CITY OF MALDEN
COMMUNITY RESILIENCE
BUILDING WORKSHOP
SUMMARY OF FINDINGS REPORT

April 23, 2020
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PREPARED FOR:
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EXECUTIVE SUMMARY

Per Executive Order 569, on November 7, 2019 the City of Malden facilitated a Community Resilience Building (CRB) Workshop using the Nature Conservancy’s CRB guidance. In preparation for the CRB Workshop, the Core Team with assistance from GZA GeoEnvironmental, Inc. (GZA) and the Mystic River Watershed Association (MyRWA) identified and invited over seventy stakeholders. These stakeholders included local and state officials and local and regional representatives from the Malden Works Steering Committee, Chamber of Commerce, Cambridge Health Alliance, Public Utilities, Metropolitan Area Planning Council (MAPC), Malden Public Schools and others. The Workshop’s central objectives were to:

- Define the top local natural and climate change-related hazards of concern;
- Identify hazard vulnerabilities;
- Identify existing City capabilities;
- Develop and prioritize actions for the community; and
- Identify opportunities to collaboratively advance actions to increase resilience.

The following is a brief summary of the CRB Workshop results with an emphasis on the top hazards, specific areas of concern and top priorities for climate adaptation actions.

Top Natural and Climate Related Hazards

1. Heat/Extreme Temperatures
2. Flooding
3. High Winds/Storms
4. Air Quality
5. Fire/Drought

Infrastructural Vulnerabilities and Areas of Concern

- Department of Public Works Yard at 356 Commercial Street adjacent to the Malden River
- City-wide Power System & National Grid Site on Commercial Street
- City-wide Drinking and Storm Water Systems
- Forest Street
- Amelia Earhart Dam on the Mystic River
- Tide Gates at Rumney Marsh and Malden River
- Bowman Street Culvert
- Intersection of Eastern Ave. and Broadway
- Intersection of Mountain Ave and Everett Street
- MWRA surcharge into stormwater system

Societal Vulnerabilities and Areas of Concern

- Senior Housing
- Salemwood School and Roosevelt Park
- Additional Public Schools
- Newland and Linden Housing Developments
Environmental Vulnerabilities and Areas of Concern

- Malden River and future economic development of the Commercial Street Corridor
- Roosevelt Park
- Saint Mary’s Brook at the border of Malden and Medford where the culvert does not connect to the pond
- Former Malden Hospital Campus
- Town Line Land Acquisition for Nature Trail

Identified Climate Adaptation Action Priorities

1. Department of Public Works (DPW) Site Resiliency Prototype Project that will support and enhance the Malden Works project, a nature-based solutions plan for improving flood resiliency and community parks and recreational open space underway to include flood protection, stormwater quality improvements and energy resilience at the DPW site.
3. Heat Mitigation/Tree Plantings Resilience Program.
4. City-wide Stormwater Improvements including a comprehensive vulnerability assessment and action plan
5. Resiliency in Zoning Assessment to evaluate how existing zoning ordinance requirements support or hinder climate resiliency and identify how zoning regulations could be amended to further bolster climate resiliency for the City.
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1.0 OVERVIEW

1.1 INTRODUCTION

The City of Malden is one of 249 municipalities (see Figure 1) in the Commonwealth of Massachusetts that are proactively increasing resiliency to natural hazards and climate change at the local level through the Municipal Vulnerability Preparedness (MVP) Program. Natural disasters can cause loss of life and extensive damages to properties and infrastructure, affecting the local, state, and national economic, social, and environmental well-being. Weather natural disasters are likely being impacted by climate change and are expected to be further exacerbated by climate change in the future.

![Map of MVP Designated Communities, FY2019 Planning Grant Communities and Locations of MVP Action Grant](image)

Figure 1. Map of MVP Designated Communities, FY2019 Planning Grant Communities and Locations of MVP Action Grant

Over the last decade Malden has experienced impacts from weather-related natural hazards such as “nor’easters”, severe winter weather, severe weather, and flooding including major storms during March 2010, August 2011, October 2012, February 2013, January 2015, and January and March 2018. The City has been actively identifying the City’s vulnerabilities
from natural hazards through the development of the City’s FEMA-approved 2017 Natural Hazard Mitigation Plan (2017 NHMP). The recent impacts from hurricanes Sandy and Irene in New England have increased the urgency for municipalities to increase resilience to address extreme weather and climate change vulnerability. In 2018, the Commonwealth experienced significant impacts from multiple nor’easters that resulted in property damage and utility disruption including power outages that extended from the coast to inland communities in the MetroWest region. New England, including Massachusetts, is expected to experience increased frequency and intensity of rain events, increased temperatures, and rising sea levels, which will increase the City’s natural hazard vulnerability. In consideration of these factors, the City is taking the necessary steps to build on the results of the City’s 2017 NHMP to develop climate adaptation and resilience priorities as outlined in this Community Resilience Building Summary Findings Report.

As of December 2019, the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs (EEA) has funded 249 communities (see Figure 1) to receive Municipal Vulnerability Preparedness (MVP) planning grants. The purpose of the grant is to provide financial assistance to communities to create a comprehensive, baseline climate change vulnerability assessment and to develop prioritized actions for dealing with climate-related and natural hazards using a field-tested approach, known as the Community Resilience Building (CRB) Workshop guide. In June 2019, the City received an MVP planning grant.

COMMUNITY RESILIENCE BUILDING WORKSHOP

This CRB Workshop guide includes a six-step approach (see Community Resilience Building Guide for more details) to conduct a vulnerability assessment and develop prioritized actions consistent with EEA requirements to a designated “MVP Community.” Receiving MVP designation will enable the City of Malden to apply for future MVP Action grants and will increase Malden’s standing for future funding opportunities from the Commonwealth (e.g., the Dams and Seawalls Grant Program). The Malden CRB Summary of Findings Report is the City’s completion of the six-step CRB process.

On November 7, 2019 the City completed the CRB Workshop at the Malden Senior City on Pleasant in Malden. The central objectives of the Workshop were to:

- Define the top local natural and climate change-related hazards of concern;
- Identify hazard vulnerabilities;
- Identify existing City capabilities;
- Develop and prioritize actions for the community; and
- Identify opportunities to collaboratively advance actions to increase resilience.

This report summarizes the findings of the CRB Workshop, identifies top natural and climate change related hazards and vulnerabilities, strengths and assets, and recommendations to improve resilience for the City of Malden.

1.2 CORE PROJECT TEAM

The City’s Core Project Team for the MVP Planning Grant included the following individuals:

- Ron Cochran, Director of Communications, City of Malden Mayor’s Office (MVP Project Lead)
- Yem Lip, Director of Engineering and City Engineer, City of Malden
- Dan Grover, Assistant Controller, City of Malden
- John DeSantis, Water Supervisor, City of Malden
- Gary Stead, Assistant Engineer, City of Malden
- Evan Spetrini, Senior Planner, Malden Redevelopment Authority
- Amber Christoffersen, Mystic River Watershed Association (MyRWA)
The Core Project Team along with technical assistance from State-Certified MVP Providers Wayne Cobleigh, Sam Bell, Dan Stapleton and Bin Wang of GZA, planned and facilitated the single-day workshop. GZA was responsible for preparing the CRB workshop materials, leading presentations, facilitating large group exercises and providing guidance during the small group exercises. Members from the Core Team and workshop participants were responsible for facilitating and documenting key information during the small group exercises and in presenting during the final large group exercise at the conclusion of the workshop.

1.3 WORKSHOP PARTICIPANTS

Over seventy (70) stakeholders were invited to the full-day workshop from various City departments, local and state elected officials, public utilities, neighborhoods, schools/daycares, community centers, regional planning and community groups and other community leaders. Section 8 includes the detailed list of attendees. Close to twenty (20) stakeholders participated in the all-day workshop held November 7, 2019 at the Malden Community Senior Center located on Washington Street in Downtown Malden. These stakeholders included individuals from the Cambridge Health Alliance, Malden Chamber of Commerce, Mystic River Watershed Association, MIT, Friends of the Malden River, and representatives from several City departments including health, public works, housing, engineering, schools, finance and the Mayor’s office.

1.4 CRB WORKSHOP PROCESS

The workshop started with a welcome by Mayor Gary Christenson and introductions by Ron Cochran, City Director of Communications. The introductions were followed by presentations by EEA’s Carolyn Meklenburg (overview of the MVP program), Wayne Cobleigh, Sam Bell and Dan Stapleton of GZA (overview of natural hazards and vulnerabilities) and Julie Wormser of MyRWA (Mystic River Watershed concerns). The presentation and workshop handouts (see Appendix A) included the following:

- MVP Program Overview
- CRB Workshop Process/Small Group Breakout Instructions
- Overview of Natural Hazards and Climate Change

After the presentations, GZA led a large group discussion to discuss and prioritize top five hazards for the City of Malden. The hazards were prioritized based on group voting using a web-based Mentimeter poll facilitated by GZA.

The large group exercise was followed by a series of small group breakout sessions during which stakeholders completed risk matrices to identify specific vulnerabilities and actions to reduce vulnerability and enhance the City’s resilience and adaptation capabilities. Appendices B and C include the stakeholder group mapping and completed risk matrices that present the results from the small group exercises. The workshop concluded with a final large group report out of priority actions and identification of the top hazards facing the City based on stakeholder rankings.
2.0   **TOP NATURAL AND CLIMATE-RELATED HAZARDS**

The Core Team presented hazards for consideration based on those identified from the City’s 2017 Hazard Mitigation Plan Update (2017 HMPU) and the Commonwealth of Massachusetts 2018 State Hazard Mitigation and Climate Adaptation Plan (2018 State Plan).

Natural Hazards included:

- severe winter weather hazards (ice, snow, blizzards, extreme cold),
- severe storms (thunderstorms, high winds, hurricanes, nor’easters, tornadoes),
- flooding (urban drainage, riverine, inland, dam failures, ground failures, sea level rise),
- fire (wildfire, urban fire),
- geologic hazards (earthquakes, landslides), and
- climate change (including sea level rise, extreme heat and cold, heavy precipitation frequency, precipitation intensity, severe storms).

**Appendix A** includes the hazards overview from the workshop presentation and handouts provided to the workshop participants.

Following the hazards overview the workshop participants discussed and identified the top natural and climate-related hazards for the City of Malden that included the following:

- Heat/Extreme Temperatures
- Flooding
- High Winds/Storms
- Air Quality
- Fire/Drought
3.0 CURRENT CONCERNS AND CHALLENGES PRESENTED BY NATURAL HAZARDS

To assist the workshop participants in identifying vulnerabilities and areas of concern, the Core Team and GZA prepared a base map for each group to evaluate during the first small group exercise. Critical assets included in the 2017 HMP Update, areas previously identified as having experienced flooding, and natural resources including open space and parks were presented on the base map. Critical assets from the 2017 HMP Update included public safety facilities (i.e. police, fire etc.), lifeline systems (i.e. electric substations, gas distribution, pump stations, etc.) transportation systems (i.e. state and local roads, MBTA rail lines, community trails), vulnerable populations (i.e. day care facilities, senior housing, assisted living facilities), medical facilities, churches, and hazardous waste sites. GZA also prepared and provided participants with a packet of information that included details on natural hazards in Malden as well as an index of the critical assets (see Appendix B). Based on a review of the base map and additional information, the participants identified key areas of concern and challenges posed by hazards in Malden. There was a consensus in that each group identified inland (urban) flooding as the greatest concern to the community and the City’s infrastructure, societal features and environmental features. Participants noted that the City experienced significant impacts from flooding during the March 2010 heavy rainfall event. The March 2010 flooding event overwhelmed parts of the City’s stormwater infrastructure and inundated some major roadways and cut off access to vulnerable population areas (i.e. senior and public housing) of the City during the major flooding event. Participants also identified challenges resulting from flooding along the Malden River and Town Line Brook that has impacted public infrastructure and could significantly impact vulnerable populations and major public infrastructure.

The City is not currently vulnerable to impacts from coastal flooding; however, workshop participants voiced concerns on the potential impacts sea level rise will have on coastal flooding impacts to the Amelia Earhart Dam. Participants noted that sea level rise may also increase the City’s vulnerability along the Malden River and from Rumney Marsh through the Town Line Brook. Stakeholders expressed concern that sea level rise will increase the vulnerability of Industrial Park properties located along the Malden River including the DPW facility and the National Grid site. Stakeholders also expressed concerns that future sea-level rise will have on the Linden Neighborhood from increased flooding from the Town Line Brook at the border with Revere.

Stakeholders also expressed concerns on impacts that high winds and severe storms pose to 1) public safety and public works response capabilities; 2) power outage potential at public safety facilities and vulnerable populations including low-income and senior housing; 3) downed transformers will have on public transit. Stakeholders noted that over the last five years Malden has experienced impacts from numerous nor’easters combined with other winter storm events including the blizzard of 2013 (Nemo), back-to-back-to-back snow-storms in 2015, 2017 nor’easter, and multiple nor’easters in January and March of 2018.

Stakeholders expressed concern for the current level of preparedness for future heat events and extreme temperatures especially in consideration of vulnerable populations. Stakeholders noted that the public schools and public housing that do not have on-site back-up power or air conditioning will be at greater risk to impacts from extended power outages or heat events lasting multiple days. Stakeholders were aware that the number of days that will exceed 90 degrees will increase for the City in the future which will lead to the need for the City to develop a more comprehensive preparedness approach to addressing heat/extreme temperatures for vulnerable populations.

Further details on the specific areas of concern and challenges identified by the stakeholders in relation to infrastructure, societal features and environmental resources are outlined in more detail in Section 5 of this report.
4.0 SPECIFIC CATEGORIES OF CONCERNS AND CHALLENGES

The following significant categories of concern and challenges were identified by stakeholders during the small work group sessions relative to Malden’s infrastructure, and societal and environmental features.

