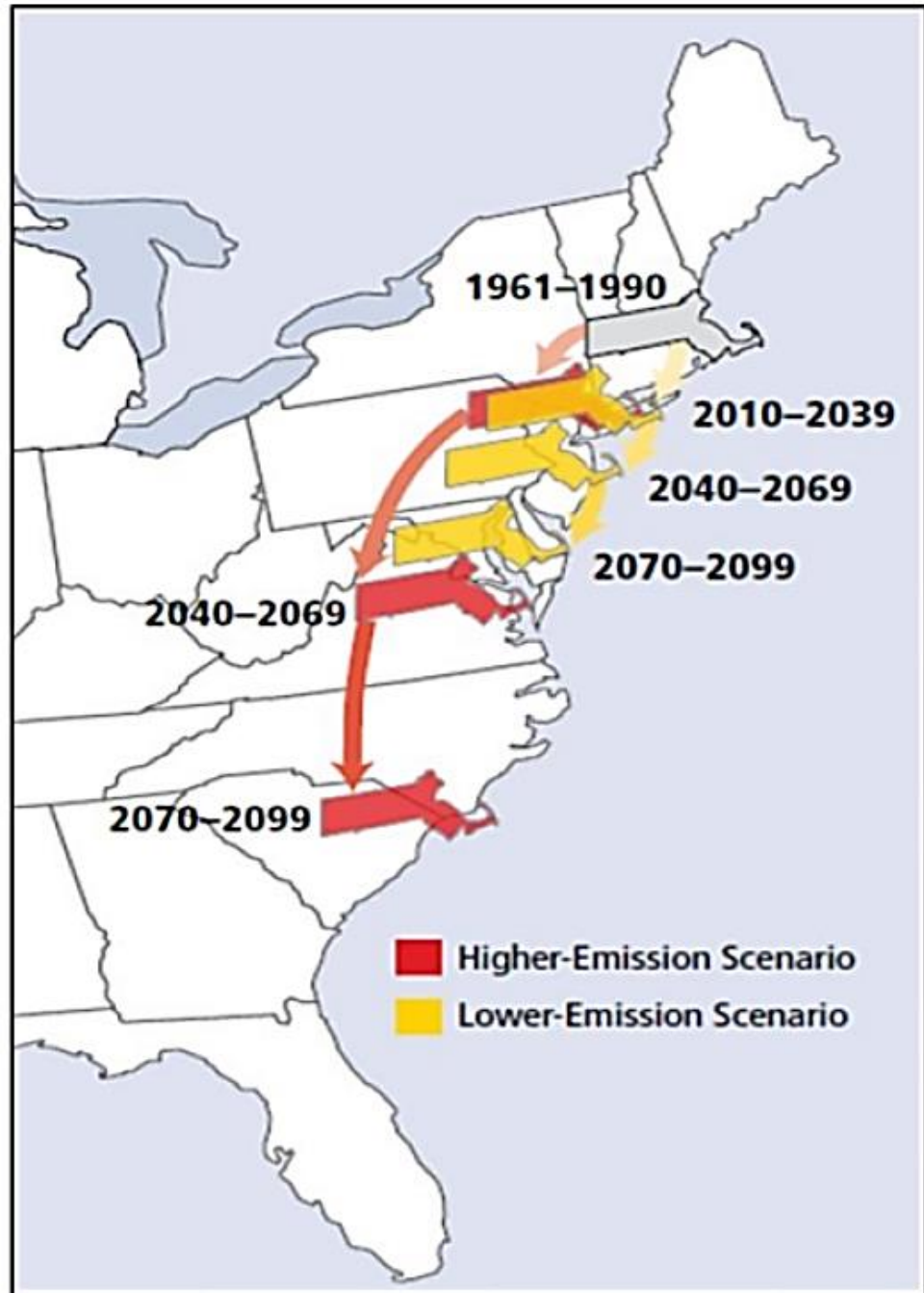
Average annual temperature and precipitation
projections for Middlesex County



Source: <http://resilientma.org/>

What do these Projections mean?

