



Municipal Vulnerability Preparedness Program Municipal Staff Training for Planning Grants

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MA Executive Office of Energy and Environmental Affairs

Agenda

- ❖ Why and How MVP was created
- ❖ MVP Basics
- ❖ Becoming MVP Certified
- ❖ Planning Process Variations
- ❖ What's Next? MVP Action Grants
- ❖ Contact Us
- ❖ Questions



**How Summer Temperatures Will Feel
Depending on Future Greenhouse Gas Emissions**

Spring in January: Boston reaches record-high temperatures

With temperatures reaching up to 70 degrees Saturday, Boston set a record high for the month as the city has only been that warm in January ...

1 week ago



April 2019 Saw The Most Days With Rain In Boston Since 1872

April 2019 Saw The Most Days With Rain In Boston Since 1872. May 02 ... This year, Boston had the most days of rain in any month since record-keeping began in 1872. ... April 2019 had 21 days of measurable
May 2, 2019



Remnants of Hurricane Florence soak Berkshires, prompt flooding



Messy 2-Day Ice Storm Set to Blast New England

Messy 2-Day Ice Storm Set to Blast New England ... Northeastern Massachusetts may see some snow before it transitions over to an icy mix.
3 weeks ago



Worcester To Hit 100 Degrees For First Time Since 1911

WORCESTER, MA — Record-breaking temperatures are expected in the city and across ... The infamous heat wave of 1911 lasted 11 days.

Jul 19, 2019



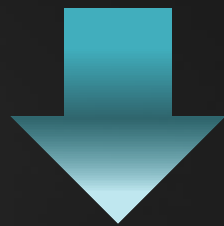
**More
evaporation**

**More
fuel for storms**

To
understand
why, you
need only
consider
your
morning
coffee



**More
Heat**

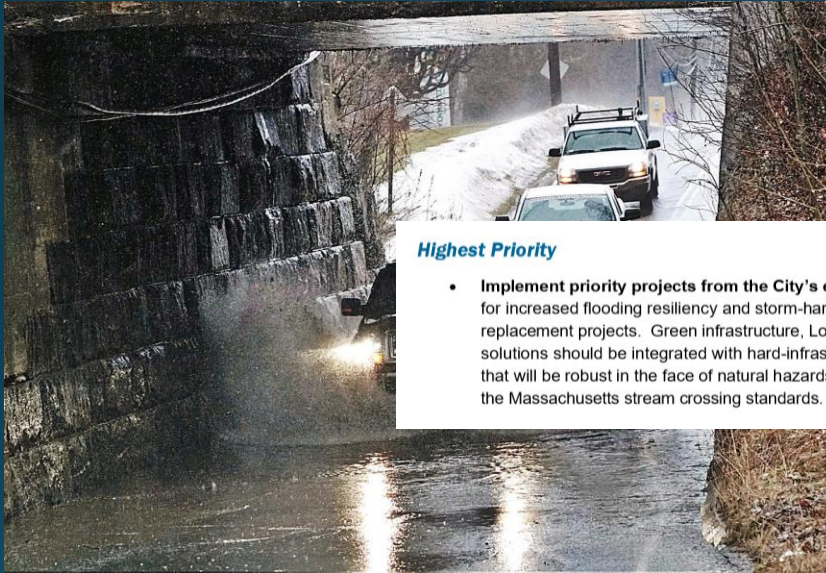


**More
precipitation**

**Rising Temperatures
Bring More Rain/Ice/Snow**

Local Climate Change Impact Stories

Stormwater Flooding in Pittsfield



Highest Priority

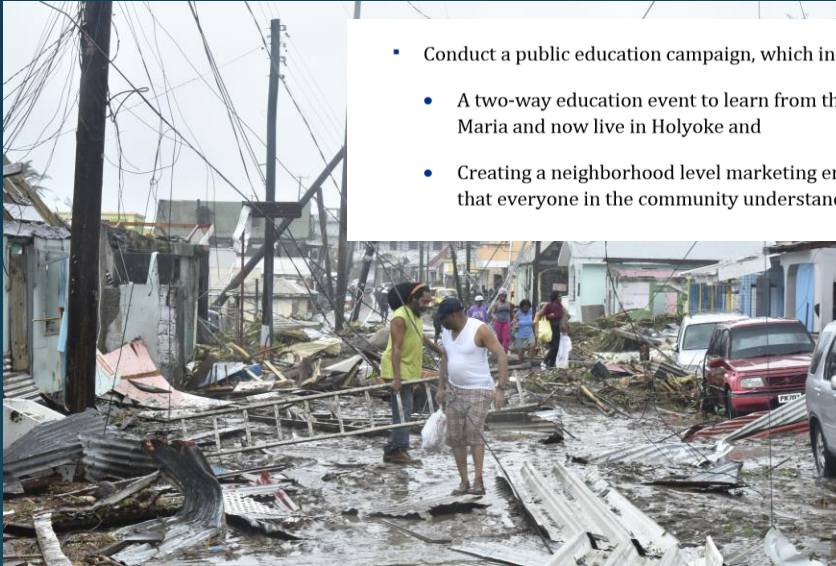
- **Implement priority projects from the City's existing field inventory of culverts, and bridges** for increased flooding resiliency and storm-hardening, including design of priority re-sizing or replacement projects. Green infrastructure, Low-Impact Design, and other nature-based solutions should be integrated with hard-infrastructure improvements to establish approaches that will be robust in the face of natural hazards and climate-change scenarios and that will meet the Massachusetts stream crossing standards.

Photo Credit: Berkshire Eagle

MVP Action Grant: Churchill Brook and West Street Culvert Replacement Project

Local Climate Change Impact Stories

Climate Migration to Holyoke



- Conduct a public education campaign, which includes: (3 groups)
 - A two-way education event to learn from the experiences of people that fled Hurricane Maria and now live in Holyoke and
 - Creating a neighborhood level marketing engagement and training program to ensure that everyone in the community understands what they need to do to be resilient.

Photo Credit: Wikimedia
Commons

MVP Action Grant | The City of Holyoke's Response to Climate Change Displacement: The Case of the Post-Maria Migration of Puerto-Ricans



It's getting
hotter...
so what?

