

## MUNICIPAL VULNERABILITY PREPARDNESS PROGRAM

COMMUNITY RESILIENCE BUILDING WORKSHOP

Summary of Findings

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#### 1. OVERVIEW

The City of Leominster, Massachusetts (City) is a community committed to proactively responding to and planning for hazards and vulnerabilities associated with severe weather events and climate change. Extreme temperatures, high intensity storms, flooding, and other natural hazards are creating an increasing level of concern for community leaders and residents alike. While the City has been proactive in preparing for natural hazards and emergency situations, improving resiliency and identifying adaptation measures to respond to future events is a continuous process and one that has the City's full commitment.

The frequency and intensity of severe storms are projected to continue to increase over time due to climate change. Resilient MA, in partnership with the Northeast Climate Science Center, works to provide climate change science and decision-supported tools to identify the weather-related impacts of climate change in Massachusetts. Projections from Resilient MA and the Northeast Climate Science Center project a rise in annual total precipitation, temperature, and days with extreme temperatures for Worcester County as shown in the PowerPoint in Appendix C. In recent years, climate-related hazards have occurred more frequently which has highlighted how the City's current infrastructural, societal, and environmental features are vulnerable to climate change. Aging infrastructure was not designed to handle storm events of high magnitude and frequency. Underserved communities within Leominster are directly impacted to the extreme temperatures occurring more frequently than ever before. Limited environmental resources cannot combat the impacts of climate change on the surrounding environment.

Some recent severe storm events that have impacted the City and highlighted the impacts of severe weather events include:

- Winter Storm Juno, January 2015 Large blizzard generating approximately 30-inches of snow and high winds. The Governor of Massachusetts declared a state of emergency and travel ban. The storm resulted in damages to several homes and businesses and resulted in significant financial costs to the City in terms of storm cleanup.
- August 2018 Flooding Approximately 2.6 inches of rain fell over less than three hours according to various reports. The short duration of the event coupled with the intensity of the rainfall caused flooding throughout the City. This storm event is indicative of increased rainfall intensity and frequency of events as projected by Resilient MA and the Northeast Climate Science Center and presented in Appendix C.

In 2019, the City applied for and received a Municipal Vulnerability Preparedness (MVP) Planning Grant from the Massachusetts Executive Office of Energy and Environmental Affairs. The MVP Planning Grant Program was designed to provide support for communities to plan for climate change resiliency by identifying natural hazards impacting the community and implementing priority actions to reduce the risks of these events. Upon completion of the MVP planning program, Leominster will become a designated MVP Community and become eligible to apply for MVP Action Grant funding to implement priority actions identified as part of this planning effort. In December 2019, Leominster held a Community Resilience Building (CRB) Workshop, which is a requirement for becoming a designated MVP community. This report serves as the Summary of Findings for the MVP planning process including the MVP kickoff meeting, the CRB Workshop, and the subsequent listening session.

#### 1.1 Community Resilience Building Workshop Steering Committee

The first step in the MVP planning process is to select a Steering Committee that represents a variety of key stakeholders in the community to lead the CRB Workshop. Leominster's Steering Committee included the following individuals from their respective City Departments:

- Wendy Wiiks, Grant Administrator
- Raymond Racine, DPW Director

- Michelle Nadeau, Administrative Assistant to the Mayor
- John Roseberry, City Engineer



- Roger Brooks, City Business Manager
- Christopher Knuth, Health Director
- Robert Sideleau, Fire Chief
- Angela Chebuske, Conservation Agent

#### 1.2 Kickoff Meeting

- Nikki Peters, Economic Development Coordinator
- James LeBlanc, EMA Director
- James Reilly, Assistant Superintendent

The Steering Committee held an initial project kickoff meeting, with MVP Certified Provider Woodard & Curran, on October 4, 2019 to discuss the overall MVP planning process and start planning for the CRB Workshop. During the kickoff meeting, roles and responsibilities of the Steering Committee were reviewed, the date of the CRB Workshop was identified, and specific action items associated with planning for and delivering the workshop were assigned.

#### 1.3 CRB Workshop

The City's CRB Workshop was held on December 11, 2019 at the Leominster Emergency Management Building located at 37 Carter Street. The Steering Committee, with support from Woodard & Curran, worked together to develop an agenda that was both informative, engaging, and aligned with the objectives of the Workshop. The objectives of the Workshop were to:

- Define top local natural and climate related hazards impacting the City,
- Identify existing and future community vulnerabilities and strengths,



- Develop and prioritize actions for the community and broader stakeholder networks, and
- Identify opportunities for the community to advance actions to reduce risks and build resilience.

#### 1.3.1 Attendees

More than 40 participants attended the eight-hour Workshop, including Mayor Dean Mazzarella and Hillary King, the MVP Central Regional Coordinator from the Massachusetts Executive Office of Energy and Environmental Affairs (MA EOEEA). The participants, which included a variety of residents, community leaders, and City staff helped identify Leominster's vulnerabilities and strengths from an infrastructural, societal, and environmental perspective. Sign in sheets for the kickoff meeting and CRB Workshop have been included in Appendix A Community Resilience Building Workshop.



#### 1.3.2 Guest Speakers

Prior to identifying priority actions or potential mitigation measures, three presenters spoke to the attendees about the MVP program and encouraged dialogue about topics that would be discussed later in the day in the smaller group exercises. The following is a list of the presenters and the topics that were discussed:

- City of Leominster (Mayor Dean Mazzarella): Welcome/Opening Remarks
- Woodard & Curran (Mary House and Kendra Dow): Background information on the MVP Workshop Process and the City
- City of Leominster (Wendy Wiiks): Best Practices in Planning for the Future (Highlights of the 1997 Planning Charette Process)
- MA EOEEA (Hillary King): Municipal Vulnerability Preparedness program overview including examples of priority actions and projects from other communities that were previously funded.

#### 1.4 Public Listening Session

Upon completion of the CRB Workshop, the City held a Public Listening Session on February 12, 2020. The purpose of the Public Listening Session was to provide a summary of the Workshop results to Workshop participants and other stakeholders who may not have been able to attend the CRB Workshop. During the listening session seventeen (17) participants were presented with the findings from the CRB Workshop and were given an opportunity to provide feedback to be included in this report. For more information on the Listening Session, including feedback received from attendees, please see Appendix D.





#### 2. SUMMARY OF FINDINGS

The purpose of the Summary of Findings is to summarize the CRB Workshop and provide information that the City can leverage for resiliency planning efforts as well as identifying adaptation and priority actions that aim to reduce vulnerabilities and reinforce areas of strength in the community.

At the beginning of the CRB Workshop, participants were asked to think about and write down (see photo below) answers to the following questions:

- 1. What are Leominster's biggest challenges? (infrastructure, societal, environment)
- 2. What are your goals for the day and what do you hope to gain from your participation in the Workshop?

Biggest Challenges - Storm water management - Flood chicitional (i.e. Stan X-the city, chanical Monoosnoc ete Port wires? Occu 3); + underg IL Pr Electric ieroc : Fires Route Cromingter's 15100 + their plaling of In key roads lity TO SURVICE A 10t. Witten 0 / toe storm PAGGEST CHALLENGES? I SONT KNOW ENOUGH ABOUT THE WHOLE CITY TO ANSWER, 2 BUT I MOVED HERE & YEARS AGO AND HOUP MU About WATER QUALITY HAS BEEN A CONSTANT monstru minuser more I WAS ALSO SURPRISED TO SEE Sub d.U com PROBLEM. TOWN WAS READY TO SETLOUT THAT THE a SLOTS-MACHINE CASIND WHEN WE hassard Doms to TLADE -TO A manoosn TO HAVE SO MUCH POTENTIAL TO REVITALIZE. SEEM destribution Sy WOV 100 dismant onard of under MRM Keominister foals willude due lopiz an undertailing OF OUT MO Guoad pictare that weludes ward picture the challenge city can con-Ry Sower RESERVOIR

Answers received from participants are summarized in Table 2-1



Table 2-1:         CRB Workshop Participant Reflection Summary								
What are Leominster's biggest challenges?								
<ul> <li>Providing severe weather-related information to residents who don't speak English.</li> <li>How to get the word out about severe weather and climate change challenges and to help the community at large to gain more knowledge.</li> <li>Burrage Avenue, Carter Street, Barrett Park, Pierce Pond Flooding.</li> <li>Traffic.</li> <li>Sidewalk snow removal.</li> <li>River and streambed erosion.</li> <li>Older and leaking sewer lines and aging infrastructure.</li> <li>Undersized drainage culverts and lines.</li> <li>Infrastructure – roads.</li> <li>Epidemic/Plague.</li> <li>Inflow and infiltration of sewer.</li> <li>Lack of capacity to handle extreme weather events.</li> </ul>	<ul> <li>Ongoing impact to water quality and potential impact of Route 2 stormwater.</li> <li>Riverbank stabilization.</li> <li>Dam upgrades.</li> <li>Adequate capital funding.</li> <li>Solid waste disposal and recycling.</li> <li>Public apathy.</li> <li>Locations of tree plantings.</li> <li>Power outages (vulnerable populations).</li> <li>Means to find funding for Gateway City and low-income communities.</li> <li>Addressing climate change beyond just MVP.</li> <li>Development in flood prone areas.</li> <li>Climate refugees (increased housing needs)</li> <li>Flooding impacts at intersections.</li> <li>Keeping up with the rapid development in the City with making sure environmental regulations are maintained.</li> <li>Funding.</li> <li>Response to extreme power loss.</li> </ul>							
<ul> <li>What are your goals for the day and what do you hop</li> <li>Understand challenges and what is being planned or done.</li> <li>Give input to City of possible solutions to emergency management related challenges.</li> <li>Gain an understanding and different perspectives of the variety of challenges the City faces.</li> <li>Identify opportunities to promote and highlight nature-based solutions.</li> <li>Preparing residents and the City to handle dealing with extreme weather (flooding, drought, snowstorms, etc.).</li> <li>Learn about new ideas to achieve MVP.</li> <li>See the MVP Program in action.</li> <li>Community education.</li> </ul>	<ul> <li>e to gain from your participation in the workshop?</li> <li>Learn from experts in this field.</li> <li>See a longer-term plan come into focus.</li> <li>Establish plan with specific measures to address each type of challenge.</li> <li>Learn more about the MVP program.</li> <li>Protect school department staff and infrastructure.</li> <li>Learn how schools can become more environmentally responsible and supportive of community needs moving forward.</li> <li>Fuller understanding of the strengths and weaknesses of the City.</li> <li>Knowledge to help lessen community's impact on environment.</li> <li>Strategies for resident actions.</li> </ul>							

#### Table 2-1: CRB Workshop Participant Reflection Summary



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#### 2.1 CRB Workshop Groups

Participants in the CRB Workshop were separated into seven groups, consisting of approximately six people each. The groups were organized to have participants with varying backgrounds to ensure that differing points of view would be shared. These groups were asked to work together to define and characterize the top natural hazards faced by the City and fill out the CRB Risk Matrix.

#### 2.2 CRB Risk Matrix

Each workshop participant worked with their group to identify natural hazards, vulnerabilities, and strengths

of the City and compile them on the CRB Risk Matrix (see Appendix B). The vulnerabilities and strengths were divided into one of three categories including infrastructural, societal, and environmental. The participants identified which actions, or projects, were considered high, medium, or low priority to aid in the project planning process. A blank CRB Risk Matrix can be found in Appendix B.

#### 2.3 Top Natural Hazards & Climate Change Impacts

Prior to starting the group discussions, participants listened to two presentations which included background information about the community relevant to the workshop goals. Wendy Wiiks, City of Leominster Grant Administrator, also presented to the workshop about the 1997 City of Leominster Charette and its planning impact on the community.

The background information presented at the workshop included information from the Montachusett Region Natural Hazard Mitigation Plan 2015 Update where natural hazards to the region, and Leominster specifically, were studied in detail. To further leverage this previous planning effort, workshop participants learned that the following hazards were identified as impacting the community during the hazard mitigation planning (HMP) process:



- Heavy rain
- Heavy snow
- Snow melt
- Nor'easters
- Severe thunderstorms
- High winds
- Hurricanes
- Tornadoes
- Ice storms
- Blizzards
- Fires
- Drought
- Extreme temperatures
- Landslides
- Dam failure
- Earthquakes
- Beavers
- Ice jams



The top hazards affecting the community listed above are related to severe weather patterns and changes in climate. Changes in precipitation, rising temperatures, and extreme weather appear to be a result of rising temperatures and a shift in climate patterns. These shifts in climate patterns not only create more frequent and severe storm events, but also impact the public drinking water supply, public health and human safety, and our environmental resources.

Lack of groundwater recharge, extreme heat, and drought has an impact on the quantity of drinking water available for public consumption, while increased severe storm events and runoff impacts the quality of the drinking water the City utilizes from reservoirs. Worsened air quality, vector-borne diseases from stagnant water, extreme temperatures, and loss of evacuation routes during large storm events all impact public health and human safety. Environmental resources are impacted through the shifting in seasons, drying of streams and wetlands, and eutrophication of lakes and ponds all occurring as a result of climate change.