(relative to temperature)



Potential Consequences of Climate Change



Changes in precipitation

- Inland flooding
- Drought



Rising Temperatures

- Wildfires
- Invasive species/pests



Extreme Weather

- Hurricanes/tornadoes
- Severe winter storms



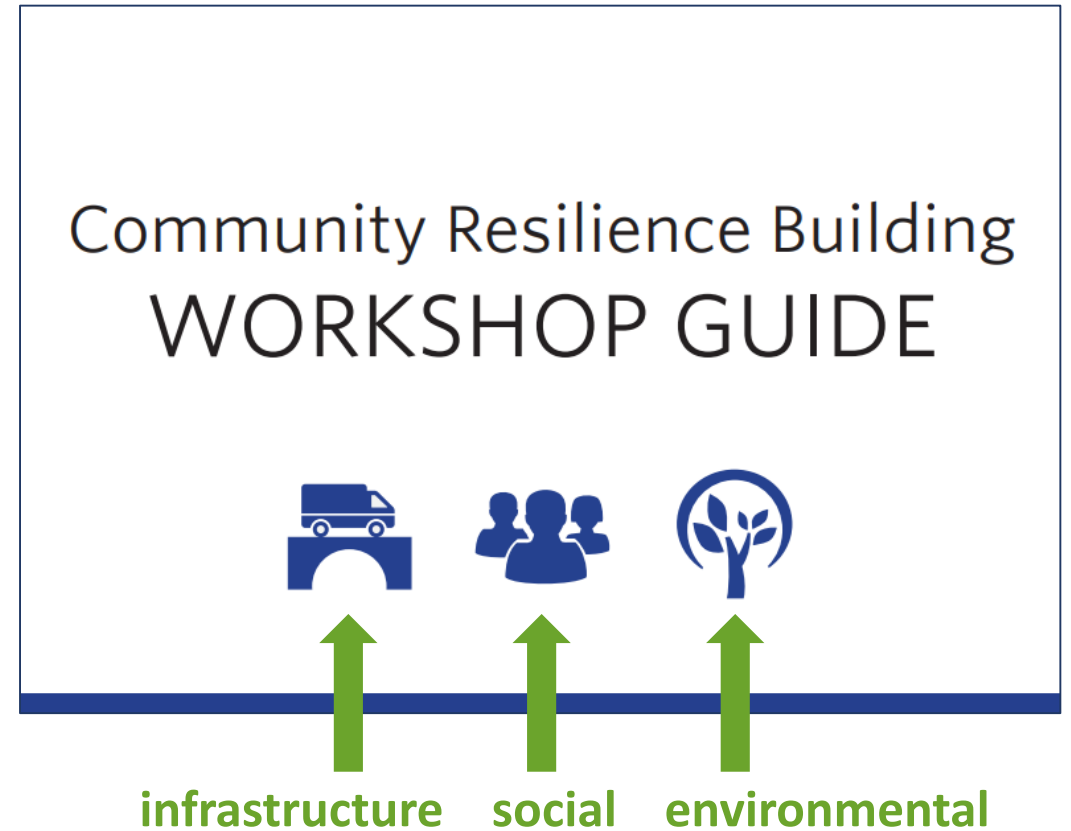
Human-induced hazards

- Loss of habitat/floodplains
- Overuse of fertilizers/pesticides

CRB Workshop Purpose

Use Community Resilience Building Workshop Guide to:

- Complete **baseline assessment** of climate change and natural hazard vulnerability
- Develop **specific actions** to address priority hazards/vulnerabilities



CRB Workshop Goals



Workshop Results

Town of Boxborough – MVP Core Team
Simon Corson, Town Planner
Bentley Herget, Building Commissioner and Zoning Enforcement Officer
Ed Kukkula, Department of Public Works Director
Paul Fillebrown, Fire Chief and Emergency Management Director
Dennis Reip, Conservation Commission Chair and Community Preservation Committee Chair
Francie Nolde, Sustainability Committee Chair