#ClimateChange

WHETHER YOU LIVE IN A...



Rural village



Small island or
coastal town



Big city

CLIMATE CHANGE THREATENS YOUR HEALTH

Drought,
floods and
heat waves
will increase.



**Vector-borne
diseases,** like malaria
and dengue virus will
increase with more
humidity and heat.

Basic necessities will be disrupted...



FOOD

Hunger and famine will
increase as food production
is destabilised by drought.



AIR

Pollution and pollen seasons
will increase leading to more
allergies and asthma.



WATER

Warmer waters and flooding
will increase exposures to
diseases in drinking and
recreational waters.

Between **2030** and **2050** climate change is expected to cause

250 000 ADDITIONAL DEATHS PER YEAR

due to malaria, malnutrition, diarrhoea and heat stress.

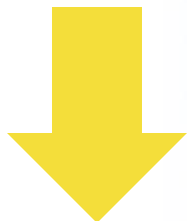


World Health
Organization

Changing Energy Use and Demand

More Warm Winter Days, Less Heating Demand

(based on annual Heating Degree-Days, base 65)



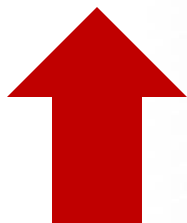
26.2%

by the 2090s

1971-2000 Average:
6839 Heating Degree-days

More Warm Summer Days, More Cooling Demand

(based on annual Cooling Degree-Days, base 65)



178%

by the 2090s

1971-2000 Average:
457 Cooling Degree-days

Impacts from Changing Precipitation Conditions



Photo Credit: Jeff Brown

- Increased total rainfall
- More intense downpours
- Changes to rainfall and snowfall patterns



Photo Credit: Dave Sherman

Impact Example: Public Health Algal Blooms

West Monponsett Pond, Halifax, Massachusetts



MVP: Policy Context

2008	Global Warming Solutions Act (GWSA)	<p>To set economy-wide greenhouse gas emission reduction goals for Massachusetts that will achieve:</p> <ul style="list-style-type: none">• 25% reduction in GHG emissions by 2020• 80% reduction in GHG emissions by 2050 (www.mass.gov/2050RoadMap)
2008	Green Communities Act	<p>A comprehensive reform of the Massachusetts energy marketplace that will greatly improve the state's ability to meet the GWSA targets</p>
2016	Executive Order 569	<p>A comprehensive approach to reduce GHG emissions to combat climate change and prepared for the impacts of climate change with:</p> <ul style="list-style-type: none">• A State Adaptation Plan• Agency Climate Coordinators & Vulnerability Assessments• Municipal Support
2018	Environmental Bond Bill	<p>\$2.4 billion bond bill with focus on climate change resiliency</p> <ul style="list-style-type: none">• Over \$200 million authorized for climate change adaptation• Codifies EO 569, including the MVP Program

Massachusetts State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)



Acknowledges that climate change is already worsening natural hazards, **integrating information and planning elements** for 14 natural hazards that affect the Commonwealth

Implementation

- *State*: Resilient MA Action Team (RMAT)
- *Local Partnerships*: Municipal Vulnerability Preparedness (MVP) Program

Municipal Vulnerability Preparedness (MVP) Program



State and Local Partnership



Financial and Technical Resources to Address Critical Municipal Needs:

12,000+ culverts and small bridges needing replacement

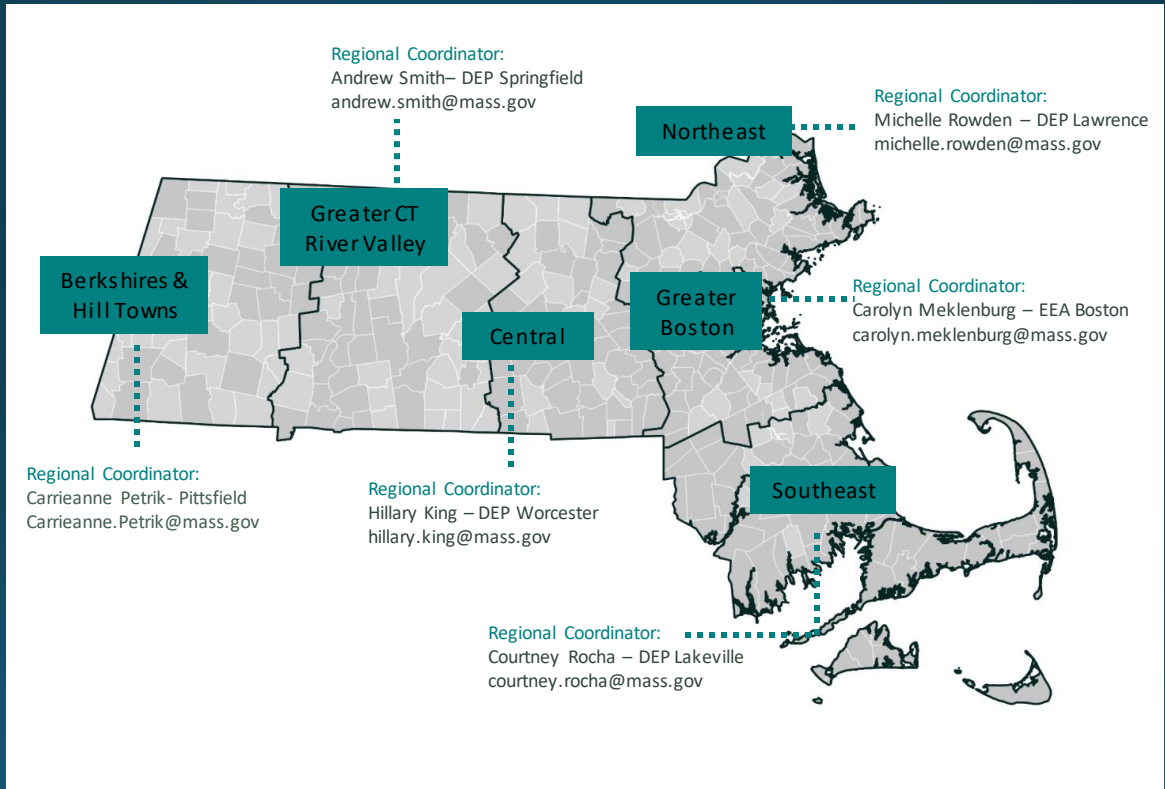
1,100 municipally-owned coastal structures

300 high-hazard dams

96% DHCD housing developments to see 5.4° increase in max temperature by 2070

MVP Regions

15



MVP Regional Coordinators...