Upon completion of these presentations, participants were asked to work with members of their groups to define and characterize the top natural hazards faced by Leominster as described in Section 2.3. A common theme discussed amongst the groups is how the hazards appear to be correlated to changes in observed climate. The natural hazards of most concern to participants at the CRB Workshop include:

- Flooding
- Snowstorms & Nor'easters
- Severe & intense storms
- Extreme temperatures
- Wind
- Drought
- Vulnerable Areas in the Community

During the CRB process, various vulnerabilities to natural hazards were identified by participants. These vulnerabilities include:

- **Neighborhoods:** Boyle Place, Burrage Avenue, Carter Street, Commercial Road, Lake View Drive, Pleasant Street, Washington Square, Whitney Field Mall
- Ecosystems: Barrett Park, Colburn Pond Dam, Monoosnoc Brook, Nashua River, Pierce Pond Dam
- **Transportation:** Leominster Connector (Route 2)
- Infrastructure: Culverts, Dams, Drainage System, Water/Sewer Infrastructure

#### 2.4 Challenges and Concerns Presented by Natural Hazards

The vulnerabilities the City faces from natural hazards will continue to be present until the City can begin implementing action items generated from the CRB process and other recent planning efforts. At the CRB Workshop, concerns were identified by each of the groups including flooding, water supply protection, erosion, tree and forest management, and social vulnerabilities. These concerns are described in more detail below.

#### 2.4.1 Flooding

Flooding concerns were a major focus throughout the MVP planning process for the City as several locations throughout the City have been identified by residents and City officials as high-risk areas. Despite having several high-risk areas identified, flooding is considered to be a city-wide issue. The high cost of implementation and maintenance remains an important obstacle for the City while addressing flooding concerns.



The City's drainage system, consisting of pipes, catch basins, manholes, and culverts, is a vulnerability and hazard for the City. During storm events, the drainage system can become overwhelmed causing flooding at the street level. Flooding has been observed during both long duration, low intensity and short duration, high intensity storms, in addition to during snow melt. The City recognizes that much of the drainage system may be undersized due to the age of the system and with time the system may become less capable of handling stormwater as storms become more intense. In addition to the drainage system and culverts, flooding around dams were another area of concern identified by the community in the 2015 Hazard Mitigation Report.

#### 2.4.2 Water Supply Protection

Leominster supplies approximately 90% of the City's residents and businesses with drinking water. Water transmission mains provide water from seven surface reservoirs, which are treated at surface water treatment plants, and three groundwater wells which receive chemical addition prior to distribution to consumers. Supplemental drinking water is purchased from the Massachusetts Water Resource Authority's (MWRA's) Wachusett Reservoir by the City to ensure residents are provided with a sufficient quantity of drinking water. The average daily demand in the City is approximately 3.6 million gallons per day.

Changes in intensity, severity, duration and timing of heavy rain and other weather events along with air and water temperature fluctuations can compromise water supplies and impact raw water quality. Increased rainfalls and events like the historic 2008 ice-storms can lead to an increase in the total organic carbon and turbidity in the raw water which has an impact on the effectiveness and efficiency of the City's treatment plants. Land acquisitions for the purpose of water supply protection will help the City maintain high quality source water by limiting development and minimizing sources of contamination. In addition, improvements to the City's treatment facilities will allow the City to better handle changing raw water quality, and upgrades to the City's distribution storage facilities (water storage tanks) will allow the City to maintain pressure, fire flow capacity, and domestic service during source water interruptions. By increasing the reliability and redundancy of the City's drinking water supply, treatment and distribution system, the City could rely less on the MWRA supply for supplemental drinking water.

#### 2.4.3 Water Quality

Protecting the quality of the City's natural resources, including the streams and rivers which wind through the City, requires properly collecting and treating wastewater. The City has led an effort in removing illicit connections, or instances where sewage is inadvertently discharged into a storm drainage pipe rather than a sewer pipe. Aging sewer infrastructure often leaks (inflow & infiltration) or is impacted by high groundwater. By targeting improvements and rehabilitation of the City's sewer collection system and identifying locations of illicit connections and discharges, less contamination is expected to the City's waterbodies. In addition, the City's Health Department works to ensure residential septic systems in Leominster are properly constructed and operating in accordance with established practices which also helps to protect the groundwater.

#### 2.4.4 Erosion

Erosion along waterways that pass-through the City has become increasingly common due to an apparent increase in storm events and runoff. Most notably, the banks of the Nashua River along the Leominster Connector and a retaining wall along Monoosnoc Brook in Downtown Leominster have recently shown signs of severe erosion that threatens municipal infrastructure. Bank failure due to erosion could have negative impacts throughout the community including loss of property or damage to infrastructure. Therefore, preventative and proactive measures, such as streambank stabilization to areas where erosion is observed or the potential for erosion exists, were identified as a priority to the City to address short term concerns.

While streambank stabilization will provide a solution to the erosion issues in the short term, long term planning around is critical to maintaining the health and function of the streambanks. Most notably, the Monoosnoc Brook was identified during the CRB as being a high priority area with severe erosion issues. Thus, the City understands that private



developments as well as public infrastructure improvements within the Monoosnoc Brook Watershed should incorporate feedback from all stakeholders to ensure achieve the overarching goal of maintaining the integrity of the Brook.

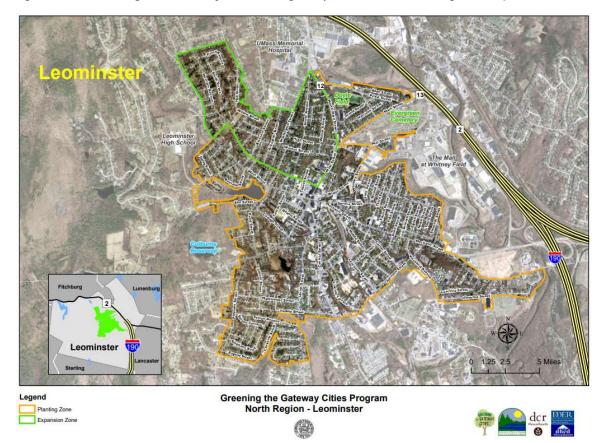
#### 2.4.5 Tree and Forest Management

Trees are an important asset to Leominster as the City is participating in the *Greening the Gateway Cities Program* (*GGCP*) which benefits communities by replenishing and supporting a dense tree canopy. With a dense canopy of trees, maintenance is crucial to ensure the trees do not negatively impact infrastructure. In an urban setting, maintenance is important to prevent power line failures during Nor'easters and strong wind events. In urban environments, a strong and healthy tree canopy provides the following benefits:

- Improving social environments,
- Reducing energy consumption,
- Increasing property values,
- Decreasing air pollution and greenhouse gas emissions, and
- Improving stormwater management and runoff.

**Figure 1** illustrates the areas of the City which are being focused on for tree planting through the GGCP. According to the GGCP, "studies show that tree canopy brings the greatest benefits when established over an entire neighborhood area, by lowering wind speeds and reducing summertime air temperature, in addition to the benefits of direct shading. It is estimates that every 1% increase in tree canopy above a minimum 10% canopy cover brings a 1.9% reduction in energy needs for cooling and up to a 1.1% reduction in energy for heating. All households in a neighborhood benefit, not just the ones with tress directly adjacent." The planting zone criteria includes those that have a low tree canopy, older housing stock, high wind speeds, and a large renter population.





#### Figure 1: Greening the Gateway Cities Program | Leominster Planting and Expansion Zones

The City has been selectively removing trees that have been identified as detrimental to the surrounding areas. Specifically, this includes trees with roots that spread horizontally, which cause damage to surrounding sidewalks and infrastructure. The City has been working to choose specific species of plants with roots which grow in a vertical direction as replacements for existing trees that were to be removed. By making educated decisions on tree plantings and maintenance in the urban environment, the City can maintain the benefits of trees while minimizing the negative impacts and costs trees may have on surrounding infrastructure.

The western portion of the City is largely comprised of forest and conservation land. The maintenance of trees and forest is important to maintain access to trails during emergencies. Keeping trails open and accessible, specifically the fire road system, provides access for emergency services such as ambulances, fire apparatus, or police vehicles. Maintaining this access during emergencies is crucial in keeping the community safe.

Continuing to focus on, support, and increase resources for the City's tree planting and maintenance program will result in multiple benefits for the City including more tree canopy, emergency access on trail routes, new contributors to stormwater management, health benefits for residents and businesses, and an increase in property values.

#### 2.4.6 Social Vulnerabilities

Social vulnerabilities were discussed at the CRB workshop, specifically the ability of the City to engage and connect with residents from a wide range of backgrounds. In particular, groups noted that residents who are disproportionally vulnerable to climate change stressors and natural hazards include individuals under 5 years old and over 65 years old, environmental justice populations, residents with limited English speaking ability, low to no income residents, people living with health challenges and disabilities, and minorities. The City has a large Hispanic and Brazilian



population which provides diversity in cultures and languages. Additionally, the City has a large elderly population. Not all residents are equally or properly prepared for natural hazards due to circumstances not necessarily in their control. Strong neighborhoods, cultures, and engagement can reduce risk from social isolation and link residents to resources and information regarding climate change impacts and emergency situations.

#### 2.5 Current Strengths and Assets

After identifying the challenges posed by Natural Hazards, the City's strengths and assets were defined by each of the seven groups. The participants determined that the City has five major strengths that other communities do not typically have. The participants saw the value in continuing to support the following strengths:

- Strong Emergency Management System: The City has robust Emergency Management Services that are
  effective at responding to emergencies in a timely and efficient manner. The Emergency Management
  Services throughout the City are capable of providing shelter to the underprivileged during severe weather
  events or in times of need and is prepared to create shelters for a large number of residents in Schools across
  the City, if needed. The City maintains a reverse 911 and communication system which is used efficiently and
  effectively during emergency events. Fire, Hospital, and Police provide support to the community during
  emergency and non-emergency events.
- Proactive Department of Public Works (DPW): The City has a strong DPW including an effective Municipal Separate Sewer Storm System (MS4) program and is effective at the utilization of technical resources such as Geographic Information System (GIS) mapping of the City infrastructure. This GIS mapping allows the City to inventory and identify its assets.
- Open Space Areas: Existing open space and protected watershed areas, environmental resources and urban street trees add value to the City including (but not limited to):
  - o Barrett Park
  - o Doyle Community Park and Center
  - Johnny Appleseed State Park
  - o Leominster State Forest
  - Nashua Valley Conservation Area
  - Prospect Park
- Successful Interdepartmental Coordination: The City's Departments (DPW, Health, Conservation, Planning, Emergency Services, Mayor's Office, Police, Fire, etc.) work effectively together through open lines of communication. This level of coordination and communication allows the City to operate efficiently during emergency and non-emergency events.
- Inclusive Population: The City has a versatile community which includes the youth, elderly, and minority population. These community members provide the City with differing needs and points of view which allows the City to become more inclusive and diverse to all populations.



#### 3. RECOMMENDATIONS TO IMPROVE LEOMINSTER'S RESILIENCY TO TOP NATURAL HAZARDS

Participants at the CRB worked with their individual groups to consider and discuss the natural hazards, vulnerabilities, strengths, and potential actions to improve the overall resiliency of City. Each group developed their own list of action items which was recorded on the CRB Risk Matrix board. At the end of the CRB Workshop, each group presented their findings on the top three key actions the City should focus on based on their discussion. Each attendee was given three dots and asked to use those dots to identify of the top three actions identified by each of the seven groups, which are the most critical or important.

Below is a list of the priorities which received the highest number of votes at Leominster's CRB Workshop. Please note that some of the actions identified by groups, including improved communications and databases, culvert evaluation and upgrades, and updated emergency evacuation plans were similar and were therefore combined into one action following the workshop.

- Communications & Database: Create a multi-lingual education system to enhance emergency preparedness for residents and visitors. Create a database for all residents in the City and provide a multi-lingual document for procedures during a shelter in place, emergency evacuations, and extreme weather events.
- Culverts: Create a city-wide program to assess, prioritize, and repair/replace culverts. Program would include structural and hydraulic capacity assessment, identification of deficient culverts and recommended improvements.
- Dam Repair & Maintenance: Complete assessment to identify dams in need of repair or maintenance, prioritize repair and/or maintenance of specific publicly owned dams. Require repair and maintenance of privately owned dams in the City.
- Increase Stormwater Capacity: Consider an analysis of the entire drainage system to calculate the capacity
  of system and detect locations where flooding is likely to occur as a result of increased storm intensity and
  frequency due to climate change. Identify locations where stormwater capacity could be increased in the City
  to improve the functionality of the stormwater drainage system.
- Public Infrastructure Evaluation: Evaluate public infrastructure upgraded on grandfathered developments. Provide ongoing routine maintenance to public infrastructure to proactively address issues associated with natural and climate-related hazards with the infrastructure. Identify potential retro-fit locations where impervious areas and ambient temperatures can be reduced and where greenspaces and stormwater treatment can be increased.
- Restore & Increase Wetland Areas: To address and improve water quality through an increase of nutrient removal, identify locations where wetlands have previously been lost and restore if feasible, ideally in locations that are currently impervious. Identify locations where new wetlands could be created to mitigate the impact of previously lost wetlands and provide flood storage to retain increased stormwater runoff anticipated as a result of climate change.
- Stream Bank Stabilization:
  - Assess, inventory, and prioritize, locations where stream bank stabilization is needed as a result of erosion. Design, permit, and implement stabilization of eroding stream banks within the City based on the assessment.