4.1 INFRASTRUCTURE

- Stakeholders expressed concern for **roadways** and **public transit areas** that experience flooding caused by **stormwater runoff** and **riverine flooding** including Broadway Corridor (including the Townline Estates and Plaza), Forest Street, Eastern Avenue, Medford Street Bridge, Intersection of Mountain Avenue and Everett Street, intersection of Broadway and Eastern Avenue, Salem Street at Mount Vernon Street, Medford Street MBTA Bridge, MBTA Oak Grove and Wellington Stations. Stakeholders noted that inundated roadways would also **limit the emergency response capabilities** of police, fire and emergency management during and directly after major flood events.

- Stakeholders noted that both the **stormwater and wastewater systems** are **vulnerable to surcharging** during heavy rainfall events combined with riverine flooding. Stormwater surcharges have had a cascading impact on further increasing the vulnerability of roadways (e.g. Forest, Hadley, Russell, and Bowman Streets) and some public housing.

- Stakeholders noted that the **Department of Public Works Facility** site is vulnerable to **flooding** from the **Malden River** and expressed concerns regarding the **DPW’s capabilities for response during major flooding events**.

- Stakeholders identified the need to have a **resilient power supply** and distribution system as critical, with the understanding that this category of concern is largely controlled by another entity (power supplier/distributor). However, the group cited specific items that could be controlled, such as the need for an Emergency Preparedness Plan, and strong relationships with National Grid, the local supplier, to reinforce the City’s priorities for power restoration to healthcare facilities, nursing homes, the emergency shelter, etc. The need for the City to identify locations with portable power generators that could be useful in emergencies was also cited.

- While the **Amelia Earhart Dam** currently reduces the potential impacts from **coastal flooding** today, stakeholders expressed concern that **sea-level-rise will increase the vulnerability** of the dam in the future. To reduce the dam’s vulnerability to future coastal flooding stakeholders noted that regional collaboration and collaboration with the Department of Conservation and Recreation will be critical to making the Amelia Earhart Dam more resilient in the future. In addition, representatives from the Mystic River Watershed Association noted that the historic coastal surges of January 4, and March 2, 2018 raised red flags when the dam appeared to be close to overtopping as noted in greater detail in the **Everett Independent** article weblink https://everettindependent.com/2018/03/16/earhart-dam-draws-attention-during-flooding-events-this-year/.

4.2 SOCIETAL

- Stakeholders identified the need to determine **back-up power capabilities** at the City’s **Senior** and **Public Housing Facilities** with respect to the top hazards.

- Stakeholders raised concerns over the lack of **public shelter space** in the event of a large-scale hazard event especially in consideration of emergency and homeless sheltering capacities.

- Stakeholders expressed the need to communicate across multiple languages to reduce the potential for **language isolation** during hazard events in the City.

- Stakeholders noted that the **Salemwood School** and **Roosevelt Park** are vulnerable to impacts from **flooding**.
• Several Senior and Public Housing developments are vulnerable to flooding from heavy rainfall and riverine flooding. Stakeholders specifically identified housing located in the Linden, Linden Heights, Forestdale, Edgeworth neighborhoods as being particularly vulnerable to flooding.

• Stakeholders identified the Cambridge Health Alliance and South Cove Care Centers as being within the FEMA special flood hazard area as well as sites that are vulnerable to flooding from stormwater run-off.

4.3 ENVIRONMENTAL

• Stakeholders identified flooding from the Rumney Marsh which is in Revere through the Town Line Brook increases the vulnerability of properties located in the Linden Neighborhood. The vulnerability is expected to increase in the future from sea-level rise.

• Flooding from the Malden River increases the vulnerability of several properties located in the Industrial Park District. Specific infrastructure vulnerable to flooding from the river is noted in Section 5.2

• Stakeholders noted that several parks and cemeteries in Malden that are at risk to flooding are also near public housing, schools and residential neighborhoods. The ones identified by several stakeholder groups included Linden, Coytemore Lea and Roosevelt Parks and Forest Dale and Holy Park Cemeteries.

• The Saint Mary’s Brook located at the City’s western border with Medford was also noted as an area vulnerable to flooding at Pleasant and Fellsway East.

• The Spot Pond Brook located on the northern border with Melrose was noted as an area vulnerable to flooding as well.

5.0 CURRENT STRENGTHS AND ASSETS IN THE CITY OF MALDEN

Based on the results of the small group discussions in evaluating community assets and hazards, the workshop participants identified many infrastructural, societal and environmental strengths in Malden.

5.1 INFRASTRUCTURAL

• Stakeholders identified the police and fire departments as a major strength for the City in terms of providing emergency response support for Malden.

• The participants all cited the importance of the DPW Facility operations and equipment and the need to maintain those assets in the event of a disaster, but also the importance of maintaining infrastructure to prevent or mitigate potential hazards. The City of Malden was successful in winning the first Norman B. Leventhal City Prize of $100,000 from MIT for the Malden Works for Waterfront Equity and Resilience (Malden Works) project. Malden Works has proposed a transformation of the city’s Department of Public Works (DPW) site on the Malden River into a civic waterfront space. The Malden Works Team will work with the DPW to study and redesign the site and building operations to foster climate change preparedness, improved stormwater management, and the integration of safe public access. The Core Team envisions building on this legacy through the preparation of this report to assist Malden in becoming more resilient to the impacts from future extreme weather and natural hazard events.

• Tide Gates located along the Malden River were noted as a strength in reducing the vulnerability of the Industrial Park District to flooding from the river.

• Stakeholders also identified the location of key facilities/utilities including the Telecommunications Switching Station, Police and Fire Stations as strengths for the City. These assets are in areas less vulnerable to flooding and can assist the City in making the community more resilient during and directly after major hazard events.
• The City’s public transportation including the **MBTA Orane Line transit system and Bike Trail** assist in reducing greenhouse gas emissions and reducing traffic as well as provide an alternative means for evacuation.

• Some stakeholders noted that the **Amelia Earhart Dam** currently provides protection from coastal flooding; however, this dam will become increasingly vulnerable to overtopping in the long-term resulting from sea-level-rise as noted in Section 5.2.

5.2 **SOCIETAL**

• The **Salemwood School** serves as strength as a **shelter** during emergency events especially during extreme temperature and flooding events.

• Stakeholders identified **Cultural and Community Networks** as key strengths for the City that include **Churches**, **Faith-based Networks**, **Malden Senior Center**, **Head Start ABCD, ABCD Poverty**, and **Youth Teen Centers** for Teen Enrichment.

• The medical services provided by **Cambridge Health Alliance** and **South Cove Care Centers** were identified as a strength for Malden to assist in providing care before and after hazard events; however, there was some concern regarding the lack of a major hospital within the City.

• **Malden’s MVP Core Team** is a key strength to the City as many team members have taken an active role over the last decade in working together to better understand the community’s vulnerabilities and identify suitable natural hazard mitigation options to reduce impacts from hazards. Many of the team members have over a decade each of **institutional knowledge** having worked for the City of Malden in various capacities that will enable the City to successfully implement key priorities outlined in this report. The City plans to leverage the Core Team member’s local knowledge and understanding of state and federal funding sources in actively implementing actions resulting from the CRB workshop.

• The City’s **Community Emergency Response Team (CERT)** and **Medical Response Corps (MRC)** were also identified as key support systems for Malden by stakeholders.

5.3 **ENVIRONMENTAL**

• The **City’s parks and open space** including cemeteries serve as key assets for reducing the heat island effect in some areas of the City and serve as flood storage areas to assist in reducing the impacts from future flooding. The stakeholders specifically identified **Pine Banks Park, Linden Park, Fellsmere Park & Pond, Forestdale Park**, and **Roosevelt Park** as key assets.

• The **Malden River** and **Little Creek** are key assets for **future economic redevelopment** along the Commercial Street Corridor.

• **Middlesex Fells** serves as a key community and regional asset serving as a buffer to flooding and providing flood storage.

• The City’s existing **water supply** serves as strength for the City where regulations are in place to ensure the quality and an adequate supply of water for the City.

• The **former hospital campus site** serves potential area for future open space for flood storage combined with economic development through resilient redevelopment.
6.0 PRIORITY ACTIONS TO IMPROVE RESILIENCE

During the final small group exercise the stakeholders developed actions to bolster the existing strengths and to improve/mitigate the vulnerabilities outlined in Sections 5 and 6. At the conclusion of the workshop stakeholders from each of the small groups presented a brief summary of their recommended priority actions as a large group and identified the following actions as the five top priorities to improve the City’s resilience to natural and climate-related hazards that included:

1. Prepare a Department of Public Works (DPW) Site Resiliency Prototype Project that will support and building from the Malden Works resiliency work underway to include flood protection, stormwater improvement and energy resiliency at the DPW site.

2. Identify and implement resiliency improvements to Public Housing.

3. Develop a City-wide Heat Mitigation/Tree Plantings Resilience Program.

4. Identify and Implement resiliency improvements to the City-wide Stormwater Infrastructure including preparation of comprehensive vulnerability assessment and action plan

5. Conduct a Resiliency in Zoning Assessment to evaluate how existing zoning requirements support or hinder climate resiliency and identify how the zoning regulations could be amended to further bolster climate resiliency for the City.

Figure 4. Small Group List of Action Priorities
6.1 HIGH PRIORITY ACTIONS

<table>
<thead>
<tr>
<th>Action</th>
<th>Type</th>
<th>Lead Department</th>
<th>Support</th>
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<tbody>
<tr>
<td><strong>INFRASTRUCTURAL</strong></td>
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<tr>
<td>Prepare engineering and redesign and retrofit of four (4) Roads that Flood Frequently Now: 1) 700 Broadway; 2) Intersection of Eastern Avenue and Broadway; 3) Intersection of Mountain Avenue and Everett Street; 4) Intersection of Salem and Mt. Vernon Streets. Step 1: Request that MassDOT to conduct feasibility of road elevation improvements for the 4 roads. Step 2: Apply for Redesign &amp; Retrofit funding.</td>
<td>Utility Infrastructure, Transportation</td>
<td>Public Works, MassDOT</td>
<td>Engineering</td>
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<tr>
<td>Conduct a Hydraulic and Hydrology Analysis &amp; Flood Improvement Feasibility Study for Linden and South Broadway Neighborhoods.</td>
<td>Utility Infrastructure, Community Resilience</td>
<td>Public Works</td>
<td>Engineering</td>
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<td>Conduct City-Wide Resilience Vulnerability Assessment &amp; Flood Improvements Feasibility Study</td>
<td>Community Resilience</td>
<td>Planning, Public Works</td>
<td>Engineering, Controller, Building, MyRWA</td>
</tr>
<tr>
<td>Prepare a Department of Public Works (DPW) Site Resiliency Prototype Project that will support and build from the Malden Works resiliency work underway to include flood protection, stormwater improvement and energy resiliency at the DPW site. Conduct a Gap Analysis to Evaluate Funding Needs for DPW to create a prototype for a Resilient Department of Public Works (DPW) Site on the Malden River.</td>
<td>Utility Infrastructure</td>
<td>Public Works, Malden Redevelopment Authority (MRA)</td>
<td>Engineering</td>
</tr>
<tr>
<td>Prepare Emergency Communications Strategy for Resilience Plan to: 1) Expand CERT/MRC Structure; 2) Build on Existing Continuity Networks like Churches; 3) Test the efficacy of communications with something like street cleaning; and Prepare Plan in multiple languages.</td>
<td>Emergency Preparedness and Response</td>
<td>Police, Fire and Emergency Management</td>
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<tr>
<td>Conduct a Stormwater Vulnerability Assessment and Resilience Feasibility Study that includes the City-wide stormwater infrastructure including 1) Tide Gates, 2) Culverts specifically at Hadley, Russell, Bowman Streets, 3) areas for upsizing of undersized pipes and cleaning of the system.</td>
<td>Utility Infrastructure</td>
<td>Public Works</td>
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<tr>
<td>Regional Collaboration to improve the resilience of the Amelia Earhart Dam to future Flood Events.</td>
<td>Coastal Resilience</td>
<td>City, MA DCR</td>
<td>MyRWA</td>
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### Action

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<thead>
<tr>
<th>Conduct Feasibility Study to evaluate Alternatives for new flood resilience project to channel water into the cemetery at Forest Road; 2) Apply for funding and Prepare Preliminary Engineering and Design for preferred alternative.</th>
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<td>Type</td>
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<tr>
<td>Utility Infrastructure</td>
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<tr>
<td>Lead Department</td>
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<td>Public Works, Engineering</td>
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### SOCIETAL

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<tr>
<th>Conduct a City-Wide Public Housing Resiliency Feasibility Study &amp; Risk Assessment for Improvements of Malden Housing Authority Properties: 1) 887 Total Elder Disabled Housing Units made including 722 Federally Assisted Program (FAP)Units and 165 State Program Units and 2) 458 Total Family Housing Units all of which are FAP Units. Include a vulnerability assessment and identification of resilience and adaptation strategies and projects to improve community resilience.</th>
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<td>Type</td>
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<tr>
<td>Municipal Facilities</td>
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<td>Lead Department</td>
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<td>Housing Authority</td>
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<td>Support</td>
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<td>Planning, Public Works</td>
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<tr>
<th>Conduct Facilities Resiliency Assessment including an energy efficiency energy audit of City Facilities, Housing, Schools, Medical Facilities. Evaluate systems like central air back-up power, threats to mechanical systems, etc. Also, include Low-income Housing Resilience Strategies with Mass Saves &amp; Resident Mobility and safety.</th>
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<td>Housing Authority, Schools, Public Works</td>
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<td>Support</td>
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<td>Planning, MyRWA</td>
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<tr>
<th>Prepare Linden Neighborhood Concept Design for Parks, School, and Public Housing that is Climate Resilient. Include Resilience Feasibility Assessment to Mitigate Riverine and Stormwater Flooding.</th>
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<td>Type</td>
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<td>Neighborhood Resiliency</td>
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<td>Lead Department</td>
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<tr>
<td>Parks and Recreation, Public Works</td>
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<tr>
<td>Support</td>
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<tr>
<td>Engineering</td>
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</table>