Manage MVP Grants



Conduct Outreach + Education on MVP



Provide Technical Support



Work to Improve MVP Program

Three Years of MVP

MVP Designations

71% of the Commonwealth

249 communities

Action Grant Projects

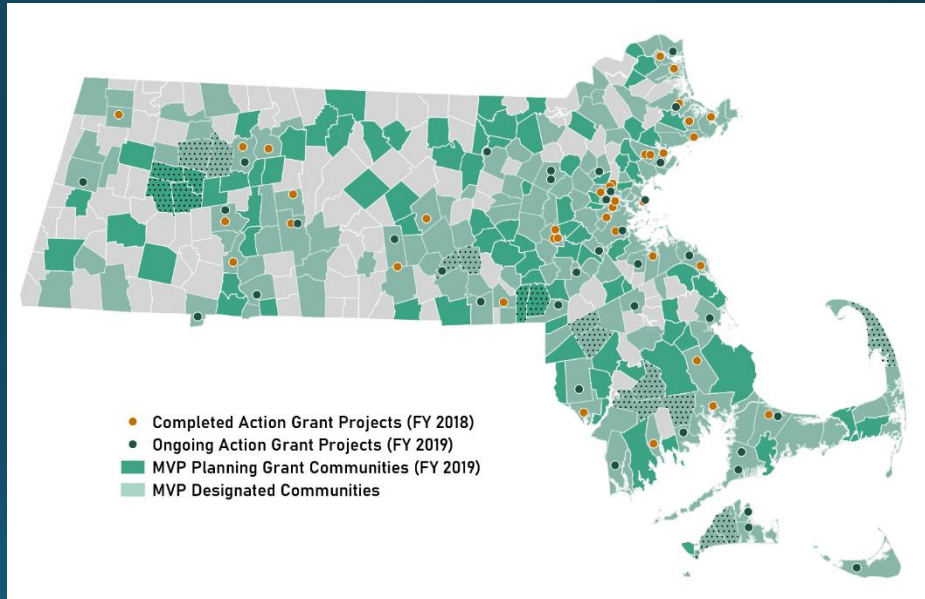
FY 18: 37

FY 19: 36

FY 20: TBA

Total Awards

\$17M+ in planning and
action grants to date



MVP Grants

18



MVP Planning Grant

- \$15,000- \$100,000 per plan
- Some expanded scopes
- *\$1M available*



MVP Action Grant

- Open to MVP communities
- \$25,000- \$2M per project
- 25% (non-state) match required
- *\$10M available annually*

MVP Principles

A community-led, accessible process that:

- Employs **local knowledge** and buy-in
- Utilizes **partnerships** and leverages existing efforts
- Reaches and responds to risks faced by **EJ communities and vulnerable populations**
- Is based in **best available climate projections** and data
- Incorporates principles of **nature-based solutions**
- Demonstrates **pilot potential** and is **proactive**



Outreach and Engagement

- Who
- Priorities
- Obstacles to Involvement
- Existing Partnerships
- Experienced Vendors



Be Creative!

Our Definition of Resiliency is Evolving

Climate change is felt amongst all populations, but it is most acutely felt within populations that have emitted the fewest GHG emissions

- Very young, by definition they have done the least
- Low Income
- Indigenous Communities, 80% of world's intact ecosystems are managed by indigenous communities
- Minority groups (as defined in the North American context)
- Differently-abled
- Incarcerated
- Queer community
- Unhoused

Yet, the data we have from the program does not indicate that these voices have been incorporated into planning projects

- Thousands of conversations have happened around the Commonwealth around the topic of Climate Change Mitigation and Adaptation...this is inherently good
- But we can bring in different voices

Municipal Staff Conducted
CRB Workshop

Heard specific concerns
from stakeholder about
barriers to participation

Town opted to hire this
stakeholder as a Community
Liaison

- Drove outreach process to people living in public housing
- Identified public housing residents who could serve as translators
- Arranged childcare and food for additional workshops

Town held two workshops
that reached beyond
“frequent flyer” participants

Resulted in fundamental
reappraisal of planning
process

- **Applied** for a FY 2020 Action Grant specifically designed to address equity

Not deliberate, but it
worked!!!

Nature Based Solutions



Low Impact Stormwater Design



Forest Management

Why nature-based?

Cost-effective

Protects water quality and quantity

Provides food and recreation opportunities

Reduces erosion

Minimizes temperature increases associated with developed areas and climate change

What are Nature-based Solutions?

Problems facing towns



Nature-based solutions

Open space preservation

Ecosystem restoration

Low Impact Development

Additional benefits



Infrastructure benefits

Nature-based solutions can save \$5 on every \$1 spent, increase property value by up to \$20, and create local jobs and capital inflows.



Societal benefits

Natural areas can reduce the likelihood of obesity by 40%, improve air and water, and draw people together to strengthen community ties.



Environmental benefits

Most natural systems rely on linkages with others. By prioritizing natural solutions, communities can provide restored links that augment biodiversity.



BUILDING CLIMATE RESILIENCE IN THE COMMONWEALTH

RESILIENCE

The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner.

=

MITIGATION

aims to reduce the causes of climate change

+

ADAPTATION

involves modifying our decisions, activities and ways of thinking to adjust to a changing climate



Definitions taken from the Massachusetts 2018 State Hazard Mitigation and Climate Adaptation Plan and Canada in a Changing Climate report (Adaptation.NRC.gc.ca)

Becoming MVP Certified

MVP Process

27

MVP Planning Grant

COMMUNITY RESILIENCE
BUILDING WORKSHOP(S)

Define and characterize hazards using latest science and data

Identify existing and future community vulnerabilities and strengths

Develop and prioritize community adaptation actions

Identify opportunities to take action

Conduct community engagement

Receive MVP designation



MVP Action Grant

Implement priority adaptation actions identified through planning process

Who's Involved?