 Design, permit, and implement stabilization of eroding stream banks located on the Monoosnoc Brook, the Nashua River along Route 2, and the North Nashua River behind the Wastewater Treatment Facility.

The following are additional recommendations for the City generated by the CRB Workshop participants through the voting process:

- Improvements to and clearing of trail network, specifically the fire road system, to maintain emergency responder access to the trail network when necessary;
- Evaluate the City's backup generator network to ensure enough power will be provided to critical buildings during emergency conditions;
- Identify the equipment needed to continue running an effective MS4 program, identify locations of illicit discharges, and protect the City's water supply;
- Identify locations where water storage tanks need rehabilitation (Legate Hill) to ensure the City is maximizing its ability to maintain water supply for fire protection and domestic supply in the event of an emergency;
- Perform a Risk and Resilience Assessment of the City's water supply, treatment and distribution system as required under America's Water Infrastructure Act;
- Expand and bolster the community emergency response team including increasing funding for emergency services;
- Implement a water conservation program to ration water in instances of extreme heat or drought;
- Perform study to increase the capacity of the City's reservoirs to adequately handle excess runoff produced during storm events;
- Establish and maintain an effective evacuation route and plan for use during an emergency (natural event or chemical spill); and
- Evaluate the gas infrastructure in the City and improve communications with private partners to ensure the safety of the community and acceptable performance of the infrastructure.



3	H-M-L priority for action over the Short or Long ter	Community Resilience Building Risk Matrix										
L		m (and <u>O</u> ngoin	g)			op Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level						
	$\underline{V}$ = Vulnerability $\underline{S}$ = Strength				HEAVY	SNOW	Denucit	HEAT	Priority	-		
	Features	Location	Ownership	V or S	RAINS	ICE	DROUGHT	WAVE	H-M-L	She		
	Infrastructural			_						-		
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#### 3.1 Next Steps

The City will leverage this Summary of Findings with the purpose of improving the City's resilience and mitigating potential impacts from natural hazard events. The plan is for the City to seek out funding to implement priority actions that have been identified in this report. With each priority action identified, and project developed, the City will engage various stakeholders throughout the community to form strong relationships that will strengthen the City's climate resilience. This community engagement is a critical piece of the MVP process and, based on the feedback from the Workshop and Listening Session, the community is engaged and ready to act.



#### 4. ACKNOWLEDGEMENTS

The City's CRB Workshop was managed by the municipal Steering Committee, led by Wendy Wiiks and Raymond Racine, in partnership with Woodard & Curran who was the MVP Technical Provider. The Steering Committee guided the work throughout the project that also included insight and input from City Staff and residents.

#### 4.1 CRB Workshop Project Team – Organization and Role

The entire MVP process for the City of Leominster was a collaborative, team effort that engaged more than 40 people. Listed below is the project team who was closely involved with the process.

#### City of Leominster, MA

Wendy Wiiks, Grant Administrator | Lead Project Manager for MVP/CRB, Presenter

Raymond Racine, DPW Director | Project Manager for MVP/CRB

Christopher Knuth, Health Director | Small Group Facilitator

Elizabeth Wood, Director of Planning & Development | Small Group Facilitator

Angela Chebuske, Conservation Agent | Small Group Facilitator

Mark Piermarini, Assistant DPW Director | Small Group Facilitator

#### Woodard & Curran

Mary House | Lead Facilitator Kenneth Mavrogeorge, PE | Small Group Facilitator Robert Little, PE | Small Group Facilitator

Kendra Dow | Small Group Facilitator

#### Massachusetts MVP Program

Hillary King, MVP Central Regional Coordinator | Guest Speaker



#### APPENDIX A: EVENT ANNOUNCEMENTS & AGENDAS

COMMITMENT & INTEGRITY DRIVE RESULTS

40 Shattuck Road | Suite 110 Andover, Massachusetts 01810 www.woodardcurran.com

#### AGENDA



SUBJECT:	City of Leominster, MA – M
LOCATION:	Leominster City Hall, Room 10
MEETING TIME:	10:00am – 12:00pm
MEETING DATE:	October 4, 2019

City of Leominster, MA – Municipal Vulnerability Preparedness Program Kick-Off Meeting & Preparation for Community Resiliency Building Workshop

#### **Invited Attendees**

Name	Organization	E-mail			
Wendy Wiiks, Grant Administrator	City of Leominster	wwiiks@leominster-ma.gov			
Michelle Nadeau, Administrative Assistant to the Mayor	City of Leominster	mnadeau@leominster-ma.gov			
Ray Racine, DPW Director	City of Leominster	rracine@dpw.leominster-ma.gov			
John Roseberry, City Engineer	City of Leominster	jroseberry@dpw.leominster-ma.gov			
Roger Brooks, City Business Manager	City of Leominster	rbrooks@dpwleominster-ma.gov			
Chris Knuth, Health Director	City of Leominster	cknuth@leominster-ma.gov			
Rob Sideleau, Fire Chief	City of Leominster	rsideleau@leominster-ma.gov			
Angie Chebuske, Conservation Agent	City of Leominster	achebuske@leominster-ma.gov			
Nikki Peters, Economic Development Coordinator	City of Leominster	npeters@leominster-ma.gov			
James LeBlanc, EMA Director	City of Leominster	jleblanc@leominster-ma.gov			
Jim Reilly, Assistant Superintendent	City of Leominster	jreilly@leominster-ma.gov			
Mary House	Woodard & Curran	mhouse@woodardcurran.com			
Alan Benevides	Woodard & Curran	abenevides@woodardcurran.com			
Ken Mavrogeorge	Woodard & Curran	kmavrogeorge@woodardcurran.com			
Kendra Dow	Woodard & Curran	kdow@woodardcurran.com			

#### Agenda

- 1. Thank You & Introductions
- 2. Identify Goals of Core Team What Does Project Success Look Like to You? All
- Background of Leominster's Participation in the Municipal Vulnerability Preparedness Program 3. (Current Issues in City, Why This Program?) - Wendy Wiiks
- 4. Overview of the Municipal Vulnerability Preparedness Program & Community Resilience Building Workshop - Mary House



- 5. Community Resilience Building Workshop & Planning for the Event Wendy Wiiks & Mary House
- 6. Discussion of Action Items/Next Steps

#### Meeting Objectives

#### Preparation for Community Resiliency Building Workshop

Goals of the Workshop are to:

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

#### Need to Identify the Following:

- Workshop Goals why does the community need to discuss current and future impacts of natural hazards?
- Workshop Date
- Workshop Location
- Workshop Timeframe (one 8-hour session)
- Workshop Food (need to provide breakfast, lunch, maybe snack)
- Outreach Campaign to Secure Maximum Number of Attendees & Engage Stakeholders
  - Identify list of potential attendees/stakeholders and how best to reach out/invite them to workshop?
  - $\circ$   $\;$  How to register attendees and designate a person to keep track
- Prepare Workshop Materials

## Leominster, MA



# **Community Resilience Building Workshop**

## When: Wednesday, December 11, 2019 | Time: 8am to 4pm

## Where: Leominster Emergency Management | 37 Carter Street, Leominster, MA

The City of Leominster received funding from the Executive Office of Energy and Environmental Affairs to complete a Community Resilience Building Workshop. The City has been impacted in the past by severe weather events and like other Massachusetts communities, now finds itself facing more unpredictable weather which bring challenges and opportunities. We are working on a Municipal Vulnerability Preparedness project that will involve an 8-hour workshop which must include input from community members. **We would love for you to participate!!!** 

We will provide breakfast and lunch to those who participate. If you are interested, please contact **Wendy Wiiks** at **wwiiks@leominster-ma.gov** by December 1st to pre-register or receive more information about the workshop. **Space is limited so please sign up today!** 







#### Community Resiliency Building Workshop Wednesday | December 11, 2019 Leominster Emergency Services | 37 Carter Street, Leominster, MA 8:00am – 4:00pm

#### **WORKSHOP OBJECTIVES**

- Define extreme weather and natural and climate related hazards impacting Leominster
- 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

#### **WORKSHOP AGENDA**

7:30am – 8:00am 8:00am – 8:15am	Registration Welcome & Overview (Mayor Dean Mazzarella & staff)
8:15am – 8:45am	Community Resilience Building Workshop – Why Are We Here? (Woodard & Curran)
8:45am-9:15am	City of Leominster staff – "Best Practices in Planning for the Future"
9:15am – 9:30am	Identify Challenges & Goals (Facilitated Activity – What Do You Think Leominster's Biggest Challenges Are? What Are Your Goals/Do You
	Hope to Gain from Participating in the Workshop?)
9:30am – 10:15am	Background Information about Leominster (Woodard & Curran)
10:15am – 10:30am	Break
10:30am – 11:00am	Characterize Natural Hazards
11:00am – 12:00pm	Identify Community Vulnerabilities and Strengths
12:00pm – 12:45pm	Lunch
12:45pm – 1:15pm	Hillary King, Regional Coordinator, MVP Program
1:15pm – 1:45pm	Continue identifying Community Vulnerabilities and Strengths
1:45pm – 2:00pm	Break
2:00pm – 3:30pm	Identify and Prioritize Community Actions
3:30pm – 4:00pm	CRB Workshop Recap and Wrap Up

#### THANK YOU FOR PARTICIPATING IN LEOMINSTER'S COMMUNITY RESILIENCY BUILDING WORKSHOP!





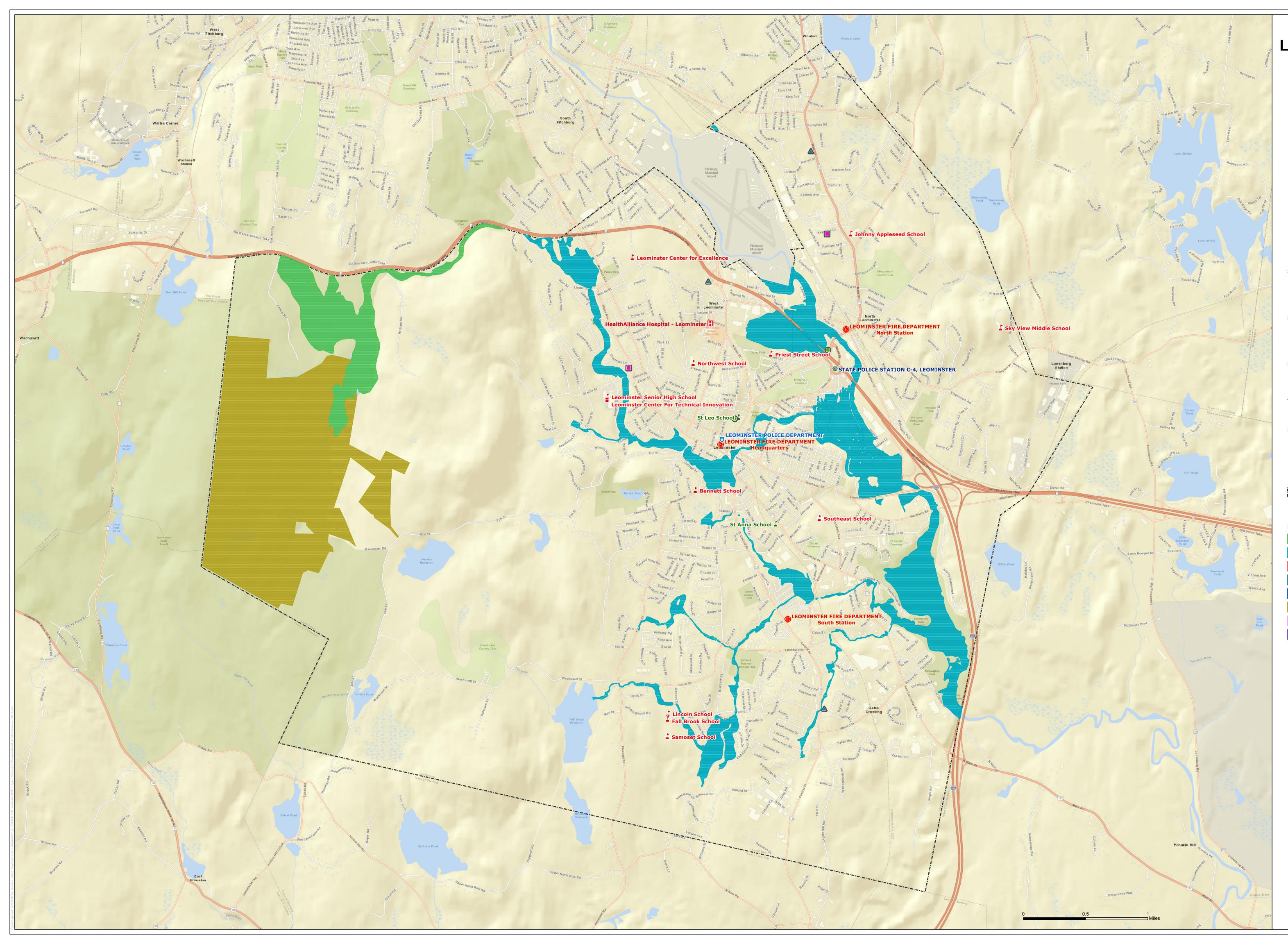
#### MUNICIPAL VULNERABILITY PREPAREDNESS COMMUNTIY RESILIENCY BUILDING WORKSHOP CITY OF LEOMINSTER, MA DECEMBER 11, 2019 | 8:00AM SIGN IN SHEET