<table>
<thead>
<tr>
<th>Conduct Salemwood Runoff (H&amp;H) Analysis, Vulnerability Assessment and Feasibility Study to include consideration of nature-based infiltration technologies and other nature-based systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
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<tr>
<td>Utility Infrastructure</td>
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<td>Malden Schools, Parks and Recreation</td>
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<thead>
<tr>
<th>Add a Winter Heating Center at the Malden First Church of Nazarene for the Homeless Shelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Neighborhood Resiliency</td>
</tr>
<tr>
<td>Lead Department</td>
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<tr>
<td>Malden First Church of Nazarene</td>
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</table>

### ENVIRONMENTAL

<table>
<thead>
<tr>
<th>Conduct resilience feasibility study to assess and identify 1) Nature Based Solutions to address FEMA Flood Hazard Zone at Salemwood School and Park with an evaluation of current plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
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<tr>
<td>Nature Based Resiliency</td>
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<td>Engineering, Public Works</td>
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<thead>
<tr>
<th>Prepare City-Wide Parks Feasibility Study for Heat Island Impacts and Heat Mitigation. Consider Tree Plantings and Pervious Surface Mitigation/Resilience Solutions.</th>
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</thead>
<tbody>
<tr>
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<tr>
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<td>Support</td>
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<tr>
<td>Conservation Commission, Planning, MyRWA</td>
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<tr>
<td>Action</td>
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<td>------------------------------------------------------------------------</td>
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<tr>
<td>Conduct tree canopy feasibility study for improvements to Roosevelt</td>
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<tr>
<td>Park at Salemwood School.</td>
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<tr>
<td>Develop Malden Hospital Redevelopment Zoning Ordinance to propose green</td>
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<tr>
<td>infrastructure and resilience for stormwater flood management (using</td>
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<tr>
<td>Category 3) with Conservation Commission.</td>
</tr>
<tr>
<td>Partner with private property owners to discuss voluntary acquisition</td>
</tr>
<tr>
<td>of Private Properties at Town Line Brook for Public Trail Access and</td>
</tr>
<tr>
<td>Floodplain Management Education Training.</td>
</tr>
<tr>
<td>Ecological Restoration of riverbanks focused along the Malden and</td>
</tr>
<tr>
<td>Mystic Rivers with an emphasis on Regional Collaboration including the</td>
</tr>
<tr>
<td>Mystic River Watershed Association.</td>
</tr>
<tr>
<td>Conduct Resiliency in Zoning Study to: 1) Evaluate How Current Zoning</td>
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<tr>
<td>Furthers or Hinders Climate Resiliency; and 2) Identify ways in which</td>
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<tr>
<td>Current Zoning could be Amended to Encourage Climate Resiliency</td>
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### 6.2 ADDITIONAL PRIORITY ACTIONS

<table>
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<tr>
<td>Prepare Shading and Tree Planting Bike Trail Study to include connections of the Bike Trail to other trails in the region.</td>
<td>Energy Resilience</td>
<td>Parks and Recreation</td>
<td>Planning, Engineering</td>
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<td>Coordinate with MBTA Resiliency Manager of Oak Grove MBTA Rail Stop Flooding Risk.</td>
<td>Resilience Corridor</td>
<td>Public Works, MBTA</td>
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<tr>
<td>Conduct feasibility study to evaluate road lowering to address low bridge for evacuation at the Medford Street MBTA Bridge.</td>
<td>Resilience Corridor</td>
<td>Public Works, MBTA</td>
<td>Engineering</td>
</tr>
<tr>
<td>Conduct Water Main Piping System and Shut-off Gate Feasibility Study and Redesign and Retrofit for improvements to undersized Water Main Piping System.</td>
<td>Utility Infrastructure</td>
<td>Public Works</td>
<td>Engineering</td>
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<tr>
<td>Coordinate with MWRA on Redesign of Sanitary Sewer Capacity in relation to flood hazard; 2. Coordinate with MBTA on Redesign &amp; Retrofit Study for MWRA Surcharge to Stormwater.</td>
<td>Utility Infrastructure</td>
<td>Public Works, MWRA</td>
<td>Engineering</td>
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<tr>
<td><strong>SOCIETAL</strong></td>
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<tr>
<td>Assess Neighbors Helping and Neighborhood Financial Assistance for Heating Center at First Church of Nazarene.</td>
<td>Neighborhood Resilience</td>
<td>First Church of Nazarene</td>
<td></td>
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<tr>
<td>Conduct an energy and flood resilience feasibility study for Cambridge Health Alliance and South Cove Care Centers to assess 1) Retrofit &amp; Redesign including Nature Based Solution (NBS); 2) Energy Resilience to Flooding. Upon identification of priorities apply for engineering, redesign and retrofit funding.</td>
<td>Community Health and Preparedness</td>
<td>Cambridge Health Alliance and South Cove Care Centers</td>
<td>Health</td>
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<tr>
<td>Prepare Citywide Energy Resilience Plan and Program for all Public Properties/Assets</td>
<td>Energy Resilience</td>
<td>Public Works</td>
<td>Engineering</td>
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<tr>
<td>Develop Energy Resilient Cooling Center at the Malden Senior Center</td>
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<td>Malden Senior Center</td>
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<td><strong>ENVIRONMENTAL</strong></td>
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<tr>
<td>Improve storm drainage in low-lying areas of Coytemore Lea Park to redirect to green Infrastructure (i.e. water diversion) in the park</td>
<td>Utility Infrastructure</td>
<td>Public Works, Parks and Recreation</td>
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</table>
7.0 PUBLIC LISTENING SESSION

Malden hosted a public listening session at the Malden Community Senior Center on January 7, 2020 from 6:30pm to 8:30pm. The City advertised the public listening session on the City’s website, social media and community distribution lists. At the listening session the City led by Ron Cochran, GZA and the Mystic River Watershed Association provided the public with the chance to learn about the CRB Workshop with an overview of the Draft Summary of Findings Report (Draft Report) including the priority actions that resulted from the workshop. Participants had the opportunity to ask questions and provide written feedback in response to the details provided in both the presentation and responses to questions during the second half of the session. Appendix D includes the details of the listening session presentation, public comments and the list of attendees.

Figure 5. Image of the public listening session participants in attendance

At the end of the public listening session the City made the Draft Summary of Findings Report available for public comment. Feedback provided by community members and leaders on the Draft Report is included in Appendix E. Many comments provided in response to both the public listening session and Draft Report highlighted and supported priorities outlined in both the presentation and Draft Report. Based on the additional public feedback presented in Appendix E the table presented in section 7.1 outlines additional community priorities for inclusion in this Final Report.

7.1 PUBLIC COMMENT PRIORITY ACTIONS

<table>
<thead>
<tr>
<th>Action</th>
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<tbody>
<tr>
<td>The City should include a goal of reducing artificial groundcover significantly over the next ten years. Prepare a plan to reduce artificial groundcover over the next 10 years that includes a local mechanism for evaluating.</td>
<td>Environmental</td>
</tr>
<tr>
<td>Collaborate with the Saugus River Watershed Council on flood mitigation and resilience projects along the Town Line Brook and Saugus River.</td>
<td>Community Resilience</td>
</tr>
<tr>
<td>Conduct a Saugus River Flood Mitigation and Resilience Feasibility Study to identify recommendations for reducing impacts from future flooding along the river. This study will include but not be limited to an assessment of natural and nature-based solutions including green infrastructure projects.</td>
<td>Environmental</td>
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<tr>
<td>Action</td>
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<tr>
<td>DPW Site Resiliency presented in Table 6.1 should be looked at in conjunction with the proposed design on new elements to the Malden Waterfront at that location. Some consideration should be given to working with the City of Melrose to potentially co-locate DPW facilities at a less vulnerable location on Broadway on the Melrose / Malden line.</td>
<td>Community and Regional Resilience, Municipal Facilities, Utility Infrastructure</td>
</tr>
<tr>
<td>The Malden Housing Authority (MHA) MHA evaluation could also include an evaluation of the use of roof-top solar to help residents keep costs lower for air conditioning.</td>
<td>Societal, Community and Energy Resiliency</td>
</tr>
<tr>
<td>The priorities outlined in Table 6.1 related to Salemwood should incorporate information that has been developed in connection with the Roosevelt Park improvement project which includes a mix of both natural and aesthetic man-made solutions to increase flood storage while ensuring recreational facilities can withstand both flooding and the rigors of a heavy recreational use by both the school and sports programs.</td>
<td>Societal, Community Resilience</td>
</tr>
<tr>
<td>Include strategic retreat as an option in the voluntary acquisition action already outlined in Table 6.1 of this Plan.</td>
<td>Environmental</td>
</tr>
<tr>
<td>Since building codes cannot be more stringent than the Massachusetts State Building Codes, Prepare a flood resilience design guideline for new and substantial improvement. Use City of Boston’s design review and resilience guidelines as a model for preparing the City of Malden’s guidelines.</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>Collaborate with Malden Works to prepare an MVP Community Outreach and Education Program using a multi-lingual approach</td>
<td>Societal</td>
</tr>
<tr>
<td>Conduct a rezoning assessment for Commercial Street as a resilience corridor as separate action to protect the Malden River and its coastline. A mandated green space along the Malden River would provide the public with open space, tree plantings, preservation of wetlands (no artificial turf) would act as a sponge both for air and water quality and flood resilience. As a part of this effort, create a climate resilient waterfront public open spaces along the Malden River will ensure that the river can absorb the waters from the rainfall and the storm water system.</td>
<td>Environmental, Municipal Facilities, Utility Infrastructure</td>
</tr>
<tr>
<td>Conduct tree canopy feasibility study for improvements that include other areas in addition to those outlined in Table 6.1 including the Forest Dale Cemetery and other cemeteries as a part of the Tree Canopy Study. These areas need to replace the trees that have come down in the past five + years. Also include in this study an evaluation of what Native plantings should replace the trees that have been removed from open spaces and our streets to provide guidance to park maintenance department of the DPW.</td>
<td>Environmental</td>
</tr>
<tr>
<td>Conduct a [stormwater utility] enterprise fund feasibility study [and implement if feasible and approved by the City] to improve the City’s stormwater system and to improve Malden’s financial stability and revenue to take care of its essential stormwater system. Include as a part of this study effective community outreach and education to increase awareness among all of Malden residents [of the benefits and the costs of implementing a stormwater utility enterprise fund].</td>
<td>Utility Infrastructure</td>
</tr>
<tr>
<td>As a part of the Salemwood Resilience Feasibility Study action outlined in Table 6.1, conduct additional drainage evaluations that would include alternative engineering and designs for improving the grass field at Roosevelt Park.</td>
<td>Environmental</td>
</tr>
<tr>
<td>Conduct a more comprehensive community health resilience vulnerability assessment and study to further address the effects of the hazards outlined in this report on the public health of residents including additional public health impacts</td>
<td>Societal</td>
</tr>
</tbody>
</table>
from water and vector borne illnesses, sanitation issues, air pollution, mobility and access to resources, and food security.

8.0 CITATION

9.0 ACKNOWLEDGEMENTS
This project was made possible through funding from the Massachusetts Executive Office of Energy and Environmental Affairs’ Municipal Vulnerability Preparedness (MVP) Grant Program. The City wants to thank EEA for their leadership and funds to support this effort. The City would like to extend a special thanks to the MVP Greater Boston Regional Coordinator, Carolyn Meklenburg for participating in both the workshop and public listening session.

Thank-you to Mayor Gary Christenson for his support throughout this process of making the City more resilient to climate change and for his participation at the CRB Workshop.

Thank-you to the City of Malden community members and leaders and the Mystic River Watershed Association for their commitment and dedication to this process, the Core Team Members identified and Ron Cochran for leading this project for the City. The Core Team would also like to thank the Malden Community Senior Center for providing a place to host the workshop and public listening session.

9.1 WORKSHOP STAKEHOLDERS
The following stakeholders were invited to participate in the CRB Workshop.

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Affiliation</th>
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</thead>
<tbody>
<tr>
<td>Marie Law</td>
<td>Adams</td>
<td>Leventhal City Prize Team</td>
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<tr>
<td>Souad</td>
<td>Akib</td>
<td>Malden Works Steering Committee</td>
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<tr>
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<tr>
<td>Karen</td>
<td>Buck</td>
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<tr>
<td>Renee</td>
<td>Cammarata Hamilton</td>
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<tr>
<td>Amber</td>
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<td>Sam</td>
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<tr>
<td>Karen</td>
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<td>Kathy</td>
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<td>Julie</td>
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</tr>
<tr>
<td>Josh</td>
<td>Young</td>
<td>ABCD</td>
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</tbody>
</table>

* November 7, 2019 Workshop Participant
Appendix A

Workshop Presentation and Handouts
Community Resilience Building Workshop

City of Malden, Massachusetts
November 7, 2019

Wayne Cobleigh
Samuel J. Bell, CFM
GZA GeoEnvironmental, Inc.