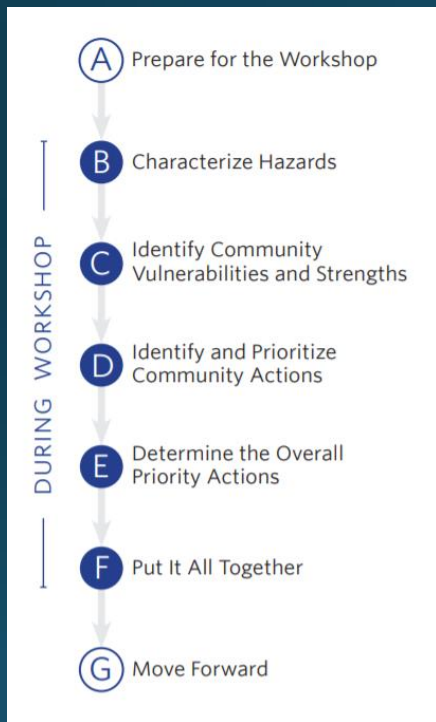
EEA (MVP Regional Coordinator)



Consultant



Community Resilience Building Workshop



Your Opportunity To:

- Gather stakeholders
- Start the climate conversation
- Brainstorm priority resilience actions for future funding

Stakeholder Mapping



CRB Risk Matrix

Community Resilience Building Workshop Risk Matrix

H-M-L: priority for action over the Short or Long term (and Ongoing)

V = Vulnerability S = Strength

Top 4 Hazards (tornado, floods, wildfire, hurricanes, snow/ice, drought, sea level rise, heat wave, etc.)

H - M - L priority for action over the Short or Long term (and Ongoing)				Coastal Flooding SLR/Storm Surge	Inland Flooding and Rain Events	Ice and Snow	Wind	Priority	Time
V = Vulnerability S = Strength								H - M - L	Short Long Ongoing
Features	Location	Ownership	V or S						
Societal									
Elderly Citizens (facilities)	Multiple	Private	V	Assess and identify vulnerabilities to determine residents needs during emergencies; Coordinate emergency planning efforts; Conduct routine evacuation drills				H	S
Neighborhood Cooperation	Town-wide	Private	V	Assist associations in identifying and conducting best practices to reduce risk; Advance a "Neighbor helping Neighbor" Program through Community Center training				H	S
Faith-based Organizations	Multiple	Private	V	Coordinate organizations in identifying and conducting best practices amongst members to reduce risk				H	S
Homeless Population	Town-wide	Town	V	Extreme weather flyers and communications about available services				M	S
Vulnerable Neighborhoods	South side	Town/Private	V	Identify level and location of vulnerable units; Develop longer term plan to reduce vulnerability				M	L
Coordinated Evacuation Plan	Town-wide	Town/State	V	Reconfigure evacuation routes; Update signage along critical routes				L	S
Sheltering Facility (upgrades)	Town/Region	Town/State	V	Conduct feasibility analysis for regional sheltering facility; Seek to construct over next 15 years.				L	L
Shelter Management Plan	Town-wide	Town	S	Review and update as needed on annual basis; More resources required (cots, shampoo, etc.)					Ongoing
Lower Household Expenses (flood insurance)	Town-wide	Town	S	Continue enrollment in FEMA Community Rating System (CRS); Reduced number flood insurance rate payers through volunteer buyouts/relocation					Ongoing
Volunteer Fire Department	Town-wide	Town	S	Continue support (well equipped and experienced) to further strengthen services - volunteer outreach					Ongoing

More examples of actions:

- Strengthen volunteer opportunities for residents
- Increase hazard awareness in high risk areas through education and outreach
- Foster a neighbor-helping-neighbor program across the community

When prioritizing, consider factors such as:

- Funding availability and terms
- Agreement on outstanding impacts from recent hazard events
- Necessity for advancing longer-term outcomes
- Contribution towards meeting existing local and/or regional planning objectives

Examples of urgency:

- A current regional sheltering and shared services agreement is an ongoing **(O)** action.
- A communication campaign on hazard impacts implemented in next six months is a short-term **(S)** action.
- Relocating affordable housing from high-hazard areas is a long-term **(L)** action.

Town of Wareham MVP Workshop Risk Matrix

Priority Level
H = High M = Medium L = Low
Time
S = Short L = Long O = Ongoing

★ = 7 TOP 5 ACTIONS

WOODS HOLE GROUP

Starbuck

Top Priority Hazards

1) Nor'easters 2) Hurricanes/Tropical Storms 3) High Winds 4) Flooding

Action Items

Hazards Addressed

Priority / Time

Infrastructure Features

Town Roadways (Onset Ave, County Rd)

Update asset management plan to enhance structural integrity of roadways + strengthen roadside vegetation management

A/B/C/D

H/M/L S/L/O

Bridges (e.g. Ferring Hill Bridge)

Adopt a bridge vulnerability assessment + traffic impact assessment

A/B/C/D

B/M/L S/L/O

★ Stormwater/Drainage System

Adopt a flood risk assessment to prioritize stormwater/drainage system improvements + enhance storm preparation protocol

A/B/C/D

H/M/L S/L/O

Tremont Dam / Wareham Dams

Identify stakeholders + conduct an environmental/surrounding water-bodies

A/B/C/D

H/M/L S/L/O

Societal Features

★ Evacuation Plan / Emergency Response Plan

Emergency Plan (especially with pop. program) / Establish an Emergency operations center (EOC)

A/B/C/D

H/M/L S/L/O

★ Shelter in Place / Vulnerable Populations

Shelter in place locations

A/B/C/D

B/M/L S/L/O

★ Public Transportation / School Accessibility

Public safety program to increase awareness of SAR + driver/student safety protocol

A/B/C/D

H/M/L S/L/O

Community Organizations (active groups NPOs, land conservation)