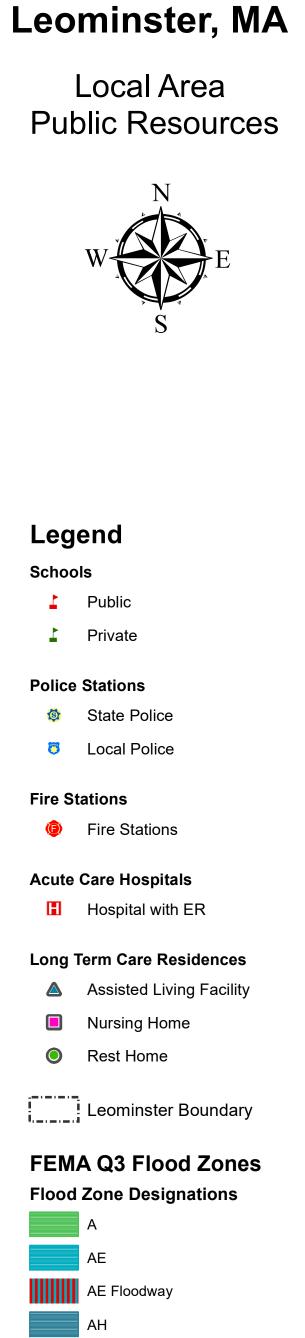
	Name Email
1.	JIM LEBLANC JAMESLEBLANC PLEOMANSTOR-MA.GOV
	Susan McNeil Spuhler susan moneill. spuhler a gmail. com
3.	Wendy Wilks Wwilks Deominster-ma. SIV
4.	George MCNAMARA BEOMAK58 & Comenst. not
	Chris Knuth cknuthe kominister-MA.gov
	Mickey Guzman (SAC) mickeya 100354@ yahoo.com
	lynthia Smith symithile wrizon, net
	Jin Reilly james. re. 114 @ leom. nsk-Ehools.org
	Elizabeth Word ewood Dkominster-maign
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14.	(Leg nol ferr, rymndran @ yakoo, com
	MARK PIRRMARINI Mptermanini@ Jpw. Leoninster-MA. Com
16.	Shawn Comeau Sconeaul drw. leominster-MA. Gov
	Emily Merlino emerlino@northcantylandtrust.org
18.	ROGER BROOKS RBROOKS EDPLS, LEIMINSTER MA. COV
19.	JERRY ROGICH ROGICH & GMAIL, COM
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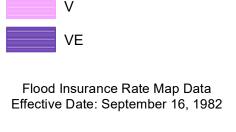




Angela Chelaske A Chelaske @ Leominister ma.gu 21. 22. MIKE LASTELLA MIKE, KASTELLA (D VORIZON, NET 23 NAncy Wilks 24. Rhonda Siciliano Rhonda M. siciliano @ HUD. 965 25. 26. Vanessa Egro Vanessaepro @ gmail.com 27. Isabelle Alera 28. Natalle Higgins MCSANIEL JAN ( CANTEL CUMMINES 29. JAN 30. MICHELLE NADEAU MNADE 31. MELISSA TASTA - doprier 578@ garai () Breven) 32. Vic 33. Tava Lappas - tava Lappas Depura lean 34. Peter Lanze polunza Ogman . Com Summer 35. ama .901 49WI 36. MAZZARELLA SMAZZARE la Cheominster-mil.gov 37 Pohno caron Mars hillory, King @mass, gov 39. Hulan King awilkins@northcountyland trust.org ANNA WILKINS 40. mpense wadend cuma. cu 41. Mary Heuse 42. 43. 44. 45. 46.







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Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:** ESRI, MassGIS, FEMA



APPENDIX B: CRB RISK MATRIX

#### Community Resilience Building Risk Matrix



#### www.CommunityResilienceBuilding.com

				Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, o						
<u>H-M-L</u> priority for action over the <u>S</u> hort or <u>L</u> ong <u>V</u> = Vulnerability <u>S</u> = Strength					Priority	Time				
$\mathbf{V}$ = Vulnerability $\mathbf{S}$ = Strength						<u>S</u> hort <u>L</u> ong				
Features	Location	Ownership	V or S					<u>Н</u> - <u>М</u> - L	<u>Short</u> Long <u>O</u> ngoing	
Infrastructural										
Societal										
Environmental										



APPENDIX C: COMMUNITY RESILIENCE BUILDING PRESENTATIONS & SUPPORTING DOCUMENTATION

# Good Morning & Welcome! Leominster Community Resiliency Building Workshop December 11, 2019

Leominster, MA Community Resiliency Building Workshop

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December 11, 2019

TACT

## **Community Resiliency Building Workshop**

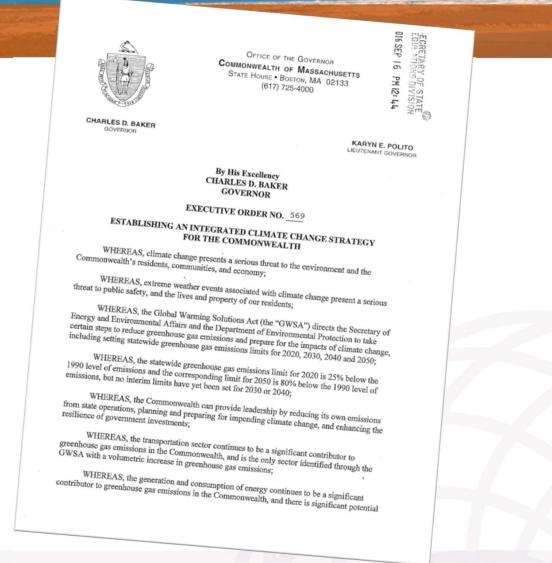


## Agenda

- 7:30 8:00 | Registration
- **8:00 12:00** 
  - Welcome & Overview
  - CRB Workshop Why Are We Here?
  - City of Leominster Staff "Best Practices in Planning for the Future"
  - Identify Challenges & Goals
  - Background Information About Leominster
  - Characterize Natural Hazards
  - Identify Community Vulnerabilities & Strengths
- 12:00 12:45 | LUNCH!
- **12:45 4:00** 
  - Guest Speaker: Hillary King, Regional Coordinator, MVP Program
  - Continue Identifying Community Vulnerabilities & Strengths
  - Identify & Prioritize Community Actions
  - CRB Workshop Recap & Wrap Up

## **Executive Order 569**

 In September 2016,
 Governor Charlie Baker signed Executive Order
 569, instructing state government to provide
 assistance to cities and
 towns to complete climate
 change vulnerability
 assessments and
 resiliency planning



## August 2018

- Governor Baker signed legislation directing \$2.4 billion to Climate Change Adaptation, Environmental Protection and Community Investments
- \$\$ allocated capital for investments in safeguarding residents, municipalities and businesses from the impacts of climate change, protecting environmental resources, and improving recreational opportunities
- The \$\$ enables critical environmental investments at the state and local levels and will put into law essential components of Governor Baker's Executive Order 569



## Municipal Vulnerability Preparedness (MVP) Grant Program



## **Municipal Vulnerability Preparedness (MVP) Grant Program**

- The MVP grant program provides support for cities and towns in Massachusetts to begin or continue the process of planning for resiliency
- The state awards communities with funding to complete vulnerability assessments and develop action-oriented resiliency plans
- Leominster submitted a grant application to participate in the MVP Planning process



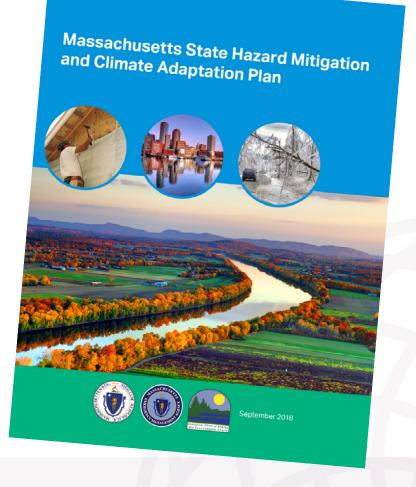
#### **Municipal Vulnerability Preparedness (MVP) Grant Program**

- The program helps communities achieve the following objectives:
  - Define extreme weather and natural and climate related hazards
  - Identify existing and future vulnerabilities and strengths
  - Develop and prioritize actions for the community
  - Identify opportunities to take action to reduce risk and build resilience



#### **Municipal Vulnerability Preparedness (MVP) Grant Program**

- MVP Principles
  - **Community-led process** that employs local knowledge and requires local buy-in and support
  - Accessible to everyone
  - Utilizes partnerships and leverages existing efforts
  - Mainstreams climate change
  - See communities as local innovators
  - Frames coordinated statewide efforts



# **Community Resiliency Building Workshop**

- As part of the MVP program, participating communities MUST complete a Community Resiliency Building Workshop!
- Upon completion of the workshop, a summary report will be submitted to EEA
- Leominster will continue to use this Summary of Findings to reinforce future planning and action item implementation

Community Resilience Building WORKSHOP GUIDE



www.CommunityResilienceBuilding.org

#### We will work together to....

- Understand connections between ongoing community issues, climate change, natural hazards and local planning and actions
- Understand how climate change will exacerbate or lead to new community issues, hazards and challenges
- Identify infrastructural, societal, environmental vulnerabilities and strengths that help Leominster become more resilient
- Explore nature-based solutions to build resiliency
- Develop and prioritize actions that delineate next steps for the community
- Identify how Leominster can advance actions to reduce risks and impacts of climate change and increase local and regional resilience



# **Community Resiliency Building Workshop**

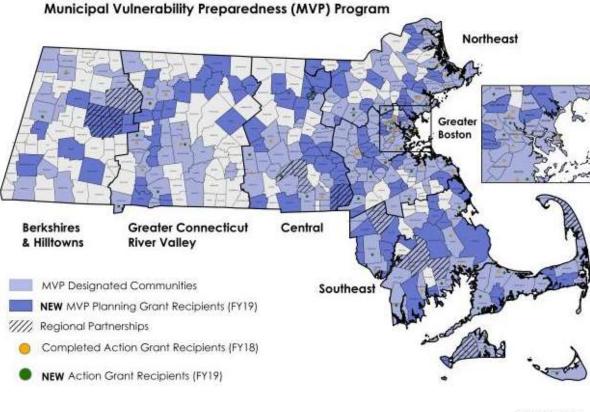
Community Resilience Building I	Risk Matrix		22 (	)		www.Commur	nityResilienceB	uilding.c	org
				Top Priority Hazards	(tornado, floods, wildfire	e, hurricanes, earthqua	ake, drought, sea level		
<u>H-M-L</u> priority for action over the <u>Short</u> or <u>L</u> ong t <u>V</u> = Vulnerability <u>S</u> = Strength	erm (and <u>O</u> ngoin	ng)						Priority	
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Features Infrastructural	Location	Ownership	V OF S						
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Environmental									

#### Municipal Vulnerability Preparedness (MVP) Grant Program

- Communities who complete the MVP program become certified as an MVP community and are eligible for potential follow-up grant funding and other opportunities
- Examples of other MA communities who have had projects funded!

Community	Project	Amount
Deerfield	Reducing Flooding Vulnerability in Deerfield	\$278,023
Devens	Devens Climate Action & Resilience Plan	\$142,170
Northampton	Protecting Downtown: Northampton's Flood Control Levees	\$315,000
Pittsfield	Churchill Brook and West Street Culvert Replacement Project	\$814,524
Uxbridge	Integrated Water Infrastructure Vulnerability Assessment and Climate Resiliency Plan	\$288,904
Wrentham	Eagle Dam Removal	\$46,000

# What Other Communities Are in the MVP Program?



Updated 11-4-2019

#### **Two Questions for You!**

The goal of the workshop is to listen and learn from attendees regarding your thoughts and ideas for meeting the CRB workshop objectives!

- What are Leominster's biggest challenges?
  - Think infrastructure, societal, environment
- What are your goals for the day and what do you hope to gain from your participation in the workshop today?