Workshop Agenda

• 8:00 - 8:30 Registration and Refreshments
• 8:30 - 8:35 Welcome and Introductions
• 8:35 - 9:00 MVP Overview and Workshop Goals
• 9:00 – 9:15 Risk Matrix Overview
• 9:15 – 10:00 Large Group Exercise
  – Presentation Overview Hazards
  – Identify and Prioritize Hazards (Exercise)
• 10:00 – 10:15 Break
• 10:15 – 11:55 Small Group Exercise
  – Introductions (10 minutes)
  – Identify Infrastructure Vulnerabilities and Strengths (30 minutes)
  – Identify Environmental Vulnerabilities and Strengths (30 minutes)
  – Identify Social Vulnerabilities and Strengths (30 minutes)
Workshop Agenda

- 11:55 - 12:55 Lunch
- 12:55 - 1:20 Community Actions Overview
- 1:20 - 2:20 Small Group Exercise
  - Define actions
- 2:20 - 2:35 Break
- 2:35 - 3:25 Small Group Exercise
  - Prioritize Actions
- 3:25 - 3:50 Large Group Exercise
  - Small group report out
  - Finalize Top Action Priorities
- 3:50 - 4:00 Closing Remarks and Next Steps

Welcome and Introductions
Malden Introductions

Ron Cochran, Director of Communications

Core Team Members:
- Yem Lip, City of Malden
- Dan Grover, City of Malden
- John DeSantis, City of Malden
- Gary Stead, City of Malden Redevelopment
- Evan Spetini, Malden Redevelopment Authority
- Amber Christoffersen, MyRWA

GZA, EEA & Mystic River Watershed Association

Introductions

- Wayne Cobleigh, Principal-in-Charge/Facilitator
- Sam Bell, Project Manager/Facilitator
- Carolyn Meklenburg, EEA
- Facilitators:
  - Dan Stapleton, GZA
  - Bin Wang, GZA
  - Julie Wormser, MyRWA
  - Amber Christofferson, MyRWA
Municipal Vulnerability Preparedness Program

Carolyn Meklenburg
MVP Regional Coordinator for Greater Boston
MA Executive Office of Energy and Environmental Affairs

MVP Regions & Regional Coordinators

Regional Coordinator:
Andrew Smith – DEP Springfield
andrew.b.smith@mass.gov

Regional Coordinator:
Hillary King – DEP Worcester
hillary.king@mass.gov

Regional Coordinator:
Courtney Rocha – DEP Lakeville
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Regional Coordinator:
Michelle Rowden – DEP Lawrence
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Regional Coordinator:
Carolyn Meklenburg – EEA Boston
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Regional Coordinator:
Courtney Rocha – DEP Lakeville
courtney.rocha@mass.gov
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.

MA 2050 Decarbonization Plan

EEA is conducting an **80x50 Study** to identify the strategies, policies, and implementation pathways for MA to achieve at least 80% Greenhouse Gas reductions by 2050.

The results of that research will be published in a **2050 Roadmap report** and will inform the setting of a **2030 GHG emissions limit** and the development of the **Clean Energy and Climate Plan for 2030**.

More information and opportunities to get involved:

[www.mass.gov/2050Roadmap](http://www.mass.gov/2050Roadmap)
Next Steps: Climate Change & the Commonwealth

**Bill S.10:**

*An Act for Climate Change Adaptation Infrastructure Investments in the Commonwealth*

- Building on success of existing programs like MVP: Proposed new source of revenue for loans, grants, and technical assistance to municipalities and regional partnerships for priority adaptation projects
  - Proposed deeds excise increase → est. $137M annually ($1B in ten years)
  - Recurring, long-term revenue stream for multi-year project feasibility

**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

**Why nature-based?**

Where appropriate, nature-based solutions can be more cost-effective, protect water quality and quantity, sustain lands that provide food and recreation opportunities, reduce erosion, and minimize temperature increases associated with developed areas and climate change.
1/2/2020

MVP Process/Grant Types

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
- Determine overall priority actions
- Receive MVP designation

MVP Planning Grant

MVP Action Grant

Implement priority adaptation actions identified through planning process

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
MVP Action Grants: Project Types

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

* Most common project type
** Second-most common project type
***Third-most common project type

NEW IN 2019
- Energy Resilience
- Chemical Safety
- Land Acquisition for Resilience
- Subsidized Low-Income Housing Resilience Strategies
- Mosquito Control Districts
+ Expanded eligibility of project location

MVP Action Grants: Project Types (cont.)
Nature-Based Solutions

**Example Action Grant Projects**

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

**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 solutions**
Example Action Grant Projects
Local Bylaws, Ordinances, Plans, and Other Management Measures
Redesigns and Retrofits

**Boston**

- 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.

**Holroyke**

- 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.

**FY18 Action Grant Projects**
Detailed Vulnerability and Risk Assessment, Further Planning

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<th>Lost</th>
<th>Impact</th>
<th>Health</th>
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<td>23.7</td>
<td>1.6</td>
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<tr>
<td>Height above sea level</td>
<td>2</td>
<td>5.8</td>
<td></td>
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Image credits: Town of Holyoke, Hunter College CUNY, El Instituto UCONN
CRB Workshop Overview

Objectives:

1. **Define top hazards.** Understand connections between ongoing issues, hazards, and local planning and actions in your Community.

2. **Identify and map vulnerabilities and strengths** to develop infrastructure, societal and environmental risk profiles for your Community.

3. **Develop and prioritize actions** that reduce vulnerabilities and reinforce strengths for your community - local organizations, academic institutions, businesses, private citizens, neighborhoods, and community groups.

4. **Identify opportunities** to advance actions that further reduce the impact of hazards and increase resilience in your Community.
CRB Workshop Overview

Malden - Resources:

- Malden GIS
- Hazard Mitigation Plan 2016 Update
- City of Malden Master Plan
- Malden Stormwater Management Plan

Risk Matrix Overview
Risk Matrix

<table>
<thead>
<tr>
<th>Category</th>
<th>Priority</th>
<th>Impact</th>
<th>Likelihood</th>
<th>Risk</th>
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<tr>
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<tr>
<td>category3</td>
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<td>unlikely</td>
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Risk Matrix - Hazards

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<th>Priority</th>
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<td>low</td>
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City of Malden Community Resilience Building Workshop
### Risk Matrix – Features

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Societal</th>
<th>Environmental</th>
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<tbody>
<tr>
<td>Vulnerability</td>
<td>Ownership</td>
<td>Vulnerability</td>
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<tr>
<td>or Strength</td>
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<td>or Strength</td>
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</table>

### Malden Features

- **Features**
  - Infrastructure
  - Societal
  - Environmental

- **Location**

- **Ownership**

- **Vulnerability or Strength**
Malden Features

Vulnerability or Strength

- **Features**
- **Location**
- **Ownership**
- **Vulnerability or Strength**

Infrastructure Features

- Transportation Systems including roadways and bridges
- Utilities including power generation facilities
- Stormwater Infrastructure
- Water supply
- Wastewater and water treatment plants
- Communications Data Centers
Societal Features

- Neighborhoods
- Police and Fire Departments
- Vulnerable Populations including elderly and children
- Emergency Medical Services
- Civic Groups
- Low to Moderate Income Areas
- Special Needs

Environmental Features

- Malden River
- Pines River
- Town Line Brook
- Open Space and Parks
- Cemeteries
- Wetlands
Large Group Exercise
+/- 30 Minutes
Identify and Prioritize Hazards

Malden Natural Hazards Rankings


- Flooding - High Frequency & Serious Severity
- Nor'easters – High Frequency & Minor Severity
- Winter Hazards - High Frequency
- Severe Thunderstorms - High Frequency and Minor Severity
- Hurricanes - Medium Frequency & Serious Severity
- Extreme Temperatures - Medium Frequency and Minor Severity
Massachusetts 2018 Hazards Rankings

Top 5 Hazards 2018 State Hazard Mitigation and Climate Adaptation Plan

- Extreme Precipitation
- Hurricanes/Tropical Storms
- Nor’easters
- Ice Storms
- Severe Winter Storm

Climate Change

- Hot Temperatures +
- Precipitation Intensity +
- Heavy Precipitation Frequency +
- Sea Level Rise +
- Snowfall -
Malden Composite Natural Hazards

Heat

Average/Extreme Temperatures
Increased Temperatures/Extreme Heat
Increased Temperatures/Extreme Heat

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<tr>
<th>Climate Indicator</th>
<th>Observed Value</th>
<th>Mid-Century Projected Change in Summers</th>
<th>End of Century Projected Change in Summers</th>
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<tr>
<td>Precipitation</td>
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<td>Increase by 4 in</td>
<td>Increase by 6 in</td>
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<td>Frequency</td>
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<td>Increase by 30 days</td>
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<tr>
<td>Winter</td>
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<td>Increase by 10 days</td>
<td>Increase by 15 days</td>
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<tr>
<td>Spring</td>
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<td>Decrease by 5 days</td>
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<tr>
<td>Fall</td>
<td></td>
<td>Decrease by 3 days</td>
<td>Decrease by 3 days</td>
</tr>
</tbody>
</table>

* Increased temperatures average from 1970-2009. Temperatures from high or decreased lowest values from low or increased amounts.

Impervious Surface
Impervious Surface

Winter Hazards
Snowfall

Wind
Wind Speed

Flood

Inland Flooding

Coastal Flooding
Sea Level Rise

NOAA et al. 2017 Relative Sea Level Change Scenarios for: BOSTON

Nuisance Flooding: 2070

Risk Zone Map
Nuisance Flooding: 2100 Extreme Sea Level Rise Scenario

Flooding Frequency: Future
Flooding Vulnerability: Future

![Projected Growth in Flood Exposure](image)

- **Title:** Projected Growth in Flood Exposure
- **Subtitle:** Exposed Flood Hazards
- **Total population in Malden exposed to flooding:**
  - Low
  - Medium
  - High

**Legend:**
- Populations are projected using current flood hazard levels.

**Break 15 Minutes**
Small Group Exercise
+/- 1 hr and 30 Minutes
Identify Feature Vulnerabilities and Strengths

LUNCH 11:55AM to 12:55PM
Community Actions Overview

MVP Action Grants: Project Types

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

*Most common project type
**Second-most common project type
***Third-most common project type
MVP Action Grants: Project Types (cont.)

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

NEW IN 2019
- Energy Resilience
- Chemical Safety
- Land Acquisition for Resilience
- Subsidized Low-Income Housing Resilience Strategies
- Mosquito Control Districts
+ Expanded eligibility of project location

2017 Hazard Mitigation Plan - Priority Mitigation Actions

- FLOOD Hazard Mitigation Actions
  - Dredge the Town Line Brook channel
  - Linden Area - increase the storage capacity behind the Revere floodgate
  - Increase storage capacity at Bowman/Durso Streets by install underground storage tanks or constructing a parallel second culvert
  - Complete flood mitigation work at the Townline Estates Trailer Park on Broadway

- WIND & WINTER STORMS
  - Tree Warden Coordination with Utility Companies

- EXTREME TEMPERATURES
  - Site Design to increase tree plantings near buildings, increase the percentage of trees used in parking areas, and along public ways
  - Promote Green Building and Cool Roof designs
2017 Hazard Mitigation Plan - Priority Mitigation Actions

- **EXTREME TEMPERATURES** (Cont.)
  - Provide facility for additional vulnerable populations (such as disabled populations and in addition to senior residents) during extreme temperature

- **DROUGHT**
  - Promote drought tolerant landscaping and site design measures

- **MULTIPLE HAZARDS**
  - Shelter generator hook-ups or clean energy resiliency
  - Regional communications and GIS capability

**Small Group Exercise**

1 hour
Identify Community Actions
Break 15 Minutes

Small Group Exercise
50 minutes
Prioritize Actions
**Prioritizing Hazards**

2nd: Flood
3rd: High Winds / Storms
4th: Air Quality
5th: Fire / Drought

**Prioritizing Projects**

1st: DFW site resiliency pilot
2nd: Public Housing Resiliency Improve.
3rd: Heat mitigation/Tree planting
4th: Zoning re-assess
5th: Emergency comm. Improv.
6th: Town Line Brook Aquation
7th: Eco restoration w/ MyRWA
8th: HGH Linden & S. Broadway
9th: Roosevelt Park / Linden Neighb.
10th: Winter Heating Center at Church
11th: Retrofit four roads that flood
Closing Remarks and Next Steps

Next Steps

1. Prepare Summary of Findings Report
2. Facilitate Public Listening Session on December 3, 2019
3. Revise Summary of Findings Report
4. Submit Final Summary of Findings Report to EEA
5. Receive MVP Designation by EEA
6. Apply for MVP Action Grants
Handouts
CRB Workshop Overview

Resources:

Select resources for Massachusetts

- Mass Gov: Climate Change
- EPA's Resilience and Adaptation in New England (RAINE)
- Massachusetts Ocean Resource Information System (MORIS)
- Comparison Matrix: Sea Level Rise and Coastal Flood Web Tools
- Adaptation Clearinghouse: sea level rise adaptation
- Georgetown Climate Center: state climate change preparations and progress
- Climate Adaptation Knowledge Exchange (CAKEX): sea level rise
- MassGIS: OLIVER - Online Mapping Tool
- MA CZM: Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning
- City of Boston: Climate Action Plan
- City of Boston: Greenovate Boston
- Cambridge: Climate Change Vulnerability Assessment
- The Provincetown Center for Coastal Studies
- Sea Level Rise Viewer | Digital Coast - NOAA Office for Coastal Management
- Coastal Flood Exposure Mapper | Digital Coast - NOAA Office for Coastal Management
- MA CZM: StormSmart Coasts - Massachusetts Shoreline Change Project
Malden Population
Malden Land Use
Malden Zoning
Societal Features: Neighborhoods
Malden Essential Facilities
Malden Lifeline Services
Malden Transportation System
Infrastructure Feature: Malden Water System
Infrastructure Feature: Malden Sewer Infrastructure
Malden Stormwater Infrastructure
Malden Stormwater Infrastructure: Catch Basins
Nuisance Flooding: 2050
Nuisance Flooding: 2070
Nuisance Flooding: 2070 – Population
Nuisance Flooding: 2070 – Social Vulnerability
Nuisance Flooding: 2070 – Property
Nuisance Flooding: 2070 – Income
Urban Flooding: Eastern Avenue near Holy Cross Cemetery