Coordinate with community groups to create a hazard mitigation education outreach program (ex. facilities tours, open houses, lectures at town events, meetings at schools)

A/B/C/D

H/M/L S/L/O

Environmental Features

Snow Removal

Implement a snow removal plan + establish a destination to avoid environmental impacts. Potential destination could be the wastewater treatment plant

A/B/C/D

H/M/L S/L/O

Onset Wells (Drinking Water)

Identify new locations for wells due to current saltwater intrusion issues

A/B/C/D

H/M/L S/L/O

Salt Marsh Conservation

Conserve adjacent uplands to prepare for salt marsh migration

A/B/C/D

H/M/L S/L/O

★ Beach Erosion

Create a beach nourishment plan for all beaches to expedite implementation

A/B/C/D

B/M/L S/L/O

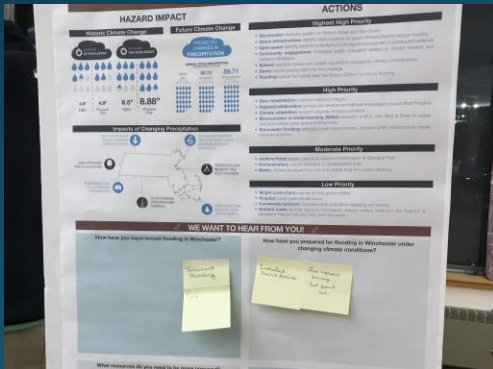
Develop action items based on each categorized feature

Public Listening Session

Opportunity to receive public feedback!



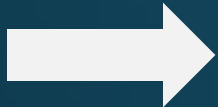
Return to your stakeholder map: who wasn't represented at your workshop?



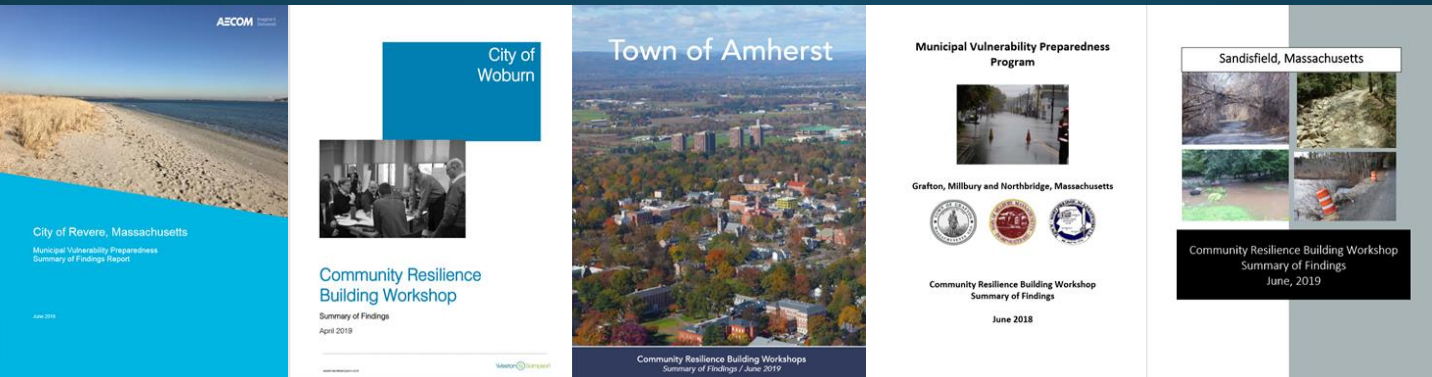
How can you reduce or eliminate barriers that would prevent residents from attending?

Consider multiple points of engagement

Summary of Findings



<https://www.mass.gov/info-details/municipal-vulnerability-preparedness-mvp-program-planning-reports>



MVP Planning Grant: Municipal Role

120-200 Hours of Staff Match Time To:



- Select MVP Vendor and Core Team
- Plan and Host CRB Workshop
 - Stakeholder outreach
 - Data gathering
 - Logistics
- Conduct Follow-up Outreach
 - Public listening session
- Communicate with EEA
 - Progress and spending reports
 - Summary of Findings
 - Yearly progress report

MVP Planning Grants: Provider Role

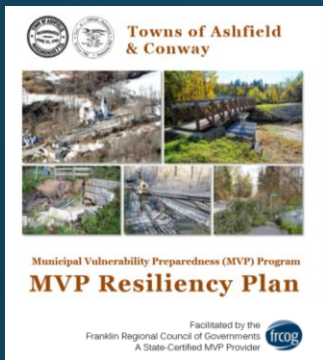
Certified MVP Providers will work with municipal project manager to:

- Select Core Team
- Scope the project
- Gather data and community information
- Plan for and Facilitate CRB Workshop
 - Basemaps
 - Climate data
 - Existing Plans
 - Risk Matrix
- Communicate with EEA



MVP Planning Process: Variations


Regional Planning



- Take advantage of regional partnerships
- Towns/cities increase capacity by working together
- More voices and perspectives = comprehensive outcome

Expanded Scope

- Translational services or other targeted outreach
- Childcare services during meetings/workshops
- Additional listening sessions



GO GREEN | Medford

A Program of the City of Medford, MA

Childcare provided onsite by the Medford Family Network. Snacks will be served.

Interpretation is being arranged for Haitian/Creole.

To request other languages, contact Alicia Hunt at: ahunt@medford-ma.gov | 781-393-2137

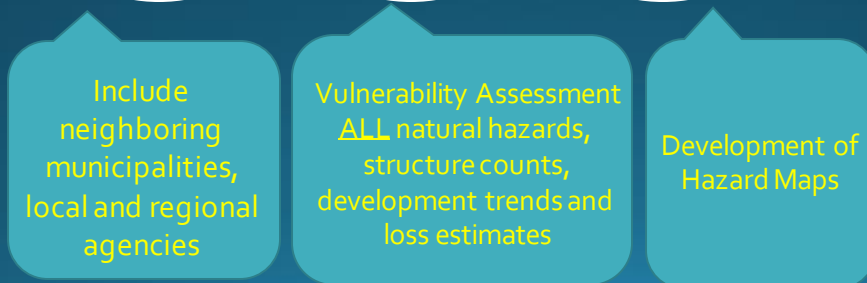
For accommodations call 781-393-2137. TTY: (781) 393-2516.