#### Agenda

- 7:30 8:00 | Registration
- **8:00 12:00** 
  - Welcome & Overview
  - CRB Workshop Why Are We Here?
  - City of Leominster Staff "Best Practices in Planning for the Future"
  - Identify Challenges & Goals
  - Background Information About Leominster
  - Characterize Natural Hazards
  - Identify Community Vulnerabilities & Strengths
- 12:00 12:45 | LUNCH!
- **12:45 4:00** 
  - Guest Speaker: Hillary King, Regional Coordinator, MVP Program
  - Continue Identifying Community Vulnerabilities & Strengths
  - Identify & Prioritize Community Actions
  - CRB Workshop Recap & Wrap Up

Leominster, MA Steering Committee Kickoff Meeting

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October 4, 2019

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Leominster, MA Community Resiliency Building Workshop

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December 11, 2019

TACT

#### Agenda

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#### **Municipal Vulnerability Preparedness (MVP) Grant Program**

- The program helps communities achieve the following objectives:
  - Define extreme weather and natural and climate related hazards
  - Identify existing and future vulnerabilities and strengths
  - Develop and prioritize actions for the community
  - Identify opportunities to take action to reduce risk and build resilience



Photo Source: Sentinel & Enterprise

# resilience

noun

1. the capacity to recover quickly from difficulties; toughness

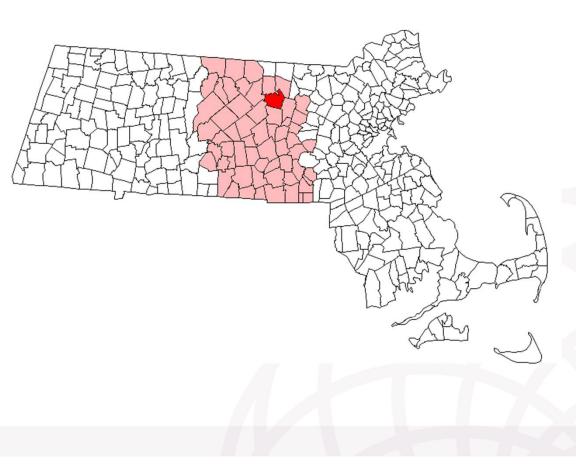
# adapt

verb

- 1. make (something) suitable for a new use or purpose; modify.
- 2. become adjusted to new conditions.

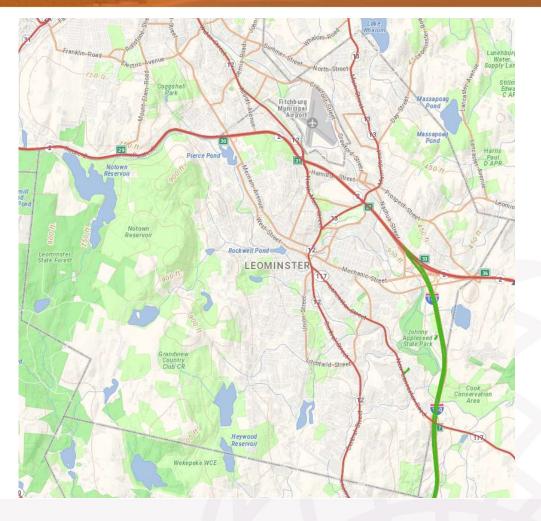
#### **Background Information**

- Population of 41,615 (as of 2017)
- Located in Worcester County (second largest city in county)
- 29.7 square miles
- Bounded by Fitchburg, Lunenburg, Lancaster, Sterling, Princeton, and Westminster
- Major roadways include Interstate 190, Route 2, Route 12, Route 13, and Route 117
- Major waterbodies include the North Nashua River and Monoosnoc Brook

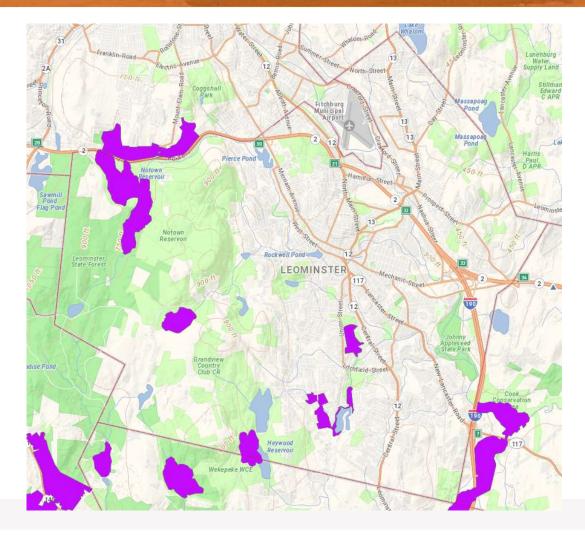


#### **Transportation, Water & Sewer**

- Primary roadways are Route 2 and Interstate 190, local bus access to MART, and MBTA services into Boston
- Water transmission mains provide water from 7 surface reservoirs and three groundwater wells, supplemented by the Wachusett Reservoir (MWRA)
- Local wastewater treatment plant serves central portion of City, remainder uses septic
- 90% of City connected to Water & Sewer



#### **Environmental Features**



- Leominster State Forest & Johnny Appleseed State Park
- Notown & Heywood Reservoirs
- Some priority habitats for rare species area
- Approximately 1,600 acres of open space and watershed land
- 15 Ponds, Lakes, and Reservoirs

#### **Natural Hazards Impacting Leominster**

- Heavy Rain
- Heavy Snow
- **Snow Melt**
- Nor'Easters
- Severe Thunderstorms
- High Winds
- Hurricanes
- Tornadoes
- Ice Storms
- Blizzards
- Fires
- Drought

- **Extreme Temperatures**
- Landslides
- Dam Failure
- Earthquakes
- Beavers
- Ice Jams

MONTACHUSETT REGION NATURAL HAZARD **MITIGATION PLAN 2015** UPDATE



Ashburnham Ashby Athol Ayer Clinton Devens Fitchburg Gardner Groton Harvard Hubbardston Lancaster Leominster Lunenburg Petersham Phillipston Royalston Shirley Sterling Templeton Townsend Westminster Winchendon



Massachusetts Emergency Management Agency in Coopera with the Federal Emergency Management Agency (FEMA). Matching funds were provided by the MRPC.

# **Recent Severe Storm Event**

- January 2015 Blizzard (Winter Storm Juno)
  - Approximately 30-inches of snow, high winds
  - State of Emergency declared
  - Travel ban
  - > \$100,000 in storm expenses for City
  - Damage to several homes and businesses





### **Recent Severe Storm Event**

- August 14, 2018 Intense Rain Event
  - Approximately 2.6" of rain
  - Loss of power
  - Major street flooding throughout town
  - Damage to several homes and businesses







#### **Known Flooding Issues**

- Determined by Local Hazard Mitigation Team, July 2012:
  - Monoosnoc Brook Area
  - Nashua River along Leominster Connector
  - Commercial Road
  - Whitney Field Mall Area
  - Boyle Place, Burrage Avenue, Pleasant Street, 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> Streets

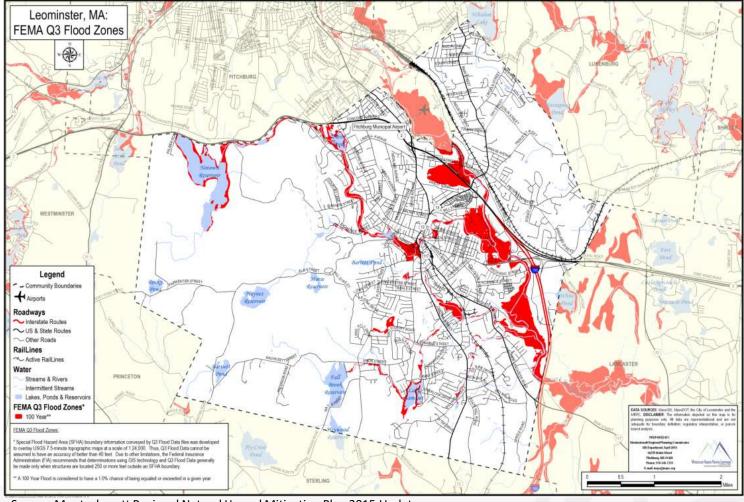






Photo Sources: Sentinel & Enterprise, Google Earth

#### **Flood Zone**



Source: Montachusett Regional Natural Hazard Mitigation Plan 2015 Update

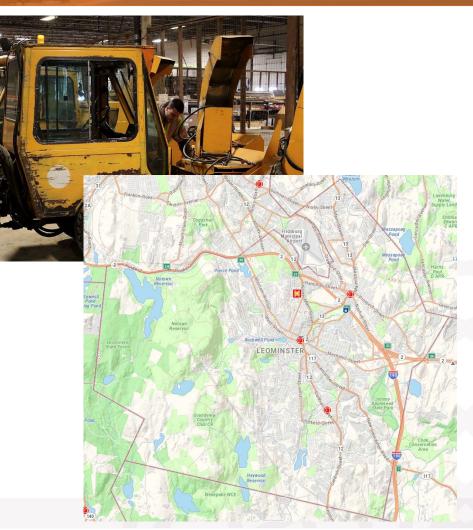
### **Critical Facilities within Flood Zone**

Leominster Critical Facilities within 100-Year Flood Zone				
HazMat Sites	Home Depot #2676	135 Commercial Road		
	Dixie Consumer Products LLC	149 Hamilton Street		
	Leominster Wastewater Treatment Facility	436 Mechanic Street		
Other Critical Facilities	Home Depot #2676	135 Commercial Road		
	Dixie Consumer Products LLC	149 Hamilton Street		
	Alternatives Unlimited	45 Pearl Street		
	Entertainment Cinema	45 Sack Boulevard		
Public Water Supply	No town Reservoir			
	Simonds Pond			
	Goodfellow Pond			
Wastewater Treatment Plant	Leominster Wastewater Treatment Facility	436 Mechanic Street		
Source: Montachusett Regional Natural Hazard Mitigation Plan 2015 Lindate				

Source: Montachusett Regional Natural Hazard Mitigation Plan 2015 Update

# Hazard Mitigation Plan – Goals, Objectives, Strategies

- **Overall Goal Statements:** 
  - Increase coordination between departments
  - Increase awareness of hazard mitigation
  - Ensure critical infrastructure sites are protected
  - Educate public about natural hazards and mitigation measures
  - Encourage development in non-hazard prone areas
  - Develop effective pre-disaster warning system
  - Create emergency distribution sites and plans
  - Identify community resources
  - Meet needs of elderly, sick, and disabled
  - Develop shelter strategy meeting FEMA and ARC standards



#### **City of Leominster – Current Overall Goals**

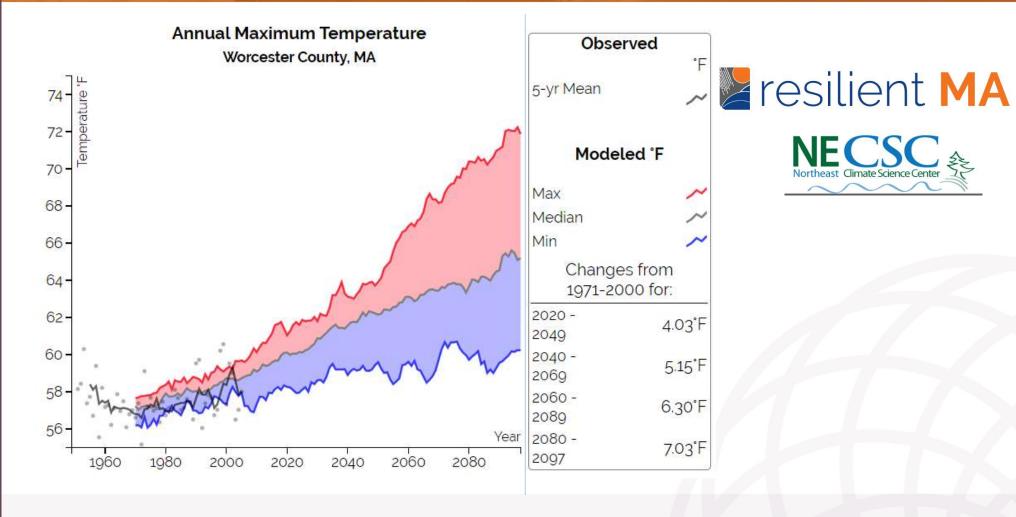
- Increase coordination between departments
- Develop effective predisaster warning system (reverse 911/Code Red)
- Create emergency distribution sites and plans
- Develop shelter strategy