Drainage backs up along Eastern Avenue and blocks the roadway during high precipitation events.
Urban Flooding: East of Rt 60 near Malden High

Low lying area, experiences drainage backups and floods during precipitation events.
Urban Flooding: Bowman and Durso

Residential neighborhood drained by 48-inch culvert, which drains to the Revere tide gate. Area floods due to run-off and is subject to tidal back-up from the tide gate.
Urban Flooding: Felway and Pleasant Streets

Floods due to open brook that backs up during intense precipitation events.
Urban Flooding: Linden Area Neighborhood

Town Line Brook watershed. Floods during intense precipitation events. Insufficient stormwater storage capacity. Also tidal flooding.
Urban Flooding: Hanover Street/Marlborough/Kennard

2008 basement backyard and flooding - flood mitigation measures have been taken
Urban Flooding: Broadway Trailer Park

Stream flooding during heavy precipitation. Mass Dot to dredge creek.
2013 Probability of Coastal Storm Flooding in the Mystic Watershed

Data Source: Woods Hole Group
2070 PROBABILITY OF COASTAL FLOODING
MYSTIC RIVER WATERSHED

Data Source: Woods Hole Group
2030 COASTAL FLOODING FROM a 1% STORM
MYSTIC RIVER WATERSHED

Depth of Flooding (ft)
- Dry
- 0.5 ft
- 1 ft
- 1.5 ft
- 2 ft
- 2.5 ft
- 3 ft
- 3.5 ft
- 4 ft
- 4.5 ft
- 5 ft
- 10 ft
- > 10 ft

Watershed Boundary
Municipal Boundary

Data source: Woods Hole Group
2013 Probability of Coastal Storm Flooding in the Mystic Watershed

Data Source: Woods Hole Group
2070 Probability of Coastal Storm Flooding in the Mystic Watershed

Depth of Flooding (ft)
- Dry
- 0.5 ft
- 1 ft
- 1.5 ft
- 2 ft
- 2.5 ft
- 3 ft
- 3.5 ft
- 4 ft
- 4.5 ft
- 5 ft
- 10 ft
- > 10 ft

Watershed Boundary
Municipal Boundary

Data Source: Woods Hole Group
Appendix B

Base Map, Assets Index and Stakeholder Group Mapping
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<thead>
<tr>
<th>OBJECTID</th>
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<th>Map Number</th>
<th>CRITICAL ASSET NAME</th>
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<th>CRB CATEGORY</th>
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<td>232 Fuller St, Everett, MA</td>
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Appendix C

Completed Risk Matrices
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<th>Features</th>
<th>Location</th>
<th>Ownership</th>
<th>V or S</th>
<th>Priority</th>
<th>Time</th>
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<td>Short</td>
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<td>MBTA</td>
<td>Malden Center/Oak Grove/Wellington</td>
<td>Public</td>
<td>V &amp; S</td>
<td>Coordinate with MBTA Resiliency Manager of Oak GroveFlooding Risk</td>
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<tr>
<td>Intersection of Eastern Avenue and Broadway</td>
<td>Linden and Linden Highlands</td>
<td>City</td>
<td>V</td>
<td>Apply for Redesign and Retrofit by Malden DPW for MVP Action Grant</td>
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<tr>
<td>685 Broadway (Townline Estates)</td>
<td>Linden</td>
<td>MA DOT</td>
<td>V</td>
<td>1. 4 Roads Flood Redesign: I) Request MADOT to conduct feasibility study of road elevation improvements, II) Apply for Redesign and Retrofit by Malden DPW for MVP Action Grant; 2. Townline Estates Manufactured Home Park Stormwater Piping Redesign and Retrofits.</td>
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<td>Bike Trail</td>
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<td>City/Lease MBTA</td>
<td>S</td>
<td>Shading and Tree Planting Bike Trail Study</td>
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<td>Medford Street MBTA Bridge</td>
<td>Industrial</td>
<td>City &amp; MBTA</td>
<td>V</td>
<td>Road Lowering to address low bridge for evacuation</td>
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<td>Water System</td>
<td>City-wide</td>
<td>City</td>
<td>S</td>
<td>Conduct Water Main Piping System and Shut-off Gate Feasibility Study and Redesign and Retrofit (underseized Water Main Piping System)</td>
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<td>MWRA Surcharge to Stormwater</td>
<td>Industrial</td>
<td>MWRA and Malden Stormwater Systems</td>
<td>V</td>
<td>1. Coordinate with MWRA on Redesign of Sanitary Sewer Capacity in relation to flood hazard; 2. Coordinate with MBTA on Redesign &amp; Retrofit Study</td>
<td>M</td>
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<tr>
<td>Intersection of Mountain Avenue and Everett Street</td>
<td>Oak Grove</td>
<td>City</td>
<td>V</td>
<td>1. Assess Retrofit &amp; Redesign including Nature Based Solutions (NBS); 2. Apply for Retrofit and Retrofit by DPW and NBS</td>
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<tr>
<td>Salem Street at Mount Vernon Street</td>
<td>Ward 5 @ North Faulkner</td>
<td>City</td>
<td>V</td>
<td>1. Assess Retrofit &amp; Redesign including Nature Based Solution (NBS); 2. Apply for Redesign and Retrofit by DPW and NBS</td>
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<td><strong>Societal</strong></td>
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<td>Malden Senior Center</td>
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<td>Salemwood School with Park</td>
<td>Maplewood</td>
<td>Municipal</td>
<td>V &amp; S</td>
<td>Tree Shading Canopy Study</td>
<td>Assess Nature Based Solutions to Address FEMA Flood Hazard Zone of Park via current plans</td>
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<tr>
<td>Cambridge Health Alliance Care Center</td>
<td>Canal Street Industrial Park</td>
<td>Private</td>
<td>V &amp; S</td>
<td>Assess Energy Resilience to Flooding</td>
<td>1. Assess Retrofit &amp; Redesign including Nature Based Solution (NBS) 2. Apply for Retrofit and Retrofit by DPW and NBS</td>
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<td>South Core Care Center</td>
<td>Canal Street Industrial Park</td>
<td>Private</td>
<td>V &amp; S</td>
<td>Energy Resilience to Flooding</td>
<td>1. Assess Retrofit &amp; Redesign including Nature Based Solution (NBS) 2. Apply for Retrofit and Retrofit by DPW and NBS</td>
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<td>Six Additional Public Schools</td>
<td>Brebe, Early Learning Center, Ferryway, Forestdale, Linden STEAM Academy and Malden HS</td>
<td>Municipal</td>
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<td>First Church of Nazarene</td>
<td>North Faulkner</td>
<td>Private</td>
<td>V</td>
<td>Extreme Temperature: Assess Neighbors Helping and Neighborhood Financial Assistance for Heating Center</td>
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<td>ABD Anti-Poverty</td>
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<td>Malden Housing Authority</td>
<td>Linden - Newland Street Community Center</td>
<td>Public</td>
<td>S</td>
<td>Develop a Property Resiliency Assessment for Malden Housing Authority Properties to include Low-income Housing Resilience Strategies with Mass Saves &amp; Resident Mobility and safety</td>
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<tr>
<td>Social Vulnerable Neighborhoods &amp; Townline Estates at 685 Broadway</td>
<td>Linden, Edgeworth and Linden Highlands</td>
<td>Private/Public</td>
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<td><strong>Environmental</strong></td>
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<td>Salemwood School with Park</td>
<td>Maplewood</td>
<td>City</td>
<td>V</td>
<td>Tree Shading Canopy Study</td>
<td>Assess Nature Based Solutions to Address FEMA Flood Hazard Zone of Park via current plans</td>
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<tr>
<td>Gunther Le Park</td>
<td>Oak Grove</td>
<td>City</td>
<td>V</td>
<td></td>
<td>Low lying flood plain with storm drainage redirect to green infrastructure (i.e. water diversion) in the park</td>
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<tr>
<td>Former now Vacant Malden Hospital</td>
<td>Upper Highlands</td>
<td>Private</td>
<td>V &amp; S</td>
<td>Malden Hospital Redevelopment Zoning Ordinance to propose green infrastructure and resilience for stormwater flood management (using Category 3) with Conservation Commission.</td>
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<tr>
<td>Town Line Land Acquisition Trail</td>
<td>Linden</td>
<td>Private</td>
<td>V</td>
<td>Town Line Brook partner with private owners for voluntary acquisition by City for open space, hiking, and hiking trail. Possible invasive species have lead by Mayor’s Office/MRA and MyRWA.</td>
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</table>
# Community Resilience Building Risk Matrix

**M - L - H**: Priority for action over the short or long term (and ongoing)

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<td>Amelia Earhart Dam</td>
<td>Mystic River</td>
<td>DCR</td>
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<td>Tide Gates</td>
<td>Rumney Marsh</td>
<td>State?</td>
<td>V &amp; S</td>
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<td>Hadley Street Culvert</td>
<td>Cemetery Town Line</td>
<td>DCR?</td>
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<td>Russell Street Culvert</td>
<td>Russel Street</td>
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<td>Parking Lots and Impervious Surface (Stormwater Management)</td>
<td>Citywide</td>
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<td>Stormwater - Citywide &amp; Runoff, Possible Upgrading and Cleaning of Existing System</td>
<td>Citywide</td>
<td>City, Melrose and DCR</td>
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<td><strong>Societal</strong></td>
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<td>Salemwood School</td>
<td>Salem Street</td>
<td>City</td>
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<td>Malden Senior Center</td>
<td>Washington Street</td>
<td>City</td>
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<td>Youth Center Teen Enrichment</td>
<td>Main Street and Salem Street</td>
<td>Private (rental)</td>
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<td>Newland/Linden Housing Areas</td>
<td>Malden Housing Authority</td>
<td>V &amp; S</td>
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<td>Vacant Former Hospital Site</td>
<td>Upper Highlands</td>
<td>Private</td>
<td>V &amp; S</td>
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<td>Senior Housing</td>
<td>Sylvan Street</td>
<td>State/MHA</td>
<td>V &amp; S</td>
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<td>Senior Housing</td>
<td>&quot;Hospital Hill&quot; Nursing Center</td>
<td>owner?</td>
<td>V &amp; S</td>
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<td><strong>Environmental</strong></td>
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<td>Roosevelt Park (turtle?)</td>
<td>Salem Street</td>
<td>City Park and School</td>
<td>V &amp; S</td>
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<td>Spot Pond Brook</td>
<td>Middlesbrough Reservation</td>
<td>DCR</td>
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<td>Forest Dale Cemetery</td>
<td>Forest Street</td>
<td>City</td>
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<td>Little Creek</td>
<td>Medford/Malden Town Line</td>
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<td>Fellswarm Pond (cement pond that can be drained for use in case of a fire - has a gate)</td>
<td>Medford/Malden Town Line</td>
<td>City</td>
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<tr>
<td>St. Mary’s Brook (does not connect to pond)</td>
<td>Medford/Malden (west border) line (Pleasant and Fellsway E)</td>
<td>City</td>
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<td>Malden River</td>
<td>Mystic River Watershed</td>
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<td>V &amp; S</td>
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**Top Priority Hazards** (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

- Conduct a Stormwater Vulnerability Assessment and Resilience Feasibility Study that includes the City-wide stormwater infrastructure including the items identified on this risk matrix

**Heat/Extreme Temperatures**
- Conduction of a Heat Island Impacts & Heat Mitigation Strategies/Projects

**Floods**
- Regional Collaboration to improve the resilience of the Amelia Earhart Dam to future Flood Events

**High Winds/Storms**
- Conduct Ecological Restoration of River Banks and Regional Collaboration including the Mystic River Watershed Association

**Air Quality**
- Conduct Flood, Energy and Public Health Resilience Feasibility Study and resilience alternatives analysis

**Priority**
- H: High
- M: Medium
- L: Low

**Time**
- S: Short
- L: Long
- O: Ongoing

**Operators and Supervisors**
- www.CommunityResilienceBuilding.org

**Risk Management Strategies**
- Conduct Feasibility Study to evaluate Alternatives for new flood resilience project to channel water into the cemetery; 2) Prepare Preliminary Engineering and Design for preferred alternative
- Conduct Flood, Energy and Public Health Resilience Feasibility Study and resilience alternatives analysis
- Prepare Citywide Flood Resilience Plan and Program for all Senior and Public Housing Properties to include vulnerability assessment and identification of resilience and adaptation strategies and projects to improve community resilience.
- Prepare Citywide Flood Resilience Plan and Program for all Public Properties/Assets
- Conduct (H&H) Analysis, Vulnerability Assessment and Feasibility Study to include consideration of nature based systems and green infrastructure alternatives
- Conduct Flood, Energy and Public Health Resilience Feasibility Study and resilience alternatives analysis
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<tr>
<th>Features</th>
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<td>DPW Facility</td>
<td>356 Commercial Street</td>
<td>MBA &amp; City</td>
<td>Y &amp; S</td>
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<td>DPW Capability</td>
<td>CITYWIDE</td>
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<td>Power System (Evaluate Generators)</td>
<td>CITYWIDE</td>
<td>MGRI</td>
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<td>CITYWIDE</td>
<td>Malden Center/Needham</td>
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<td>ROAD SYSTEM</td>
<td>in FEMA Hazard Mitigation Plan (HMP) and new ones on map</td>
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<td>TELECOMMUNICATIONS SWITCHING STATION</td>
<td>CITYWIDE</td>
<td>Private?</td>
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<td>Salemwood School (Can be a Shelter)</td>
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<td>SENIOR HOUSING</td>
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<td>LOW-INCOME HOUSING</td>
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<td>Churches (Interfaith Roundtable - Karen Colon)</td>
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<td>MEDICAL CENTERS (No major Hospital in Town)</td>
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<td>LACK OF TREE CANOPY</td>
<td>Low Income Areas</td>
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<td>LINCOLN PARK (MEET SCHOOL + HOUSING + BIKE PATH)</td>
<td>Start to School &amp; Housing - Bike Path</td>
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<td>MALDEN RIVER + FUTURE ECONOMIC DEVELOPMENT OF COMMERCIAL STREET</td>
<td>Public/Private</td>
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<td>NATIONAL GRID SITE</td>
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<td>TOWN LINE BROOK</td>
<td>Reference Flooded Streets Section of HMP</td>
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Appendix D

Listening Session Presentation, Comments and Sign-In Sheet
MALDEN’S MUNICIPAL VULNERABILITY PREPAREDNESS MVP PUBLIC LISTENING SESSION

The City of Malden will host a Public Listening Session on

Tuesday January 7, 2020 at 6:30pm to 7:30pm

Malden Senior Community Center Cafeteria, 7 Washington Street, Malden, MA 02148

On Tuesday, January 7th at 6:30 pm in the Malden Senior Community Center Cafeteria, the City of Malden will host a public “listening session” to let us hear your ideas and comments on a brief presentation summarizing the results of the recently completed MVP Community Resilience Building Workshop. You may share your ideas in person or anonymously. A full-day MVP workshop took place on Thursday November 7, 2019 that resulted in: 1) identification of the top natural and climate related hazards facing the City, 2) evaluation of strengths and vulnerabilities that exist in the City in terms of the top hazards; 3) development and prioritization of actions designed to make the City more resilient to the top hazards today and in the future.