MVP and Hazard Mitigation Integrated Plans

MVP



HMP



Climate Data and Projections



resilient **MA**

Climate Change Clearinghouse for the Commonwealth

Explore
Sectors

Identify
Changes

Take
Action

Maps

Data

Documents

Search for resources...

QSearch

Providing the most up-to-date climate change science and decision-support tools for the Commonwealth. [More »](#)

Climate Change Data

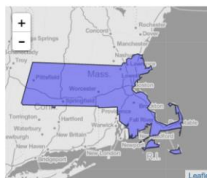
The Baker-Polito Administration is investing in the best science and data to understand how the climate is projected to change and to allow Massachusetts to plan and adapt for the future.

[More »](#)

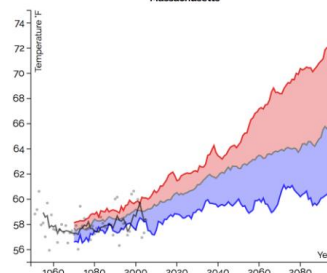
State:

Calculated Variable:

Season:



Annual Maximum Temperature
Massachusetts



Download Data

Observed

5-yr Mean
Max
Median
Min

Modeled °F

Changes from
1971-2000 for:

2020 - 2049 3.83°F
2040 - 2069 5.02°F
2060 - 2089 6.14°F
2080 - 2097 6.84°F

11

1

2

3

4

5

Climate Data

NOAA Regional Climate Center

<http://scacis.rcc-acis.org/>

Maximum 3-Day Mean Max Temperature for WESTFIELD BARNES MUNICIPAL AP, MA

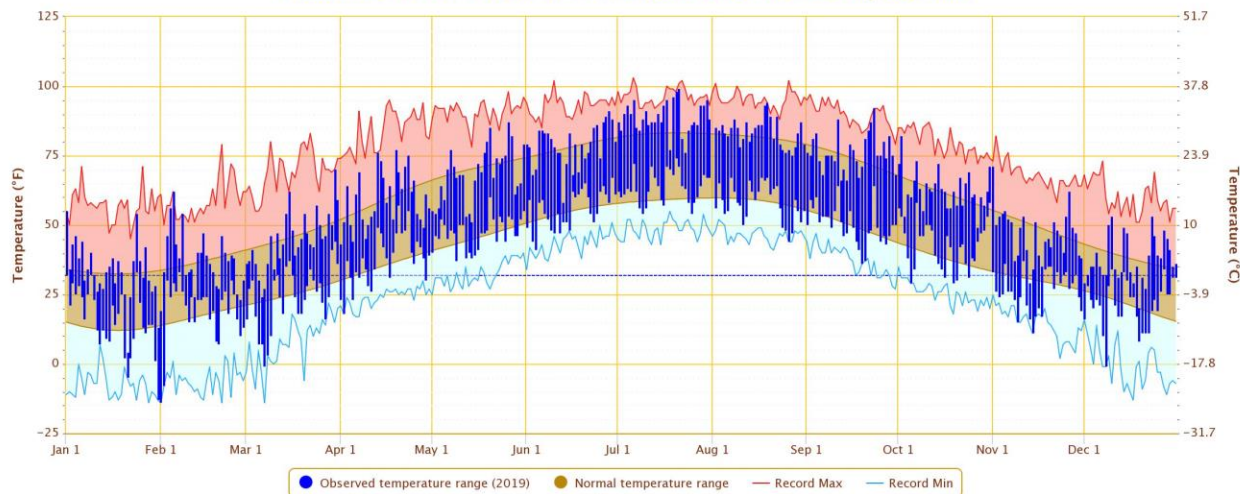
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	100.7	2011-07-23	0
2	100.3	2010-07-07	0
3	99.3	1948-08-28	0
4	99.0	2011-07-22	0
5	98.3	2010-07-06	0
-	98.3	1948-08-27	0
7	98.0	2010-07-08	0
-	98.0	2006-08-03	0
9	97.7	2019-07-21	0
-	97.7	2012-07-18	0

Period of record: 1948-06-01 to 2020-01-07

Daily Temperature Data – WESTFIELD BARNES MUNICIPAL AP, MA

Period of Record – 1948-06-01 to 2020-01-07. Normals period: 1981–2010. Click and drag to zoom chart.



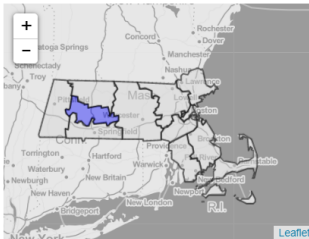
Climate Projections

County ▼ Hampshire County, MA ▼

Calculated Variable:

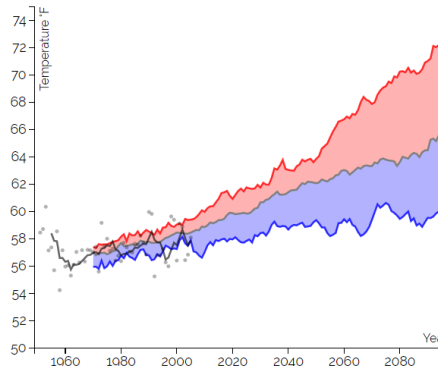
Maximum Temperature ▼

Season: Annual ▼



Add Chart

Annual Maximum Temperature
Hampshire County, MA



Download Data

Observed

5-yr Mean

Modeled °F

Max
Median
Min

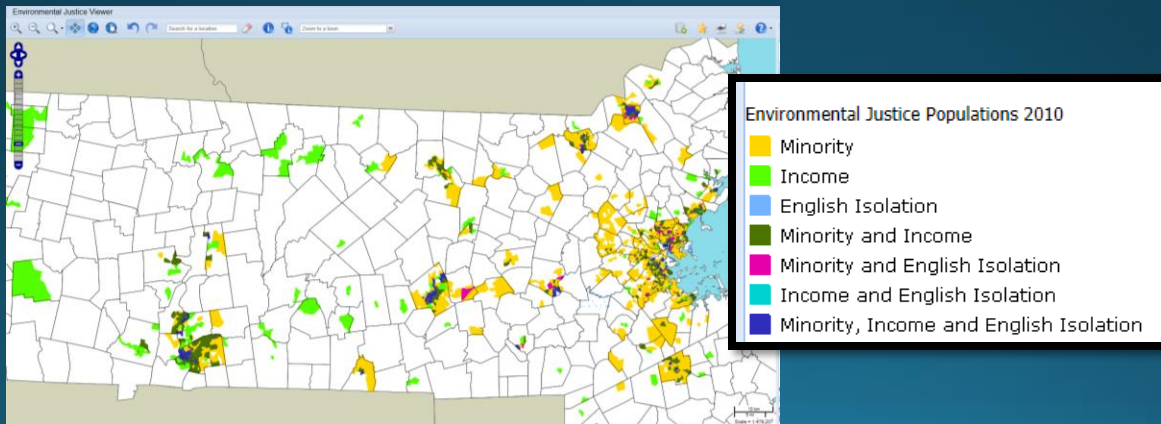
Changes from
1971-2000 for:

2020 -	3.90°F
2049	
2040 -	5.08°F
2069	
2060 -	6.37°F
2089	
2080 -	7.13°F
2097	

About the Source
Data

Social Data

- [Massachusetts Environmental Justice Mapper](#)
- [US Census Bureau / American FactFinder](#)
- [Massachusetts Environmental Public Health Tracking](#)
- Regional Planning Agency (RPA)



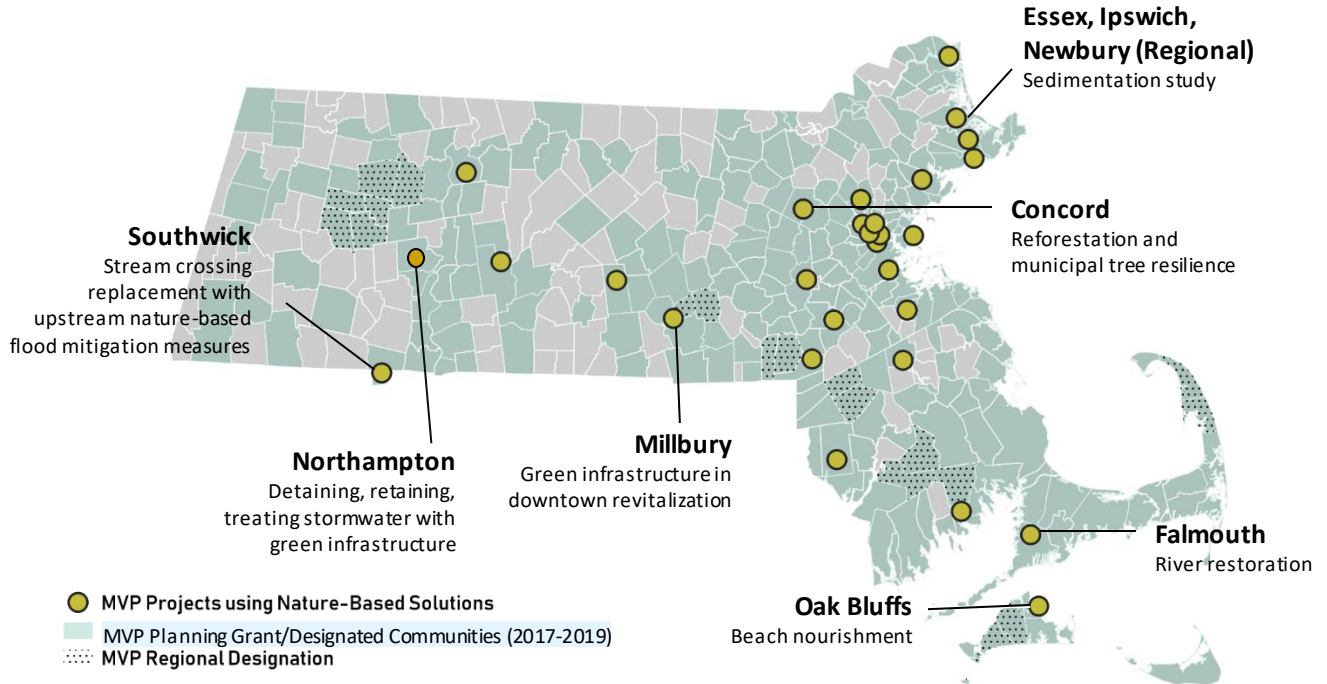
What's Next?

MVP Action Grants

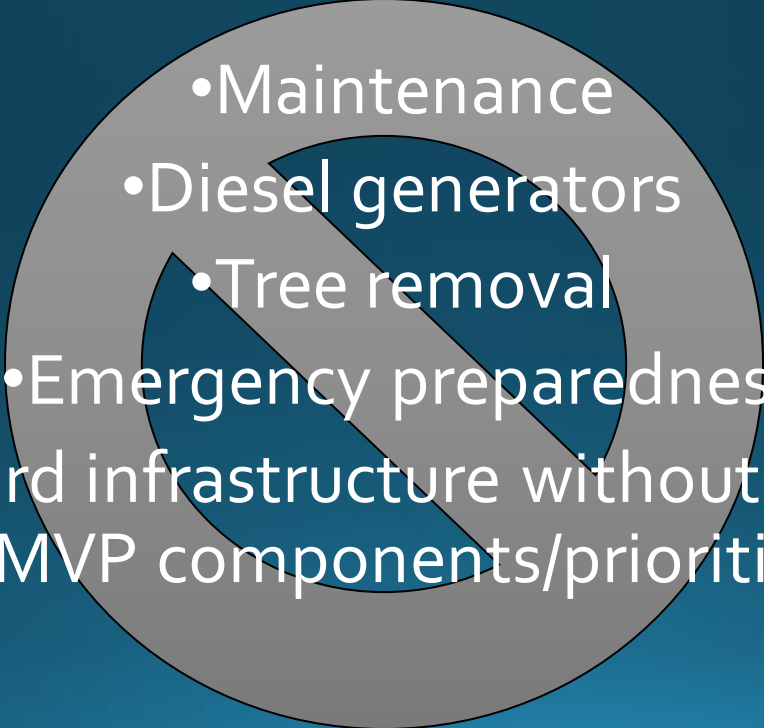
MVP Action Grant Project Types

- 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
 - Nature-Based Solutions to Reduce Vulnerability to Other Climate Change Impacts
 - Ecological Restoration and Habitat Management to Increase Resiliency
- Energy Resilience
 - Chemical Safety
 - Land Acquisition for Resilience
 - Subsidized Low-Income Housing Resilience Strategies
 - Mosquito Control Districts