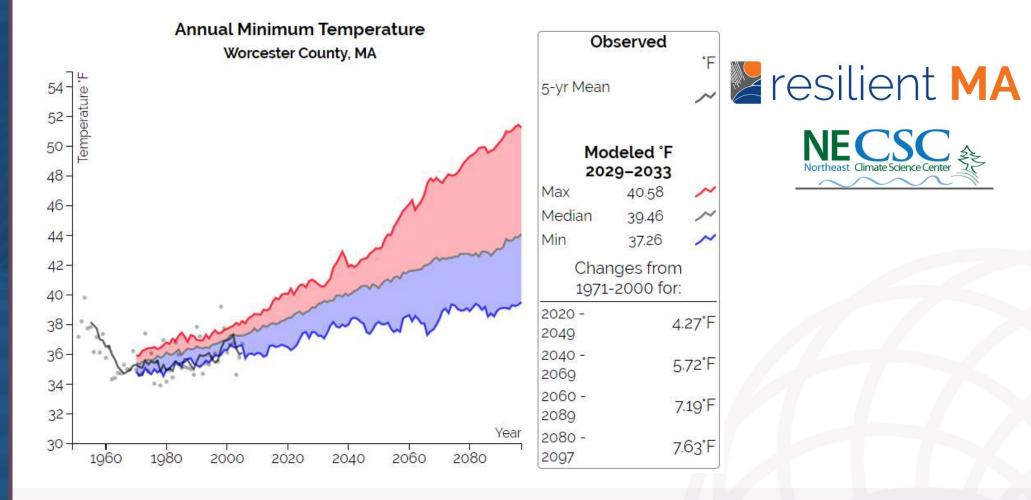
Photo Source: Sentinel & Enterprise

# What About the Future?

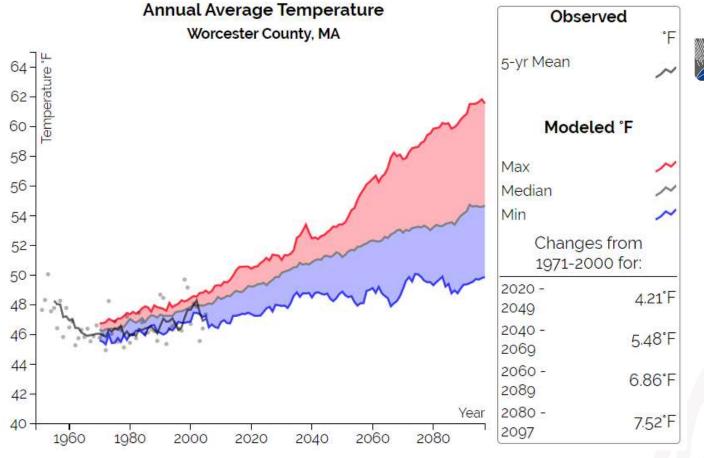
#### **Annual Maximum Temperature**



#### **Annual Minimum Temperature**

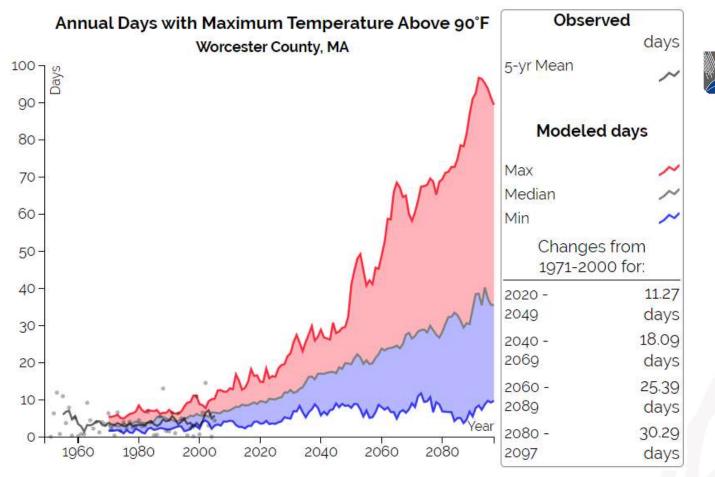


#### **Annual Average Temperature**





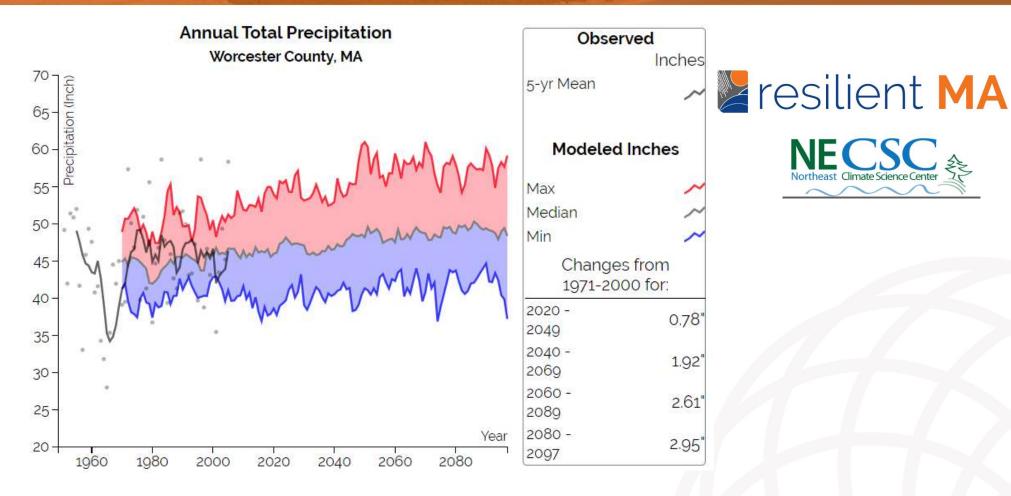
#### **Annual Days With Maximum Temperature Above 90**





Northeast Climate Science Cente

#### **Annual Total Precipitation**





#### Today, we will work together to....

- Understand connections between ongoing community issues, climate change, natural hazards and local planning and actions
- Understand how climate change will exacerbate or lead to new community issues, hazards and challenges
- Identify infrastructural, societal, environmental vulnerabilities and strengths that help Leominster become more resilient
- Explore nature-based solutions to build resiliency
- Develop and prioritize actions that delineate next steps for the community
- Identify how Leominster can advance actions to reduce risks and impacts of climate change and increase local and regional resilience





Community Resiliency Building Workshop Wednesday | December 11, 2019 Leominster Emergency Services | 37 Carter Street, Leominster, MA 8:00am – 4:00pm

#### WORKSHOP OBJECTIVES

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

#### WORKSHOP AGENDA

7:30am - 8:00am	Registration
8:00am - 8:15am	Welcome & Overview (City Grant Administrator & DPW Director)
8:15am – 8:45am	Community Resilience Building Workshop – Why Are We Here? (Woodard & Curran)
8:45am – 9:00am	Identify Challenges & Goals (Facilitated Activity – What Do You Think Leominster's Biggest Challenges Are? What Are Your Goals/Do You Hope to Gain from Participating in the Workshop?)
9:00am - 9:45am	Background Information about Leominster (Woodard & Curran)
9:45am - 10:15am	Guest Speaker, To Be Determined
10:15am - 10:30am	Break
10:30am - 11:00am	Characterize Natural Hazards
11:00am - 12:00pm	Identify Community Vulnerabilities and Strengths
12:00pm - 12:45pm	Lunch
12:45pm - 1:15pm	Guest Speaker, To Be Determined
1:15pm - 1:45pm	Continue Identifying Community Vulnerabilities and Strengths
1:45pm - 2:00pm	Break
2:00pm - 3:30pm	Identify and Prioritize Community Actions
3:30pm - 4:00pm	CRB Workshop Recap and Wrap Up

THANK YOU FOR PARTICIPATING IN LEOMINSTER'S COMMUNITY RESILIENCY BUILDING WORKSHOP!

#### **Recent Efforts**

- Open Space and Recreation Planning (2014)
- Participation in Regional Hazard Mitigation Plan (2016)
- Municipal Vulnerability
   Preparedness Planning Grant



MONTACHUSETT REGION NATURAL HAZARD MITIGATION PLAN 2015 UPDATE



Prepared by: usett Regional Planning Commission (MRPC) 1427R Water Street, Fitchburg, MA 01420

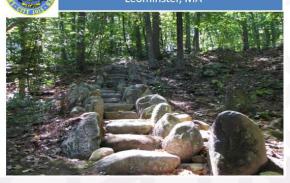


The preparation of this plan was funded by a grant from the Massachusetts Emergency Management Agency in Cooperation with the Federal Emergency Management Agency (FEMA). Matching funds were provided by the MRPC.



Ashburnham

Ashby Athol



### Input from City Employees – Natural Hazard Impacts

- Flooding
- Rain
- Nor'Easters
- Ice Storms



Photo Source: Sentinel & Enterprise

#### Input from City Employees – Largest Vulnerabilities

- High intensity rainfall events
- Erosion along Nashua River
- Undersized storm drains
- Areas that flood frequently
- Damage to businesses during storm events or infrastructure failures



### Input from City Employees – Largest Strengths

- Emergency Management
   Department
- Disconnection of combined storm and sewer infrastructure
- Quick responses to hazards by DWP, EMS, fire, police, etc.
- DPW and Engineering working on vulnerable areas before they become a problem – preventative maintenance
- Water and sewer system



Photo Source: Leominster Champion

### Input from City Employees – Improve Resiliency

- Improve and upgrade stormwater infrastructure
- Continue to identify weak spots and make improvements
- Reassess
   vulnerabilities around
   City
- More preventative maintenance



#### Conserve, Integrate, Restore

- Conserve the natural green infrastructure already providing free ecosystem services
- Integrate Low Impact
   Development and green
   infrastructure design into
   development
- Restore the resiliency of landscapes through LID



#### **Nature Based Solutions**

- 96% of the total US population lives in counties where federally-declared, weather-related disasters have occurred since 2010
- One of the best adaptation practices is preserving natural areas
- Nature-based solutions provide multiple benefits, and a higher return on investment with flood risk reduction strategies



#### **Green Infrastructure & Low Impact Development**

#### Green Infrastructure

- Incorporates natural features such as floodplains, forests, wetlands, and buffer areas
- Refers to a designed landscape that puts natural systems to work like soil and vegetation and mimics those natural processes

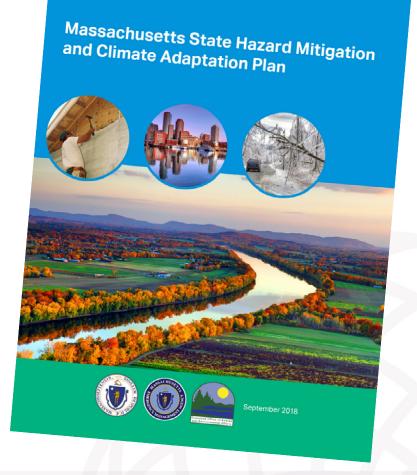
#### Low Impact Development

 Category of green infrastructure that works with nature to manage stormwater and decrease the impact of development on surface and groundwater



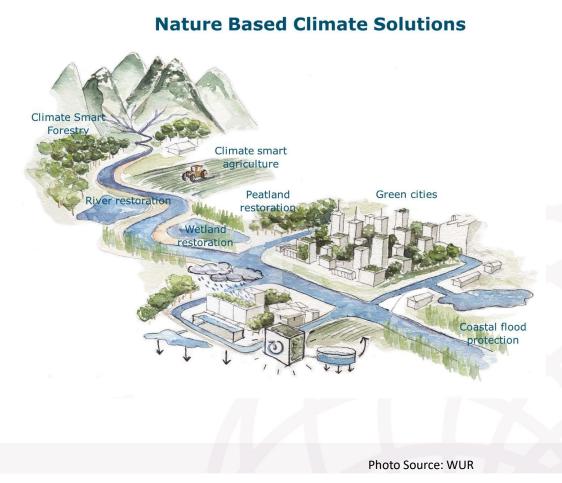
#### **Nature Based Solutions – State Focus**

- State hazard mitigation and climate adaptation strategy focuses on nature based solutions
- For implementation of certain State grant or State administered grant programs – emphasis is or may be placed on projects that outline a nature based solution



#### **MVP Action Grant**

- Projects that build resilience, are proactive and clearly demonstrate efforts to redesign, re-evaluate, or reconsider and incorporate new climate change data.
- Projects are encouraged to utilize nature-based strategies to address climate change impacts.
- Many of these projects might also be funded through existing grant programs (DER's Culvert Replacements, MEMA)



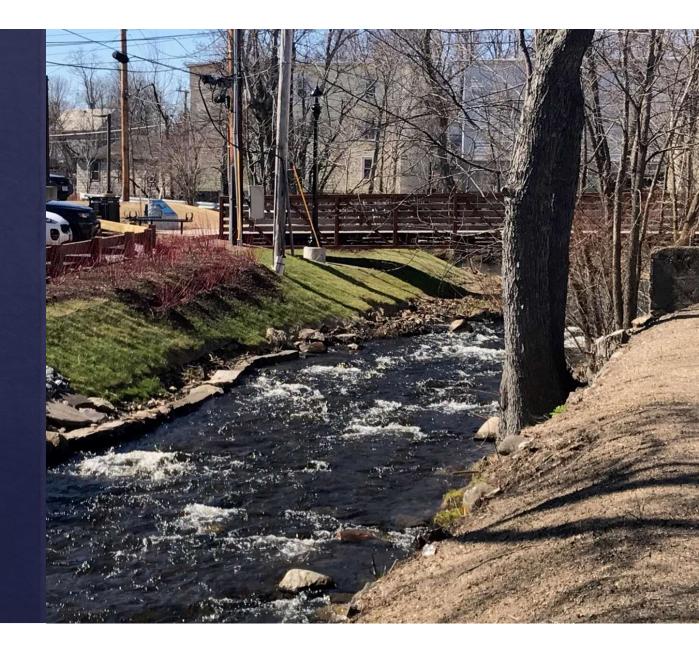
Leominster, MA Community Resiliency Building Workshop

山村

December 11, 2019

TACT

### BEST PRACTICES IN PLANNING THE FUTURE



# 1997 PLANNING CHARETTE

A CHARETTE? WHAT'S THAT?

### CHARETTE

Gathers a cross section of the community to plan for the future.

It's a look at a community's strengths, weaknesses, threats and opportunities.

Prepare a vision statement with goals and action steps.