Workshop Attendees

Name	Department/Committee
Simon Corson	Planning Board
Cindy Markowitz	Planning Board
Bentley Herget	Building Department
Ed Kukkula	Department of Public Works
Paul Fillebrown	Fire Department
Dennis Reip	Conservation Commission
Francie Nolde	Sustainability Committee
Barbara Salzman	Sustainability Committee
Warren O'Brien	Police Department
Les Fox	Select Board
Jon Markiewicz	Select Board
Ron Sisco	Boxborough Reserve Corps
Ralph Murphy	Housing Board
Bryan Lynch	Board of Health
Lisa Stamand	Boxborough Conservation Trust
George Krusen	Resident
Michelle Rowden	Regional MVP Coordinator
Kelly Brown	Regional MVP Coordinator
Bob Hartzel	CEI
Emily DiFranco	CEI

Top Hazards



Flooding: Flooding was a hazard of concern to Boxborough. There are multiple areas in town that have experienced historical flooding and others that are expected to flood under future climate change projections.



Strong Storms: Extreme weather events, including strong winter storms, heavy rainfall with high winds, and ice storms were a top concern due to their potential for damage to infrastructure and other physical, social, and environmental consequences.



Drought / Extreme Temperatures: As global temperatures continue along a long-term warming trend, local occurrences of drought and extreme temperature (i.e., days greater than 90° F) are predicted to increase. Drought conditions have the potential to limit water supply availability, increase wildfire risk, and impact agriculture in Boxborough. Extreme temperatures have the potential to impact vulnerable populations without access to air conditioning.