Nature-Based Solutions



Projects that are NOT MVP-competitive:

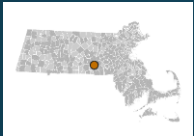
- 
- Maintenance
 - Diesel generators
 - Tree removal
 - Emergency preparedness
 - Hard infrastructure without core MVP components/priorities

Example Action Grant Projects

Nature-Based Flood Protection, Drought Prevention, Water Quality, and Water Infiltration Techniques

48

Millbury



Utilizing **green infrastructure** like stormwater planters, bioretention bump outs, rain gardens, and other measures like porous pavers and pervious pavement **to reduce heat island effects and stormwater runoff** into the Blackstone River.

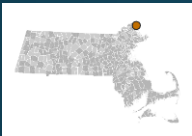
Nature-Based
Solution



Example Action Grant Projects

Redesigns and Retrofits

Salisbury



Increasing the resilience of the neighborhood of Ring's Island by **raising its access/egress roads** and by improving tidal flushing through **culvert replacements**

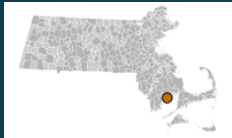


Proactive

Example Action Grant Projects

Land Acquisition for Resilience

Mattapoisett



Purchasing 120 acres of forest, streams, freshwater wetlands and coastal salt marsh as conservation land to prevent development in vulnerable areas

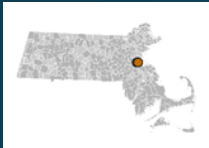


Proactive Approach

Example Action Grant Projects

Local Bylaws, Ordinances, Plans, and Other Management Measures

Boston



Developing its first ever resilient design guidelines for new buildings so that development in the future floodplain is prepared for at least three feet of sea level rise, the likely scenario by late century



Proactive

Pilot Potential

OFFERED BY [Executive Office of Energy and Environmental Affairs](#)

Municipal Vulnerability Preparedness Program Action Grant Projects

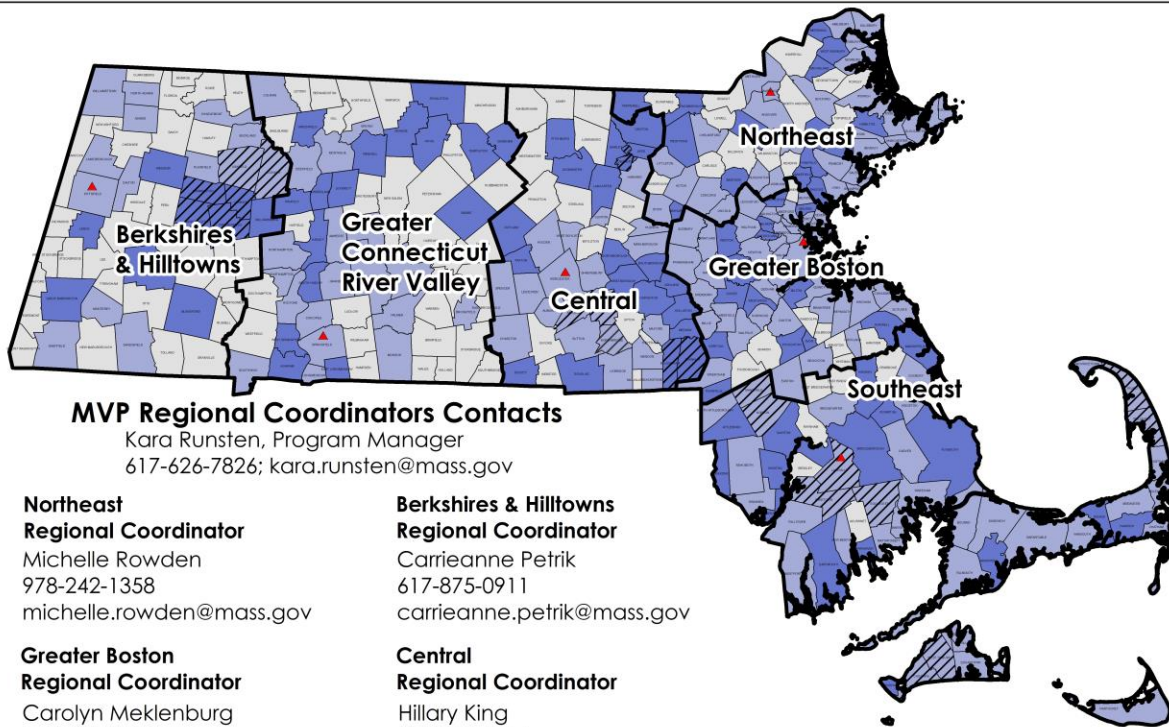
Find a summary of all FY18 action grant projects as well as detailed deliverables below.

[FY18 MVP Action Grant Summary](#)

TABLE OF CONTENTS

- ▼ [Adams](#)
- ▼ [Arlington](#)
- ▼ [Belchertown](#)
- ▼ [Boston](#)
- ▼ [Brookline](#)
- ▼ [Cambridge](#)

To view more examples of MVP Acton Grant Projects:
<https://www.mass.gov/info-details/municipal-vulnerability-preparedness-program-action-grant-projects>



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- ▲ Office Locations
- MVP Designated Communities
- NEW MVP Planning Grant Recipients (FY19)
- ▨ Regional Partnerships

Updated 12-16-2019





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<https://www.mass.gov/municipal-vulnerability-preparedness-program>