### Your being here makes a difference



#### 1997 - Leominster's Strengths

- Plastics Industry
- Community's Deep Roots
- Transportation Access
- Minimal urban decline
- ♦ Single tax rate
- Social and physical environment
- Skilled workforce

- Quality of Life
- School to work initiatives
- Downtown is vibrant
- Viable shopping areas
- ♦ Hospital
- Proper budget management
- Safety and emergency services
- Mix of occupations

#### 1997 - Weaknesses





How this one day of planning helped the city plan the future

## Long Range Planning

(Lack of - according the charette report)

- School space needs study
- Growth Management Plan
- State environmental affairs community build out
- ♦ Rezoning 2008 and 2013
- Open Space and Recreation Plans (4)
- ♦ Water rate study
- Sewer/water infrastructure analysis city wide
- Omplete Streets analysis
- Green Communities



### Open Space & Recreation Plan



- Expanded Barrett Park and made it a destination.
- Expanded our trail network
- Created the Monoosnoc Brook Walkway
- Preserved almost 2000 acres of open space
- ♦ Created parks on the east side where none existed
- ♦ Purchased Sholan Farms a huge asset to Leominster



#### Leveraging state and federal funding

- In ten years completed \$ 5,058,000.00 in upgrades to our parks including Doyle Field and created new parks
- ♦ Leveraged \$3,100,000 in state and federal funding



#### Frances Drake

Fournier Park

Doyle Field

### Lack of affordable housing (in 1997)

- ♦ Still have a lack of affordable housing as do many other communities
- ♦ Leominster has partnered with the private sector to create additional housing using state historic tax credits and grants.





40 new units at 140 Adams St



50 new units at 98 Adams St

40 new units at Summer St



39 new units at Carter JH

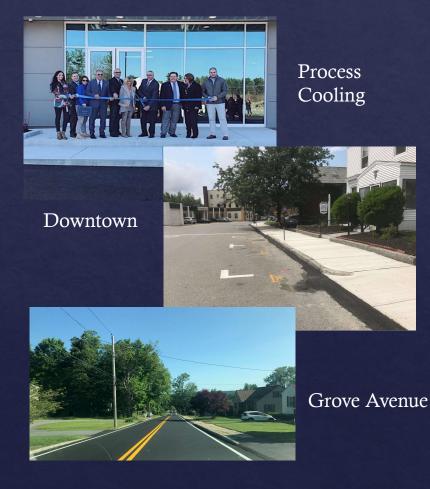
### Public/Private Partnership on Adams Street

- - Improved drainage, added sidewalks, and paved roads around Adams Street

# \$1.3 million in state funding leveraged \$20 million in private investment

#### Lack of maintenance for infrastructure (in 1997)

- Fix it First Program
- Secured over \$8 million for infrastructure for Orchard Hill Park area, Southgate Business Park, Adams Street area, and downtown improvements.
- This year we matched our Chapter 90 paving program with \$1 million of City funds
- Over \$90 million invested in our school buildings
- Over \$50 million in grants and low interest loans for upgrades to our water and wastewater treatment plants.



### Lack of Recreational Facilities (in 1997)

- 26 miles of organized trails with markings and added parking lots
- ♦ New playground at Frances Drake
- New playground at Third Street
- New open space park with 33 new trees on Mechanic Street
- Added splash park and playground at Fournier Park
- Turf, baseball field expansion and new upper field at Doyle Field
- Proposed downtown grant for in front of the Woodblock Building

Projects added new trees
Permeable pavers
Recycled water
Repaired drainage problems
Environmental education aspects

#### 1997-present

**The Planning sessions of the past have helped us improve:** 

♦ energy efficiently

In the second second

outdoor recreation

♦ Balanced growth

Much more to do!

Today is your day to be part of Leominster's future!  $_{\diamond}$ 

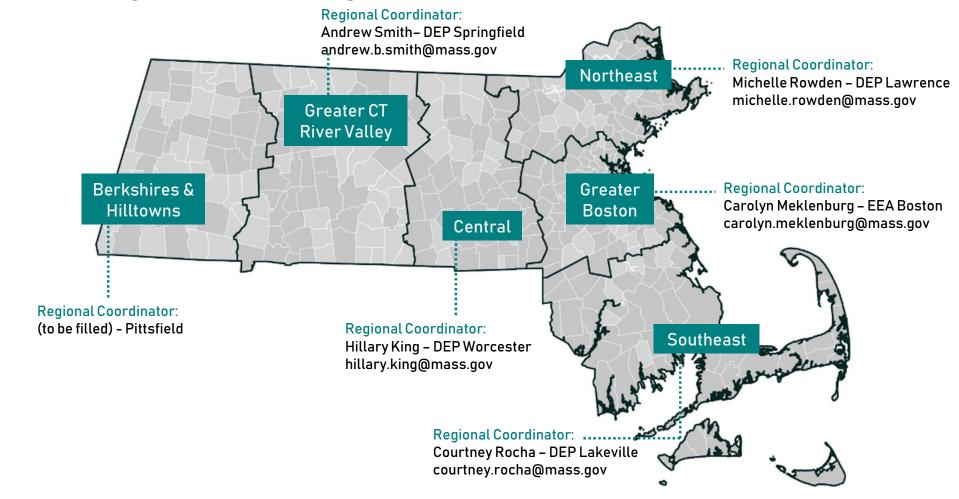


## Municipal Vulnerability Preparedness Program



Hillary King, MVP Central Regional Coordinator MA Executive Office of Energy and Environmental Affairs

## **MVP Regions & Regional Coordinators**



### Massachusetts State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) – September 2018



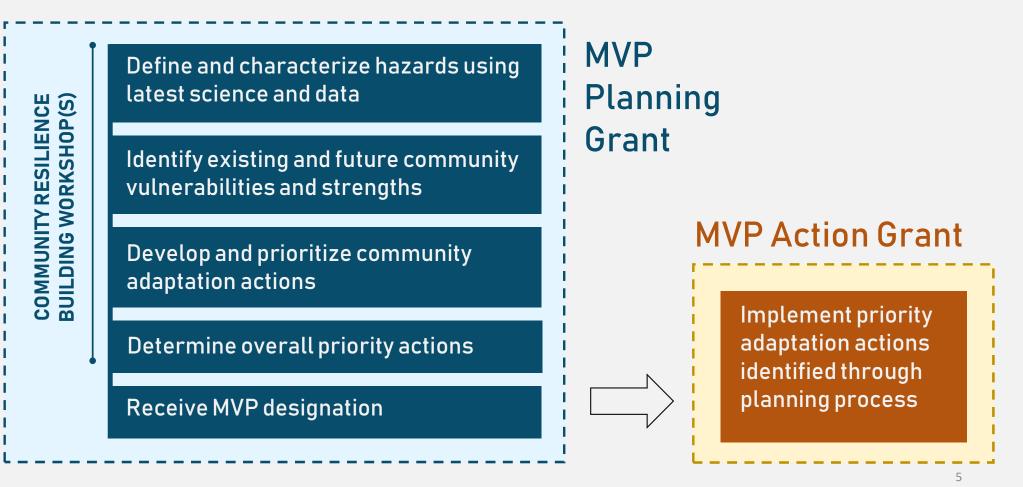
- Acknowledges that climate change is already worsening natural hazards, integrating information and planning elements for 14 natural hazards that affect the Commonwealth
- Uses best scientific data and projections to assess risk and vulnerability
- Evaluates the Commonwealth's existing capabilities to implement **agency-specific and statewide activities** to reduce risk and increase resilience

## **MVP Principles**

A community-led, accessible process that

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

## MVP Process/Grant Types



## Three Years of MVP

MVP Designations 71% of the Commonwealth 249 communities

Action Grant Projects FY 18: **37** FY 19: **36** 

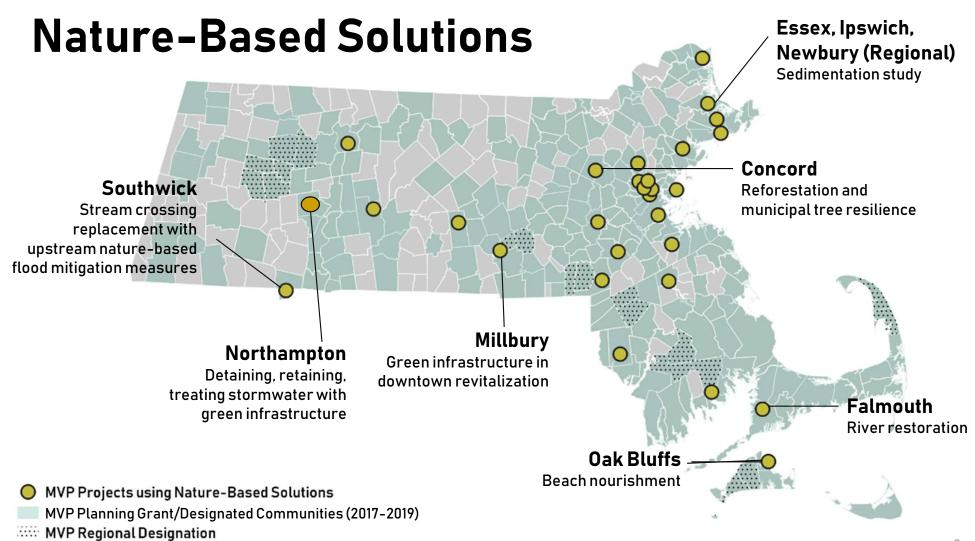
Total Awards \$17M+ in planning and action grants to date

- Completed Action Grant Projects (FY 2018)
- Ongoing Action Grant Projects (FY 2019)
- MVP Planning Grant Communities (FY 2019)
- MVP Designated Communities

## **MVP Action Grants: 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



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



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



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 solutions** 

Local Bylaws, Ordinances, Plans, and Other Management Measures Redesigns and Retrofits



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

Retrofitting a major waterfront park into a legacy park that uses nature-based solutions to address climate vulnerabilities while providing important access to recreation for residents.





**Redesigns and Retrofits** 



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



#### Example Action Grant Projects

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

### **Belchertown**



Designing and permitting for a **replacement water storage tank** that would increase storage capacity and resiliency to drought, and completing a **feasibility/concept design of a rainwater harvesting system** at Belchertown High School to irrigate the athletic fields.



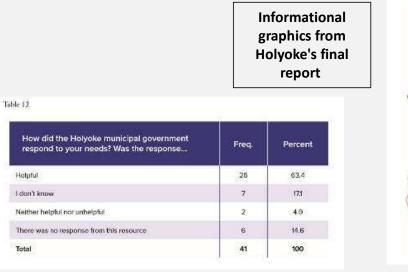
#### **FY18 Action Grant Projects**

Detailed Vulnerability and Risk Assessment, Further Planning

### Holyoke



Conducted a detailed **demographic analysis** of individuals who arrived in Holyoke from Puerto Rico as a result of Hurricane Maria and develop recommendations for **planning for future climate change migrants** in Holyoke



#### Hampden County's Puerto Rican Population, 2017

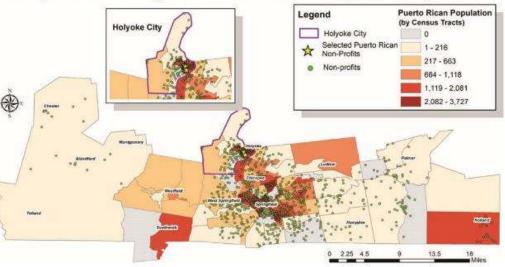


Image credits: Town of Holyoke, Hunter College CUNY, El Instituto UCONN

# **MVP Resources**

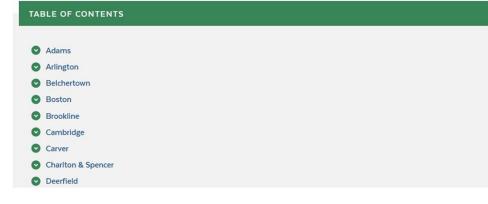
#### <u>mass.gov/municipal-vulnerability-</u> preparedness-program



#### 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



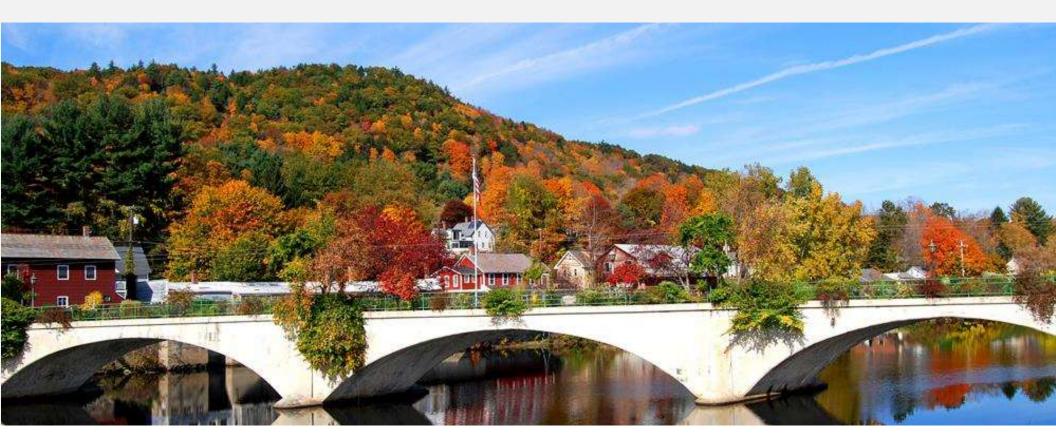
#### resilientma.org





USET

### hillary.king@mass.gov https://www.mass.gov/municipal-vulnerabilitypreparedness-program





APPENDIX D: LISTENING SESSION FEEDBACK

# **Welcome!** Leominster MVP Planning Program Listening Session February 12, 2020

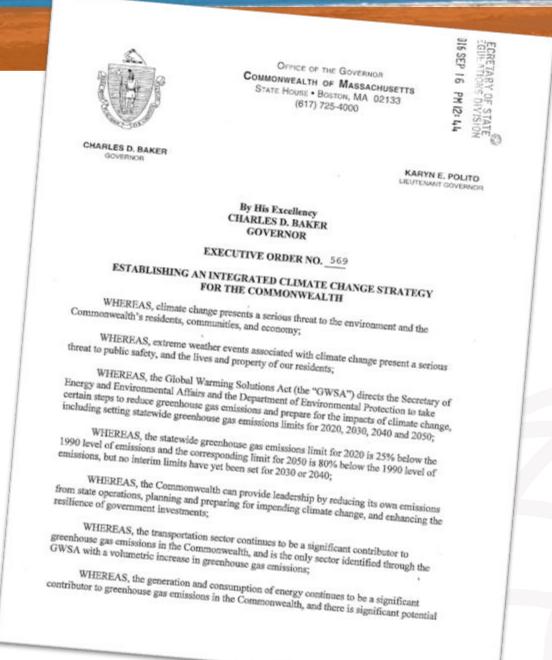


# Agenda

- •What is the MVP Program?
- Steering Committee
- Community Building Resiliency (CRB) Workshop
- Top Priority Actions
- Additional Priority Actions
- Next Steps
- Tonight's Listening Session