The City’s MVP Planning Team will integrate your comments and ideas into the final MVP Plan Report. Completion of the MVP planning project will make the City eligible to apply for MVP action project grants from the Commonwealth to address the City’s key priorities. The event is free of charge.

The workshop was organized and led by a core team of local, regional and state officials, City residents and businesses and the City’s consultant, GZA. This planning project is funded by the Commonwealth’s Executive Office of Energy and Environmental Affairs (EEA) MVP Planning Grant.

For More Information, Contact:
Ron Cochran, Communications Director at rcochran@cityofmalden.org
Public Listening Session Agenda

- MVP Program Overview
- Summary of Findings Report
  - Core Team
  - Project Timeline
  - Stakeholders
  - Hazards
  - Strengths and Vulnerabilities
  - Priority Actions
- Next Steps
- Public Comments and Questions
MVP Program Overview

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 **Environmental Justice communities and vulnerable populations**

**Why nature-based?**
Where appropriate, nature-based solutions can be more cost-effective, protect water quality and quantity, sustain lands that provide food and recreation opportunities, reduce erosion, and minimize temperature increases associated with developed areas and climate change.
MVP Process/Grant Types

- Define and characterize hazards using latest science and data
- Identify existing and future community vulnerabilities and strengths
- Develop and prioritize community adaptation actions
- Determine overall priority actions
- Receive MVP designation

MVP Planning Grant

MVP Action Grant

Implement priority adaptation actions identified through planning process

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
Summary of Findings Report

Malden MVP Core Team

Core Team Members:
- Ron Cochran, City of Malden
- Yem Lip, City of Malden
- Dan Grover, City of Malden
- John DeSantis, City of Malden
- Gary Stead, City of Malden Redevelopment
- Evan Spetrini, Malden Redevelopment Authority
- Amber Christoffersen, MyRWA
**Project Timeline**

- City receives MVP Planning Grant – July 2019
- City establishes Core Team – July – August 2019
- Project Kick-off Meeting – September 2019
- Stakeholder Outreach – September – October 2019
- Community Resilience Building Workshop – November 7, 2019
- Public Listening Session – January 7, 2020
- Final Summary of Findings Report – February 2020

**Stakeholders**

**LOCAL PUBLIC**
- Malden Mayor’s Office
- Malden City Council
- Malden School Committee
- Malden Public Works Commission
- Malden Planning Board
- Malden Redevelopment Authority
- Malden Housing Authority
- Malden Board of Health
- Malden Public Works Department
- Malden Engineering Department
- Malden Planning Department
- Malden Police and Fire Departments
- Malden Emergency Management
- Malden Controller’s Office
- Malden Chamber of Commerce
- Malden Building Commissioner
- Malden Public Facilities

**REGIONAL/STATE PUBLIC**
- Massachusetts Executive Office of Energy and Environmental Affairs (EEA)
- Mystic River Watershed Association (MyRWA)
- Metropolitan Area Planning Council (MAPC)

**PRIVATE/NON-PROFIT**
- Cambridge Health Alliance
- Eversource
- MIT
- Cataldo Ambulance
- Friends of the Malden River
CRB Workshop Overview

Objectives:

1. **Define top hazards.** Understand connections between ongoing issues, hazards, and local planning and actions in your Community.
2. **Identify and map vulnerabilities and strengths** to develop infrastructure, societal, and environmental risk profiles for your Community.
3. **Develop and prioritize actions** that reduce vulnerabilities and reinforce strengths for your community - local organizations, academic institutions, businesses, private citizens, neighborhoods, and community groups.
4. **Identify opportunities** to advance actions that further reduce the impact of hazards and increase resilience in your Community.

Climate Resilience in the Mystic River Watershed

Julie Wormser, Deputy Director
We know the earth is getting warmer.

What does more heat globally do to our local weather?
Well, big storms.

Levees fail.

Credit: NOAA

Credit: Washington Post

Hurricane Katrina, New Orleans 2005
Know where the high ground is.

Credit: Charles Sykes
Superstorm Sandy, New York, 2012

Storms are hardest on low-income people.

Credit: Nicolaus Czarnecki
Snowmageddon, Greater Boston, 2015
Weather is not racist; housing patterns can be.

Hurricane Harvey, Houston, 2017

Credit: Washington Post

We need a new name for “100-year” storms

Nor’easter Riley, Everett, MA 2018

Credit: Greg St. Louis
Get toxics out of flood plains.

Hurricane Florence, North Carolina, 2018

Credit: Joshua Stevens/NASA

Building codes matter.

Hurricane Matthew, Florida, 2018

Credit: Johnny Milano
We need to prepare to welcome refugees.

Hurricane Dorian, 2019
Grand Bahama island

Climate change is more than big storms.
Hotter summers

Projected coastal flooding

[Credit: Boston Globe]

[Credit: Climate Ready Boston]

[Credit: Woods Hole Group]

2070 PROBABILITY OF COASTAL FLOODING
MYSTIC RIVER WATERSHED

[Data sources: Rossi et al. 2015]
Rain is bunching up:

- Winter Nor’easters
- Summer thunderstorms
- Less drizzle in between
- Shorter, more intense droughts so water table is higher
- More flooding when it does rain

October 2016: Entire Mystic Watershed was in extreme drought conditions (38% of MA)

Flash floods, flash droughts

October 2016: Entire Mystic Watershed was in extreme drought conditions (38% of MA)

Credit US Drought Monitor

Flash floods, flash droughts

October 2016: Entire Mystic Watershed was in extreme drought conditions (38% of MA)

Credit US Drought Monitor
2070 Flood Probability

How do we make it work in the Mystic?
Do we have a governance challenge.

Mystic River Watershed
- 76 square miles
- 600,000+ people
- 21 municipalities

Amsterdam
- 85 square miles
- 800,000+ people
- 1 municipality

- Voluntary partnership among 19 Mystic communities
- Founded in Sept 2018
- 95%+ of watershed
- Secured $1.7 million in regional funding
Vision

- We are data-driven and action-oriented.
- We share a pragmatic, optimistic vision that recognizes the Mystic River as a tremendous asset.
- We are mutually supportive.
- We have the governance, trust, and participation to maximize our effectiveness.

Summary:

- It's going to be different. It doesn't have to be worse.
- We’re all in this together. Working regionally will be cheaper, more effective, and friendlier.
- It’s going to be expensive. Let's make every dollar count by making every climate investment also address other goals.
Highest Ranked Hazards

- Heat/Extreme Temperature
- Flooding
- High Winds / Storms
- Air Quality
Vulnerabilities and Strengths

Vulnerabilities & Strengths – Infrastructure

Infrastructure Vulnerabilities

- Roadways and MBTA Public Transit
- Stormwater and Wastewater Systems
- Department of Public Works (DPW) Facility on Commercial Street
- Power Supply
- Amelia Earhart Dam

Infrastructure Strengths

- Police and Fire Stations
- DPW Facility on Commercial Street
- Tide Gates
- Amelia Earhart Dam
- MBTA Public Transit and Bike Trail
Vulnerabilities & Strengths - Societal

Societal Vulnerabilities
• Senior and Public Housing Facilities
• Lack of Public Sheltering Space
• Language Isolation
• Salemwood School & Roosevelt Park
• Cambridge Health Alliance (CHA) & South Cove (SC) Care Centers

Societal Strengths
• Cultural and Community Networks
• Community Emergency Response Team & Medical Response Corps
• Salemwood School and Roosevelt Park
• CHA and SC Care Centers

Vulnerabilities & Strengths - Environmental

Environmental Vulnerabilities
• Town Line Brook and Rumney Marsh
• Malden River
• Parks & Cemeteries – Linden & Coytemore Lea, & Forest Dale and Holy Park
• St. Mary’s and Spot Pond Brooks

Environmental Strengths
• City Parks and Open Space
• Malden River and Little Creek – Future Economic Development
• Middlesex Fells
• Water Supply
• Former Hospital Campus Site
Top Priorities Actions

- Identify and Implement resiliency improvements to the City-wide Stormwater Infrastructure including preparation of comprehensive vulnerability assessment and action plan.

- Conduct a Resiliency in Zoning Assessment to evaluate how existing zoning requirements support or hinder climate resiliency and identify how the zoning regulations could be amended to further bolster climate resiliency for the City.
Top Priorities Actions

• Prepare a Department of Public Works (DPW) Site Resiliency Prototype Project that will support and build from the Malden Works resiliency project underway to include flood protection, stormwater improvement and energy resiliency at the DPW site.

• Identify and implement resiliency improvements to Public Housing.

• Develop a City-wide Heat Mitigation/Tree Planting Resilience Program.

Priority Infrastructure Actions

• 13 Total Priority Actions
  • 8 High Priority Actions
  • 5 Medium Priority Actions
  • No Low Priority Actions
High Priority Infrastructure Actions

- **Prepare engineering and redesign and retrofit of Four (4) Roads** that Flood Frequently Now: 1) 700 Broadway; 2) Intersection of Eastern Avenue and Broadway; 3) Intersection of Mountain Avenue and Everett Street; 4) Intersection of Salem and Mt. Vernon Streets.

- **Conduct a Hydraulic and Hydrology Analysis & Flood Improvement Feasibility Study for Linden and South Broadway Neighborhoods.**

- **Conduct City-Wide Resilience Vulnerability Assessment & Flood Improvements Feasibility Study.**

- **Regional Collaboration to improve the resilience of the Amelia Earhart Dam to future Flood Events.**

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High Priority Infrastructure Actions

- **Prepare a Department of Public Works (DPW) Site Resiliency Prototype Project** that will support and build from the Malden Works resiliency project underway to include flood protection, stormwater improvement and energy resiliency at the DPW site.

- **Prepare Emergency Communications Strategy for Resilience Plan** to: 1) Expand CERT/MRC Structure; 2) Build on Existing Continuity Networks like Churches; 3) Test the efficacy of communications with something like street cleaning; and Prepare Plan in multiple languages.

- **Conduct a Stormwater Vulnerability Assessment and Resilience Feasibility Study** that includes the City-wide stormwater infrastructure including 1) Tide Gates, 2) Culverts specifically at Hadley, Russell, Bowman Streets, 3) areas for upsizing of undersized pipes and cleaning of the system.

- **Conduct Feasibility Study** to evaluate Alternatives for new flood resilience project to channel water into the cemetery at Forest Road; 2) Apply for funding and Prepare Preliminary Engineering and Design for preferred alternative.
Priority Societal Actions

- 9 Total Priority Actions
  - 5 High Priority Actions
  - 2 Medium Priority Actions
  - 2 Low Priority Actions

High Priority Societal Actions

- **Conduct a City-Wide Public Housing Resiliency Feasibility Study & Risk Assessment** for Improvements of Malden Housing Authority Properties.
- **Conduct Facilities Resiliency Assessment** including an energy efficiency energy audit of City Facilities, Housing, Schools, Medical Facilities.
- **Prepare Linden Neighborhood Concept Design for Parks, School, and Public Housing** that is Climate Resilient. Include Resilience Feasibility Assessment to Mitigate Riverine and Stormwater Flooding.
- **Conduct Salemwood Runoff (H&H) Analysis, Vulnerability Assessment and Feasibility Study** to include consideration of nature-based infiltration technologies and other nature-based systems.
- **Add a Winter Heating Center** at the Malden First Church of Nazarene for the Homeless Shelter.
Priority Environmental Actions

- 10 Total Priority Actions
  - 8 High Priority Actions
  - 1 Medium Priority Actions
  - 1 Low Priority Actions

High Priority Environmental Actions

- **Conduct resilience feasibility study to assess and identify 1) Nature Based Solutions** to address FEMA Flood Hazard Zone at Salemwood School and Park with an evaluation of current plans.

- **Prepare City-Wide Parks Feasibility Study for Heat Island Impacts and Heat Mitigation.** Consider Tree Plantings and Pervious Surface Mitigation/Resilience Solutions.

- **Conduct tree canopy feasibility study for improvements** to Roosevelt Park at Salemwood School.

- **Develop Malden Hospital Redevelopment Zoning Ordinance** to propose green infrastructure and resilience for stormwater flood management (using Category 3) with Conservation Commission.
High Priority Environmental Actions

- **Partner with private property owners to discuss voluntary acquisition** of Private Properties at **Town Line Brook for Public Trail Access** and Floodplain Management Education Training.