Concerns / Strengths

Top Hazards

				Top Priority Hazards			Top Priority Hazards				
				Strong Storms		Flooding		Extreme Temperatures / Drought		Priority	
										Mark priority as H	
Features				Location		Owner	V or S	Proposed Actions			L (low)
INFRASTRUCTURE											
Road flooding due to low-point in road, proximity to surface waters/wetlands/floodplain, or beaver activity in wetlands. (Note: Study is currently underway to assess and prioritize catch basins for retrofits - recommendations from this report will likely include some of the infrastructure at the flooding sites listed here)	Route 111 (key transportation corridor)		State	V	t. 111 is a state-owned road managed by MassDOT. Town is building a sidewalk (public library to Liberty Square Road) on RT. 111 and is working with MassDOT to improve sections of the road. Once the sidewalk project is complete, work with MassDOT to conduct a study of Route 111 to determine other areas for improvement.				M		
	Littlefield Rd. near Central St.		Town	V	conduct town-wide stormwater study to assess/prioritize areas for re-design and retrofit to mitigate flooding. Major egress/collector roads should be prioritized for mitigation.				H		
	Depot Rd. near Wildlife Management Area		Town	V							
	Depot Rd. near Liberty Square Rd.		Town	V							
	Davidson Rd.		Town	V							
	Burroughs Rd. near Wolf Swamp		Town	V							
	Sargent Rd.		Town	V							
	Hill Rd. and Cunningham Rd.		Town	V							
	Route 111 (crossing of Elizabeth Brook)		Town	V							
	Hill and Barbeau Lane		Town	V							
End of land near Cisco campus near border with Harvard		Town	V								
Fire station in floodplain and has potential to flood.	Fire Station, Rt. 111		Town	V	study has been conducted to develop a new Public Safety and Health Building (police and fire departments), including the potential of relocation (\$24 million, \$15 million for fire station alone). Identify "climate-resilient" tasks that would be included in building relocation, as these are potentially fundable through an MVP Action Grant.				H		
Road flooding may limit access to waste disposal facilities (one access road).	Transfer station		Town	V	conduct study to determine alternative options for accessing the transfer station. Alternatives may include: raising road elevation to minimize access problems during flooding; develop mutual aid agreement with adjacent towns to allow waste disposal during flooding; use old DPW site as a backup when road to transfer station is flooded.				L		
Water level and water quality (iron; Swanson Rd. salt storage impacts) of drinking water in private wells - significant area is on private wells and vulnerable to drought/ flood impacts.	Town-wide		Private	V	Water Resources committee is looking at alternative water sources for wells in western portion of Boxborough. Based on the results of the committee's work, explore options for supplemental funding sources including MVP to acquire identified land. MassDOT may contribute funds through their Salt Remediation Program.				H		
	Town-wide		Town	V	Identify key parcels for future water supply climate resiliency including those prioritized in the 2030 Master Plan.				H		
Old DPW facility is located adjacent to wetlands/waterbody. DPW stockpiles, salt shed, fuel station, household hazardous waste collection, etc. are located at this facility.	DPW		Town	V	conduct a study to determine feasibility of relocating DPW yard or installing stormwater BMPs and secondary containment at facility to decrease flood risk.				M		
Sustainable power source located on commercial site in town.	Cisco		Private	V/S	determine the economic benefit to the town of installing other solar sites on commercial properties. Conduct a town-wide assessment for additional sites available to install solar panels including commercial sites similar to the Cisco property.				M		
Municipal utility maintains infrastructure for wind damage.	Town-wide			S	review town regulations to determine the need to strengthen regulations to increase the size of vegetative buffers required for site clearing for new and redevelopment.				L		
SOCIAL											
Public alert system is updated and works well but may not be available to all populations (e.g., renters, people without landlines)	Town-wide		Town	V/S	explore adding mobile devices to the public alert system in the future.				L		
Lack of generator at key town facilities.	Town Hall, Sargent Memorial Library, DPW		Town	V	assess potential for library to be used as cooling/warming station if it had a backup generator/solar battery.				L		
Increase in ice storms may lead to decline in personal safety (e.g., driving, walking)	Town-wide		Town	V	No actions identified						
Warmer climate and increased rainfall will increase mosquito breeding, length of mosquito season, and associated human health impacts. Increases in other insect-related issues such as illness from ticks.	Town-wide		Town	V	Town will continue to provide for mosquito control as needed. Board of Health is looking conducting additional clinics at new Public Health and Safety building.				L		
Warmer climate and subsequent decline in air quality may impact residents with respiratory illnesses.	Town-wide		Town	V	Town is working to provide more clinics to residents including space in a new Public Health and Safety building to address health and respiratory illnesses.				L		
Climate vulnerable populations throughout town.	Town-wide		Town	V	assess possibility of expanding Boxborough Rental Assistance Program (BRAP) to assist vulnerable populations in climate change-related needs such as adequate air conditioning and heating. Consult with town counsel to determine if the "No Aid" amendment would limit funds for private residents.				L		
ENVIRONMENTAL											
Multiple culverts have been identified as barriers to aquatic connectivity by North Atlantic Aquatic Connectivity Collaboration.	Beaver Brook Road Hill Road Route 111 Crossing at Elizabeth Brook		Town/ Private	V	An initial culvert assessment has been conducted by the North Atlantic Aquatic Connectivity Collaborative - conduct engineering/design as needed to retrofit top 3 priority culvert barriers.				L		
Reduction of greenhouse gas emission from town-owned vehicles.	Town-wide		Town	V/S	convert town-owned vehicles to electric or hybrid vehicles where appropriate (e.g., school buses, police vehicles, Building Inspector, Planning, some DPW vehicles).				H		
Reduction of greenhouse gas emissions from town-owned facilities.	Town-wide		Town/ Private	V	Use audits to determine locations that may be appropriate for solar; update town facilities in accordance with energy audits; Review potential for retrofitting existing buildings with solar; develop a residential solar education program.				H		
Increase in invasive species (e.g., garlic mustard, purple loosestrife, Japanese knotweed, bittersweet, and additional species).	Town-wide		Town	V	Develop a town-wide management plan for invasive species; Develop public education program to make public aware of problem and what they can do on their property to identify and control invasives.				L		
Agriculture in Town at risk due to increase in extreme weather and drought.	Town-wide		Private	V	Work with USDA NRCS to assess climate resiliency needs for at-risk farmers in Boxborough and and identify funding options.				L		
Multiple opportunities for conservation and for the installation of nature-based solutions (e.g. Harvard Sportsmen's Club, Cisco property); Key undeveloped lands (e.g., Hager Land drumlin, upland sites, future wellhead sites) located throughout town.	Town-wide		Town/ Private	S	Identify future land protection/land acquisition priorities to incorporate climate change resiliency (e.g., conservation area between Sargent Rd./Depot Rd. helps to naturally mitigate floods); Cisco/Harvard Sportsman Club has only partial protection and opportunities for increased protection, including unique grasslands habitat at heightened risk of impacts related to drought/extreme temperatures. Conservation Commission has a list of prioritized parcels for conservation. Work with the Conservation Commission to review and update this list for conservation priorities that are specific to climate resiliency.				H		
Three energy audits have been conducted for town buildings.	Town-wide		Town	S	Use audits to determine locations that may be appropriate for solar; update town facilities in accordance with energy audits.				M		
Forests in Town provide natural air quality protection.	Town-wide		Town	S	assess opportunities for additional tree planting, buffer zone improvements, reforestation, etc.				L		
Electric charging station to be installed at town building.	Sargent Memorial Library		Town	S	assess other town facilities to install electric charging stations; convert select town vehicles (non-emergency response vehicles) to electric.				L		