# What is the MVP Program?

In September 2016, Governor Charlie Baker signed Executive Order 569, instructing state government to provide assistance to cities and towns to complete climate change vulnerability assessments and resiliency planning



# August 2018

- Governor Baker signed legislation directing \$2.4 billion to Climate Change Adaptation, Environmental Protection and Community Investments
- \$\$ allocated capital for investments in safeguarding residents, municipalities and businesses from the impacts of climate change, protecting environmental resources, and improving recreational opportunities
- The \$\$ enables critical environmental investments at the state and local levels and will put into law essential components of Governor Baker's Executive Order 569



### Municipal Vulnerability Preparedness (MVP) Grant Program

- The MVP grant program provides support for cities and towns in Massachusetts to begin or continue the process of planning for resiliency
- The state awards communities with funding to complete vulnerability assessments and develop action-oriented resiliency plans
- Leominster submitted a grant application to participate in the MVP Planning process



### Municipal Vulnerability Preparedness (MVP) Grant Program

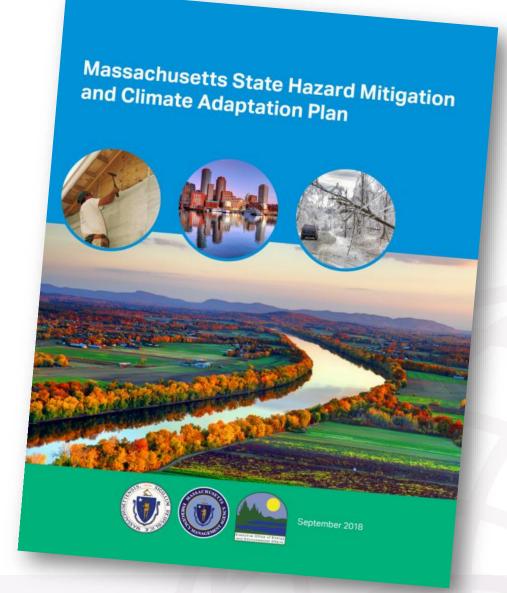
- The program helps communities achieve the following objectives:
  - Define extreme weather and natural and climate related hazards
  - Identify existing and future vulnerabilities and strengths
  - Develop and prioritize actions for the community
  - Identify opportunities to take action to reduce risk and build resilience





### Municipal Vulnerability Preparedness (MVP) Grant Program

- **MVP** Principles
  - Community-led process that employs local knowledge and requires local buy-in and support
  - Accessible to everyone
  - Utilizes partnerships and leverages existing efforts
  - Mainstreams climate change
  - See communities as local innovators
  - Frames coordinated statewide efforts



# **Steering Committee**

- Wendy Wiiks
- Michelle Nadeau
- Raymond Racine
- John Roseberry
- Christopher Knuth
- Robert Sideleau
- Angie Chebuske
- Nikki Peters
- James LeBlanc
- James Reilly
- Elizabeth Wood

Grant Administrator Administrative Assistant to the Mayor DPW Director City Engineer Health Director Fire Chief Conservation Agent Economic Development Coordinator EMA Director Assistant Superintendent Director of Planning & Development City of Leominster City of Leominster

MVP Certified Provider Support Team (Woodard & Curran):

- Mary House
- Alan Benevides, PE
- Kenneth Mavrogeorge, PE
- Kendra Dow, EIT

# **Community Building Resiliency (CRB) Workshop**

- December 11, 2020
- More than 40 participants
- Purpose
  - Identify Leominster's challenges and goals
  - Characterize natural hazards
  - Identify community vulnerabilities and strengths
  - Identify & prioritize community actions



# CRB Workshop





### Risk Matrix – Identifying Hazards, Vulnerabilities, Strengths, and Actions

<b>H</b> - <b>M</b> - <b>L</b> priority for action over the <u>S</u> hort or <u>L</u> ong term $\underline{V}$ = Vulnerability <u>S</u> = Strength	n (and <u>O</u> ngoin	g)		Top Priority Hazards	SNOW			Priority	Time
Features	Location	Ownership	V or S	inius.	AND	DROUGHT	HEAT WAVE	H · M · L	Short Lon Ongoing
Infrastructural									
DRINKING WATER TANKS/TRAMENT STORWATER CULVERTS (1.8. DECICCO, DE	WEST	CITY	V	LAND ACQUISTION ASSESSMENT OF CULV		WATER FORM	Public Filmes WATER Locations	M	0
MONOOSNOE BROOK RETAINING WALL TORNWATER MERASTRUCTURE		CITY	Ý	REHAGING ATON AND RECONTRUST		scoma - Diecicco	- POWNTOWN CULURS	H	5
NASHUA RIVER BANK EROSION			V	RELASILISATION &	CRAPE -			H	2
WATER SYSTEM INFRASTRUCTURE	CAYWIDE	CITY	1/s			INPROVING AND D	pes.	M	0
1, 1	CITYWIDE	CITY	V	ENAMATING OF CIT	Y BACKUP POWER	NEEDS / RAHA	concentrations	M	0
HIGH HAZARD DAMS	CITYWIDE	CITY	V	REHABILITAS & A				Н	0
COMMUNIC ON / DISEMWATING	CITYWIDE	CITY	V	SET WP STANDA	ROS/POLICIES	to GET INFORMAT	and To Public	H	0
FOR NEW AND DIVERSE POPULASIONS							in rerustic	//	
Low Income community/Homelessness	CITYWIDE	CITY	V	SET UP CITY ST	AMDARDS TO HEL	P IN TIMES OF	EMERGENCIES	Н	0
ACCESS TO ENERGENCY MEDICA /	CITYWIDE S	CITY	V	COURDINATION +	ITH HUSpital on	STAFFING DUR	c energe cits	M	0
DEPARTMENTAL COORDINATION	CITYMOR	CITY	S		partmental co	ORDINATION		L	0
TRANSPORTATION ACCESS	CITYWIDE	CITY	V/s	PROVISIONS FOR TRANSPORTATION	ARNISONS FOR TRANSPORTATION		PROVISIONS FOR TRANSPORTATION	L	0
Environmental									
GREENING THE GATEWAY CITIES	CITYWIDE	CITY	S					L	O
MSY PROGRAM - STORMWATER	CITYWIDE	city	V	VACTOR FOR CLEANING BASINS	RUAD TREATMENT TECHNIQUES			H	0
NO TOWN RESERVEN WATERSHED	NW LEOMIN		V	FORESTRY M	ANAGEMENT			M	O
WASTEREMOVA / ANDERIS	Westweister	FITCHOUR G WESTMUSTER	V					M	0
CONTINUE USE OF ONSITE SOIL ABSINGTIME	CITYLIDE	PRIVATE	V	EVALUATE EX	isting sewers	ystem for pos	SIB/E EXPANSION	L	0
CITY PARKING AREAS		CITY	V	CREEN ENFRAST	METURE/LIC	)		1	0

# **Identifying Priority Projects**

STREAM BANK STABILIZATION/ FRiprap/culvent Monoosnac Brook (retaining wall) Route 2 Culverts (separate (improvements)
 sterminater collection system) - Improvements + clearing of Fire road system along trail network.

- Create a plan to nation water during extreme heat

- Study water reservin to increase capacity to handle xcess runoff

- Establish + manutain emergency evacuation)

 Evaluate public intrastructure upgraded on grandfatturited developments (ongoing routine maintenance)
 Improving communications for multi-lingual
 Study
 Gas intrastructure - improving communications with partners

Increase stormwater
 Capacity

Complete assessment fer

chm repair - maintenance

- Education program (what to do

- Funding for emergency services (ability to meet stream crossing stats) - Evac. plan for natural or chamical Event Restore / increase wetland areas 1084 ch create new onus (address ) improve water quality Tanks rehabilitations (upgrades) Legat Hill · Evaluate City backup gunerators (equipment runded)

# **Top Priority Actions**

- Communications & Database
- Stream Bank Stabilization
- Culverts
- Dam Repair & Maintenance
- Increase Stormwater Capacity
- Restore & Increase Wetland Areas
- Public Infrastructure Evaluation

ommunications/ Database - every nousehold to have doament (multi-lingual) to prepare - shalter in place Culverts - prioritize, repair + replace - Community energency response tam. Expand + Bolsten

Action	Description & Notes
Communications & Database	Create a multi-lingual education system to educate residents on what to do in an emergency. Create a database for all residents in the City and provide a multi-lingual document for procedures during a shelter in place. Improve communications for multi-lingual residents.

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Restore & Increase Wetland Areas	To address and improve water quality, identify locations where wetlands have previously been lost and restore if feasible. Identify locations where new wetlands could be created to mitigate the impact on previously lost wetlands.

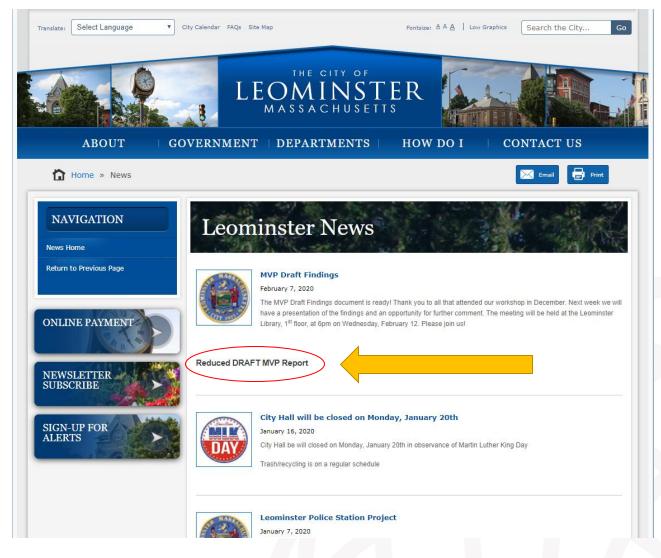
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Culverts	Create a city-wide program to assess, prioritize, and repair/replace culverts. Program would include structural and hydraulic capacity assessment, identification of deficient culverts and recommended improvements.
Dam Repair & Maintenance	Complete assessment to identify dams in need of repair or maintenance, prioritize repair and/or maintenance of specific publicly owned dams. Required repair and maintenance of privately owned dams in the City.
Increase Stormwater Capacity	Consider an analysis of the entire drainage system to calculate the capacity of system and detect locations where flooding is likely to occur. Identify locations where stormwater capacity could be increased in the City to improve the functionality of the stormwater drainage system.
Restore & Increase Wetland Areas	To address and improve water quality, identify locations where wetlands have previously been lost and restore if feasible. Identify locations where new wetlands could be created to mitigate the impact on previously lost wetlands.
Public Infrastructure Evaluation	Evaluate public infrastructure upgraded on grandfathered developments. Provide ongoing routine maintenance to public infrastructure to proactively address issues with the infrastructure.

## **Additional Priority Actions**

- Improvements to and clearing of trail network
- Evaluate the City's backup generators
- Identify the equipment needed to continue running an effective MS4 program
- Identify locations where water storage tanks need rehabilitation
- Expand and bolster the community emergency response team
- Create a plan to ration water in instances of extreme heat or drought
- Perform study to increase the capacity of the City's reservoirs
- Establish and maintain an effective evacuation route and plan
- Evaluate the gas infrastructure in the City

# **Next Steps**

- Finalize Summary of Findings Report based on feedback provided this evening
- Submit Summary of Findings Report to Executive Office of Energy and Environmental Affairs (EEA)
- Prepare one or more MVP Action Grant Applications for Priority Actions – Anticipated May 2020



### **Tonight's Listening Session**

Do you have questions on the MVP Process?

Do you have questions or feedback on the Priority Actions?

Do you have questions on what the next steps in the process are?

### Leominster, MA MVP Listening Session

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February 12, 2020

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