- **Ecological Restoration of riverbanks** focused along the Malden and Mystic Rivers with an emphasis on Regional Collaboration including the Mystic River Watershed Association.

- **Conduct Resiliency in Zoning Study** to: 1) Evaluate How Current Zoning Furthers or Hinders Climate Resiliency; and 2) Identify ways in which Current Zoning could be Amended to Encourage Climate Resiliency.

- **Prepare Malden Hospital Redevelopment Zoning Ordinance** to propose green infrastructure and resilience for stormwater flood management (using Category 3) with Conservation Commission.

MVP Action Grants: Project Types
MVP Action Grants: Project Types

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

* Most common project type
** Second-most common project type
*** Third-most common project type

MVP Action Grants: Project Types (cont.)

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

NEW IN 2019

• Energy Resilience
• Chemical Safety
• Land Acquisition for Resilience
• Subsidized Low-Income Housing Resilience Strategies
• Mosquito Control Districts
  + Expanded eligibility of project location
Example Action Grant Projects
Local Bylaws, Ordinances, Plans, and Other Management Measures
Redesigns and Retrofits

Boston

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.

Next Steps
Next Steps

2. Submit your ideas and comments to rcochran@cityofmalden.org by January 31, 2020
3. Provide Report to EEA for review
4. Receive Designation as an MVP Community
5. Prepare to Apply for MVP Action Grants in April 2020

Questions and Answers
Community Resilience Building

COMMENTS

Population growth needs to be considered in planning process.
- You mention identity and implement resilience interventions to public and senior housing. This is critical keeping in mind environmental justice communities is just about all of us.
- We need considerable more attention to be given to community outreach and education awareness. If you want company networks to communicate during emergency events then they need education/training of awareness and to understand their role during emergencies.
- I worry that not leave our most vulnerable communities vulnerable in this plan. Don't leave us out.

Education - Education - Education/Awareness/Advertisement
- Let's make preparedness a common household awareness and norm affect each resident

Thank you.

Send any additional comments to Sam Bell at samuel.bell@gza.com
Are there benefits of being in an environmentally Justice area. We should look @ climate => we are getting hotter!!

We need more free accessible cooling locations including shade in parks / schools, spray decks & water features in open spaces / playgrounds, & public pools / splash pads that are open & available to people who don't drive / in all neighborhoods. Our parks are hot, & we've lost access to Wright's Pond & our public pool has limited hours.

Send any additional comments to Sam Bell at samuel.bell@gza.com
Organics & Nutrient Management Plan to improve soil health on public & private land. (Healthy soils have higher water infiltration rates and water holding capacities - A 1% increase in soil carbon holds 20,000 gallons of water per acre.)

Question — we talk a lot about where water goes, but Malden has a lot of very high land, some of which has housing on it — this is an erosion risk. Are there plans to deal with these water flows?

Planning and implementation of Stormwater Utility for Malden, using funding to incentivize pervious surface (fee structure based on pervious surface.) Regional Watershed Utility.

Programs to reward private property owners for tree cover?

Send any additional comments to Sam Bell at samuel.bell@gza.com
Storm water management - infrastructure

- Leverage other funding sources like CPA
- Coyote Run Park
- Passive storm water techniques like bio-swales
- Rain gardens as public infrastructure
- Coyote Run Park to be used as emergency community storage facility for neighborhood
Send any additional comments to Sam Bell at samuel.bell@gza.com
Thank you for your work & for the presentation. I appreciate the comprehensive approach and the priorities that you’ve identified. My concern—and it begs the question—is whether the city’s current governmental departments, organizational structure and staff is being assessed as part of this process to not only implement, but to maintain and sustain, the necessary improvements and expanded services that will be administered and supported over time. For instance, increased tree planting and improving the canopy is critical citywide—but we have no city arborist or Parks Dept. to assess and maintain what we already have in place at present. Will recommendations be made to city government on how they can improve, expand, fund and administer these priorities? I’m less confident on this side of the equation that Malden will be able to respond and adapt quickly enough & maintain the services that will be required.
Resolution that Urban Infrastructure Choices to Combat Deadly Heat Waves Shall Take Precedence:

Whereas, heat waves are growing in frequency and intensity and pose the most danger to the lives of the most vulnerable in our communities, such as the elderly, small children, and people without reliable means to seek cooling shelter, and

Whereas, it is well documented that accelerated fossil fuel combustion has created a climate emergency, and deadly heat wave events are expected to increase in frequency and intensity in coming years, and

Whereas, sometimes the power grid fails and air conditioning fails, leaving many stranded in deadly hot temperatures, and furthermore, avoiding the deadly health effects heat waves is often impossible, especially at night.

Whereas, the City of Malden is densely developed with asphalt shingled buildings, paved with asphalt, concrete, plastic artificial turf or landscaped with black mulch, surfaces which convert light energy into heat energy, amplifying the intensity of heat waves, causing an urban heat island effect, such that, on hot summer nights, the difference can be as high as 22°F (12°C). Also, waste heat from traffic, air conditioning systems, and other machinery further exaggerates the temperature difference between cities and the surrounding rural areas, and

Whereas, artificial turf traps the sun’s light energy and converts it to heat to achieve temperatures significantly higher than even asphalt (blacktop) which also is known to trap heat and

Whereas, natural, living grass fields, shade trees, and live green plants remove light energy from the air and instead convert light energy into plant matter, preventing heat from forming, and remove heat-trapping carbon dioxide from the air, and also during photosynthesis, emit oxygen and cooling water vapor, and

Whereas, the City of Malden has a duty to take every reasonable civic action to protect its most vulnerable population from increasing exposure to preventable death,

Therefore, it is resolved that the goal of lessening urban heat intensification should take precedence with every decision and choice of civic infrastructure by the City of Malden on behalf of its citizens, so

Therefore, it is resolved that there should be an immediate moratorium on removal of live grass athletic fields, parks or play areas, currently planned and in the future, and no plans for artificial turf field should be entertained, and

Therefore, it is resolved that all plastic artificial turf fields should be returned to live grass as opportunities arise with the need for aging turf replacement, and
Therefore, the preservation and maintenance of all existing shade trees should take priority, and all options to facilitate the preservation of mature urban tree canopy should be employed, including but not limited to the hiring of a city arborist, and

Therefore, it is resolved that all designs for new or re-designed municipal parking lots and all new city owed pedestrian walkways should be required or incentivized to plant and maintain shade trees, at a minimum of one shade tree for 4 cars or one shade tree for every 20 feet, as part of their design, and

Therefore, it is resolved that, all newly constructed buildings should be required or incentivized to have either white roofs, solar panels, or be planted with live plants (green roof).

Resolved, that with any new project for improvement being entertained by the City of Malden, steps lessening the heat island effect and preserving living green infrastructure for the health of the Citizens of Malden, especially those most vulnerable populations such as young children, the elderly and those in environmental justice neighborhoods, should take precedence as a matter of course in all policy decisions.

Respectfully submitted by

Kari Percival
4 Seaview Ave.
Malden, MA 02148

Shirin K. Alberto
137 Laurel St. #137A
Malden, MA 02148

Kathleen Sullivan
27 Oliver St
Malden, MA 02148

Ann Schiro
34 Oliver Dr
Malden, MA
02148

John Said
39 Pierce St.
Malden, MA 02148
City of Malden, Massachusetts  
Public Listening Session  
January 7, 2020, 6:30PM-7:30PM  
Malden Senior Community Center, 7 Washington Street, Malden, MA 02418

~ Sign-in Sheet ~

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<tr>
<th>Name (Please print)</th>
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Appendix E

Public Comments
More comments to be added.

From: Brian DeLacey <bdelacey@gmail.com>
Date: Friday, January 31, 2020 at 10:58 AM
To: Ron Cochran <rcochran@CITYOFMALDEN.ORG>
Cc: "mayor@cityofmalden.org" <mayor@cityofmalden.org>, "Lisa M. Cagno" <lcagno@CITYOFMALDEN.ORG>, "sdorai@maldenps.org" <sdorai@maldenps.org>, "Christopher J. Webb" <cwebb@cityofmalden.org>
Subject: Input to the Vulnerability Preparedness Grant Program

January 31, 2020

Mr. Ron Cochran
Emergency Management Department
City of Malden

Cc: Mayor Gary Christenson and Malden City Council, School Committee, Health Department

Please accept my attached comments concerning the City of Malden’s participation in the State’s Municipal Vulnerability Preparedness grant program (MVP).

I ask you to incorporate these remarks in your final report.

Thank you,
Brian DeLacey
January 31, 2020

Mr. Ron Cochran
Emergency Management Department
City of Malden

Cc: Mayor Gary Christenson and Malden City Council, School Committee, Health Department

Please accept my comments to the City of Malden’s participation in the State’s Municipal Vulnerability Preparedness grant program (MVP). I ask you to incorporate these remarks in your final report.

Malden can learn a great deal from how our neighbors are addressing vulnerabilities arising from climate change. While we can learn from others, we also should lead in these crucial activities.

A January 28, 2020 news story asked, “WHY IS SOMERVILLE STILL INSTALLING TURF FIELDS IN INCREASINGLY HOT CLIMATES?” Malden needs to ask itself the same question.

Malden’s answer to this question is simple: Malden needs to cap the square footage of artificial turf citywide. Malden’s upper limit on artificial turf should be set at what exists today, and no more.

Detrimental impacts of artificial turf on air temperature and the environment is well known.

Further, as part of Malden’s Vulnerability planning, the city should include a goal of reducing artificial groundcover significantly over the next ten years. This is easily achievable and should be planned.

In January 2020, the Boston City Council passed a resolution declaring the climate crisis is a Health Emergency. The Malden City Council should do the same. I have included a copy of that resolution for your reference. Boston is acting on concerns Malden residents have highlighted in recent months:

“The health threats of climate change include increased exposure to extreme heat ...” and “Climate change exacerbates health disparities, disproportionately harming the most vulnerable among us - children and pregnant women, people with low income, the aged, and people with disabilities and chronic illnesses, and marginalized people of all races and ethnicities ...”

These issues have been raised in Malden’s public meetings. They were discussed again at Malden’s January 2020 Conservation Commission meeting. (I refer you to the record of that meeting for further information on the elevated heat impacts of artificial turf being proposed for Roosevelt Park.)

I attach a “heat map” of Malden showing growing heat islands hovering over the city. Climate change and human change (such as Malden’s installation of artificial turf fields) raise the temperature.

Heat islands are a “red plague” over Malden. We have the obligation and ability to redress this. Please: 1) cap the limit on artificial turf square footage, and 2) establish a plan to reduce this total in the future.

Thank you for including my comments in your research and report.

Sincerely,    Brian DeLacey / Malden, MA
REFERENCES

"Our region will feel many impacts from climate change in the coming years, but the one we will all face—no matter how close we live to a flood zone, how much money we make, our access to health care, or our proximity to a highway—is heat. Since the 1980s, each successive decade has been warmer than any preceding decade since the 1850s. Worldwide (and in our region), July 2019 was the hottest month in recorded history.

This trend is not our friend. Somerville's Climate Change Vulnerability Assessment says that in 10 years we will have 40 days each year over 90 degrees. Remember how hot it was last summer? We had only 10 days of 90 degrees or more. This will be an extraordinary increase in a very short time."


https://www.greenribboncommission.org/2020/01/boston-city-council-passes-resolution-declaring-that-the-climate-crisis-is-a-health-emergency

https://www.cityofmalden.org/702/Municipal-Vulnerability-Preparedness

RESOLUTION AFFIRMING THAT
THE CLIMATE CRISIS IS A
HEALTH EMERGENCY

WHEREAS: The United Nations’ Intergovernmental Panel on Climate Change (IPCC) reported that only a decade remains for global warming to be kept to a maximum of 1.5°C, and even half a degree will significantly worsen the risks of drought, floods, extreme heat, and poverty for hundreds of millions of people; and

WHEREAS: The IPCC report concluded that global greenhouse gas (GHG) emissions would need to be reduced by 45% by 2030, and entirely by 2040 to avoid the most catastrophic effects of climate change, yet these emissions hit a record high in 2018; and

WHEREAS: 1,299 jurisdictions and local governments in 25 countries have declared a climate emergency, including the Worcester City Council and Amherst Town Council in the Commonwealth of Massachusetts, and 13,273 scientists from 156 countries named climate change an emergency; and

WHEREAS: More than 100 national public health groups, including the American Medical Association and the American Academy of Pediatrics; Center for Climate, Health, and the Global Environment; and Harvard T.H. Chan School of Public Health agree that the climate crisis is a health emergency; and

WHEREAS: Climate change affects the social and environmental determinants of health—clean air, safe drinking water, sufficient food and secure shelter; and

WHEREAS: The health threats of climate change include increased exposure to extreme heat, reduced air quality, more frequent and intense natural hazards, and increased exposure to infectious diseases and allergens, nutritional security, effects on mental health, and increased risk of population displacement and conflict; and

WHEREAS: Climate change exacerbates health disparities, disproportionately harming the most vulnerable among us—children and pregnant women, people with low income, the aged, and people with disabilities and chronic illnesses, and marginalized people of all races and ethnicities; and

WHEREAS: Children’s health is increasingly threatened from air pollution from fossil fuels, famine, heat, water shortages, and vector borne-diseases from every degree of warming; and

WHEREAS: The burning of fossil fuels like coal, oil, and gas for electricity, heat, and transportation is the primary source of human-generated emissions; and
Here is some feedback to be included. Also, on another note, can you change all references to the Leventhal project to "Malden River Works" instead of "Malden Works."