Actions

Top Concerns: *Infrastructure*



- **Road Flooding**
 - Roadway flooding due to low points in the road
(*e.g., Route 111*)

- **Municipal Buildings**
 - Multiple town-owned buildings are located in the floodplain
(*e.g., Fire Station, Old DPW Facility*)

- **Private Water Supply**
 - Water quality and quantity of drinking water in private wells

Top Concerns: *Societal*



■ Vulnerable Populations

- Many key town facilities do not have generators and cannot be used as warming/cooling stations.
- BRAP program not currently used for climate related needs such as air conditioning/heating.

■ Emergency Alert System

- Current system may not be adequate for all residents as it does not work on mobile devices.

■ Insect-Related Illnesses

- Potential increase in climate-related increases in mosquito breeding areas due to increased temperatures and longer periods of standing water.

■ Respiratory-Related Illnesses

- Potential increase related to impacts to air quality associated with climate change.

Top Concerns: *Environmental*



■ Invasive Species

- Increase in invasive species including garlic mustard, purple loosestrife, Japanese knotweed, bittersweet, and others.
-

■ Aquatic Connectivity

- Multiple culverts have been identified as barriers to aquatic connectivity.
-

■ Greenhouse Gas Emissions

- Need to reduce greenhouse gas emissions from town-owned vehicles and facilities.
-

Top Strengths



■ Land Protection Opportunities

- Multiple opportunities for land conservation and for the installation of nature-based solutions.

■ Energy Audits

- Three energy audits have been conducted on town-owned buildings.

■ Alternative Energy Sources

- The town has previously supported alternative energy sources such as an electric charging station at the Sargent Memorial Library and has allowed the installation of a solar site at the Cisco property.

Top Recommended Actions

1. Road Flooding Study

■ Assess:

- Expand the culvert assessment currently being conducted to include additional information related to climate resiliency.
- Prioritized recommendations for repairs / replacements.

■ Repair:

- Repair roadways and culverts based on the recommendations from the study.



Top Recommended Actions

2. Identify Alternative Drinking Water Sources

■ Problem:

- Many residents rely on private wells for drinking water.
- The western portion of town in particular, may be vulnerable to drought and flood impacts affecting the water quality and quantity at those wells.

■ Solution:

- Build off the work of the Water Resources Committee.
- Support efforts to acquire necessary land.



Top Recommended Actions

3. Conversion of Town-Owned Vehicles to Electric or Hybrid

- In an effort to reduce greenhouse gas emissions, select town vehicles could be converted to electric or hybrid vehicles.
- Add electric charging stations at other town buildings.



Other High Priority Actions

- Review the list of conservation priorities in the OSRP develop additional priorities reflecting climate change resiliency goals.
- Identify “climate-resilient” tasks that would be included in the development of the new Public Safety and Health Building.
- Identify key parcels for future water supply climate resiliency in regards to water level and water quality.





NEXT STEPS

- **MVP Community Designation**
- **Implement Prioritized Recommendations**
- **Apply for Action Grant Funding**

Questions / Comments

- **Contacts:**

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