From: Steve Winslow <swinslow@CITYOFMALDEN.ORG>
Date: Thursday, January 30, 2020 at 3:37 PM
To: Ron Cochran <rcochran@CITYOFMALDEN.ORG>
Cc: Yem Lip <ylip@CITYOFMALDEN.ORG>, Daniel Grover <dgrover@CITYOFMALDEN.ORG>, John DeSantis <jdesantis@CITYOFMALDEN.ORG>, "Gary R. Stead" <gstead@CITYOFMALDEN.ORG>, Evan Spetrini <espetrini@maldenredevelopment.com>, "Amber Christoffersen (amber.christoffersen@mysticriver.org)" <amber.christoffersen@mysticriver.org>
Subject: Municipal Vulnerability Plan - Comments

Ron:

Thanks to you and the MVP for all the thought and hard work that went into the draft plan. The draft plan and the proposed priorities are very well done. I provide the following comments both from my perspective as a long-term resident of Malden, Councillor at Large, as a former project manager at MRA focused on the Malden River area (as part of the then Telecom City Project now River's Edge) and my long-term work with the Mystic River and Saugus River Watershed Associations related to the development of the Northern Strand Trail.

1. East Side Partnership. MyRWA is a very strong partner for the west side of the city that sits in the Malden / Mystic River watershed. As I commented at the January 7 meeting - there's a need to be sure that we also build partnerships with Revere and the Saugus River Watershed on the east side of the city, particularly since the coastal protections on the east side are much less robust at the current time that those on the west side. Certainly willing to reach out to contacts there. Serious consideration should be given to revisit and update to seek a more natural version of the regional "Saugus River Floodgate Project" that was first proposed to address the extreme flooding conditions of the Blizzard of 1978 but was dropped in 1993.

2. DPW Site Resiliency: that should be looked at in conjunction with the proposed design on new elements to the Malden Waterfront at that location. Some consideration should be given to working with the City of Melrose to potentially co-locate DPW facilities at a less vulnerable location on Broadway on the Melrose / Malden line.

3. High Priority Infrastructure: I wholeheartedly agree with these priorities especially as they relate to the ongoing planning along the Broadway corridor. I have been advocating that the study be broadened to include consideration of stormwater flooding issues including those noted on Bowman Street. A City-wide assessment of our stormwater system is urgently needed.

4. Societal Actions: the MHA evaluation could also include an evaluation of the use of roof-top solar as a means to help residents keep costs lower for air conditioning. The priorities related to Salemwood should incorporate information that has been developed in connection with the Roosevelt Park improvement project which includes a mix of both natural and aesthetic man-made solutions to increase flood storage while ensuring
recreational facilities can withstand both flooding and the rigors of a heavy recreational use by both the school and sports programs.

5. Town Line Brook properties and beyond: consideration should also be given to incentivize less development in flood plains and perhaps even strategic retreat of the most vulnerable homes by offering density credits in other parts of Malden in return for restricting development. Building codes should be reviewed to ensure that new construction and alterations in current and future flood zones will be able to withstand expected events (See Boston’s building code). This should consider not only outside elevations but also basement elevations which are often lower.

Councillor Winslow
Begin forwarded message:

From: Karen Buck <karen.buck.mt@gmail.com>
Date: January 31, 2020 at 4:38:39 PM EST
To: Ron Cochran <rcochran@CITYOFMALDEN.ORG>
Subject: MVP comments

Hi Ron,
Attached are comments regarding the MVP draft plan for the City of Malden. Even though these comments represent common feelings among Friends of the Malden River, these comments are from myself as a resident and community activist of Malden.
Thanks for the opportunity to comment.

Thanks,
Karen Buck
323 Forest St, Malden, MA 02148

This email has been scanned for spam and viruses by Proofpoint Essentials. Click here to report this email as spam.
Dear MVP Task Team,
We may have talked briefly about some of the items below. But, I want to either bring these items to the forefront for consideration due to their eligibility for action grants.

2. Community Outreach and Education – Eligible projects include those that increase public understanding of climate change impacts within and beyond the community and foster effective partnerships, especially with Environmental Justice communities.

Community Outreach and Education is a challenge in Malden due to multi-lingual population, poverty of time and bandwidth, lack of diversity in time offerings and lack of child-care. If funded and matched with grassroot groups and volunteers with proper planning and community outreach, there would be greater results in education and attendance.
Malden River Works has been very successful in community outreach with 497 survey responses and large attendance in two public meetings. It has been work, but well worth the effort. A combination of stipends, staff hours, and volunteer work was part of the success.

3. Local Bylaws, Ordinances, Plans, and Other Management Measures – Projects to develop, amend, and implement local ordinances, bylaws, standards, plans, and other management measures to reduce risk and damages from extreme weather, heat, flooding and other climate change impacts are eligible.

There needs to be rezoning in our Commercial Street corridor to protect the Malden River and its coastline. A mandated green space along the Malden River would provide the public with open space, tree plantings, preservation of wetlands (no artificial turf) would act as a sponge both for air and water quality and flood resilience.

4. Redesigns and Retrofits – Engineering and construction projects to plan, redesign, or retrofit vulnerable community facilities and infrastructure (e.g., wastewater treatment plants, culverts, and critical municipal roadways/evacuation routes) to function over the life of the infrastructure given projected climate change impacts, including more intense precipitation, extreme heat, and flooding are eligible.

Malden needs to establish an enterprise fund to improve its storm water system. A feasibility study is the first step. The City of Malden needs more financial stability and revenue to take care of its essential storm water system. Following the feasibility study, would be effective community outreach and education to increase awareness among all of Malden residents.
Nature-Based, Infrastructure and Technology Solutions to Reduce Vulnerability to Extreme Heat and Poor Air Quality – Green infrastructure projects that utilize natural resources, vegetation, and pervious surface to reduce ambient temperatures, provide shade, increase evapotranspiration, improve local air quality, and otherwise provide cooling services within the municipality are encouraged.

The Forest Dale Cemetery and other cemeteries need to replace the trees that have come down in the past five + years. The trees need to be of native origin (not the Asian Pears that are populating our streets). Native plantings should replace the trees that have been removed from our streets. The park maintenance department of the DPW needs more information and education as to how to manage our green spaces effectively and with nature based solutions (e.g. Howard Park: gardens were razed by the DPW in late August destroying natural solutions of native plantings due to complaints of people hanging out on the park benches.) Malden DPW has to find a suitable native tree for planting. The Asian Pear that populates our city is not a substantial replacement.

Creating a climate resilient waterfront public open spaces along the Malden River will ensure that the river can absorb the waters from the rainfall and the storm water system. To create a resilient open space is critical to protect the DPW and the Malden River. This project would utilize and enhance natural resources to manage flooding and to keep the DPW operating in an efficient manner.

I know that synthetic turf fields are heat islands from experience and common knowledge. I encourage the City of Malden to investigate proper drainage and construction of a grass field at Roosevelt Park. I also encourage the City of Malden to reject any proposals for other synthetic turf fields.

I have worked with grass fields as an athletic director. With proper drainage and care (no synthetic fertilizers or pesticides in a wetland area), these fields can be managed.
Ecological Restoration and Habitat Management to Increase Resiliency – Projects that repair or improve natural systems for community and ecosystem adaptation, such as right-sizing culverts, dam removal, controlled burns, soil stabilization, invasive species removal and native revegetation, prevention and recovery from forest pest invasions in urban and rural forests, restoration of floodplain functions, and other natural resource management projects.

The Malden River needs to be reestablished with native plants. Phragmites need to be removed and controlled. The Oxbow Islands need to be protected from storm water trash flow and pollutants that flow through the storm drains. The Army Corps of Engineers has a plan of action that needs to be implemented on the Malden River in the Oxbow Islands section. This section of the Malden River will be the most helpful during flood events.
Sent from my iPhone

Begin forwarded message:

roochran@cityofmalden.org
Subject: MVP comments

Dear Mayor Christenson, Mr. Cochran, [redacted]

I would like to submit the following comments to the draft of the MVP (Malden Vulnerability Report)

After attending the meeting, I believe the City of Malden needs to plan for the future by revisiting current projects that will impact stormwater runoff and heat island effects, especially in areas of the City that are already effected by heat islands and flooding.

One such project is the Roosevelt Park Improvement Plan. This project will be adding an additional heat island in a congested area that already houses 4 artificial turf fields which are serving as heat islands. Weather data has already demonstrated there are more more days with temperatures at or above 90 degrees. In addition, data has shown that storms with more precipitation are going to continue and escalate. The low lying areas in flood zones will be subjected to more intense and more frequent floods.

The Salemwood School and Roosevelt Park have already been highlighted in the vulnerability report as high impact/action items. (See below for those highlighted comments)

The consultant from GZA was asked about the effects of articulations turf by transforming Roosevelt Park, a 3 acre grass park, which abuts a culverted brook and wetland area in a very low lying area which also serves as a collection and storage area from the highlands across Salem Street. His response was, "You answered your own question." It would be detrimental.

In a neighborhood that already experiences significant flooding in their basements, considering adding to this flooding by not mitigating the current flooding conditions is dangerous to those residents. The MVP calls for an H and H (Hydraulic and Hydrology) study of the stormwater system for Salemwood and Roosevelt Park. This has not been
done for this project or for the betterment of the entire community to ensure our stormwater drainage system is sufficient.

For these reasons, Malden must be committed to a vulnerability plan that addresses heat island mitigation and potential flooding in all neighborhoods to protect our City as a whole and the residents in these targeted areas.

We must adhere to our commitment as a community to mitigate climate change by preparing for what science is telling us. When we received the grant to create a vulnerability plan it was a beginning. Now we have to remember, this challenge is real. Immediate gratification for an artificial turf field may produce damaging effects for our City in the near future.

Sincerely yours,
Kathleen M. Sullivan
27 Oliver Street
Malden, MA 02148

City of Malden Vulnerability Draft

4.2 SOCIETAL • Stakeholders identified the need to determine back-up power capabilities at the City’s Senior and Public Housing Facilities with respect to the top hazards. • Stakeholders raised concerns over the lack of public shelter space in the event of a large-scale hazard event especially in consideration of emergency and homeless sheltering capacities. • Stakeholders expressed the need to communicate across multiple languages to reduce the potential for language isolation during hazard events in the City. • Stakeholders noted that the Salemwood School and Roosevelt Park are vulnerable to impacts from flooding.

4.3 ENVIRONMENTAL • Stakeholders noted that several parks and cemeteries in Malden that are at risk to flooding are also near public housing, schools and residential neighborhoods. The ones identified by several stakeholder groups included Linden, Coytemore Lea and Roosevelt Parks and Forest Dale and Holy Park Cemeteries.

5.3 ENVIRONMENTAL • The City’s parks and open space including cemeteries serve as key assets for reducing the heat island effect in some areas of the City and serve as flood storage areas to assist in reducing the impacts from future flooding. The stakeholders specifically identified Pine Banks Park, Linden Park, Fellsmere Park & Pond, Forestdale Park, and Roosevelt Park as key assets.

6.0 PRIORITY ACTIONS TO IMPROVE RESILIENCE During the final small group exercise the stakeholders developed actions to bolster the existing strengths and to improve/mitigate the vulnerabilities outlined in Sections 5 and 6. At the conclusion of the workshop stakeholders from each of the small groups presented a brief summary of their recommended priority actions as a large group and identified the following actions as the five top priorities to improve the City’s resilience to natural and climate-related hazards that included:
1. Prepare a Department of Public Works (DPW) Site Resiliency Prototype Project that will support and building from the Maiden Works resiliency work underway to include flood protection, stormwater improvement and energy resiliency at the DPW site.
2. Identify and implement resiliency improvements to Public Housing.
3. Develop a City-wide Heat Mitigation/Tree Plantings Resilience Program.
4. Identify and Implement resiliency improvements to the City-wide Stormwater Infrastructure including preparation of comprehensive vulnerability assessment and action plan.
5. Conduct a Resiliency in Zoning Assessment to evaluate how existing zoning requirements support or hinder climate resiliency and identify how the zoning regulations could be amended to further bolster climate resiliency for the City.

ACTION

Conduct Salemwood Runoff (H&H) Analysis, Vulnerability Assessment and Feasibility Study to include consideration of nature-based infiltration technologies and other nature-based systems. Utility Infrastructure Maiden Schools, Parks and Recreation Public Works.

Conduct tree canopy feasibility study for improvements to Roosevelt Park at Salemwood School. Energy Resiliency Park and Recreation Public Works.
Begin forwarded message:

From: Dcampitup <Dcampitup@comcast.net>
Date: January 31, 2020 at 1:15:19 PM EST
To: Ron Cochran <rcochran@CITYOFMALDEN.ORG>
Subject: MVP Draft Report Public Comment

Dear Mr. Cochran,

Please accept these comments in response to the Municipal Vulnerability Preparedness DRAFT Report:

As a lifelong Maldonian, residing on Chester Street (Ward 2), these comments are informed, not only by my life experience, but also my professional experience in the field of Nursing and Public Health.

While the Report is very thorough, I think it is well within its scope to document all of the potential effects related to public health and hygiene. I suggest this Report be amended to include all aspects of the overwhelming effects of climate change on Malden, as well as the entire Mystic Watershed area.

The Infrastructure Vulnerabilities of Heat/Temperature Rise, Flooding, High Wind/Air Quality, Fire and Drought each have tremendous implications specific to the health status on individuals of all ages, as well as the epidemiology of the Malden population.

The include such problems secondary to water/vector bourne illnesses, sanitation issues, respiratory conditions such as asthma, mobility/access to resources and the already existing problems of poverty and food insecurity, to name a few.

Recommendations should outline the many initiatives and action steps, such as
1. expansion of Malden's Board of Health Department,
2. availability of temporary housing, home care, emergency, acute, urgent and long term care services, and
3. ongoing consultation with the many infectious disease and public health experts we are fortunate to have access to in the Boston area.

If you and/or the authors of the MVP Report have questions and/or wish to discuss my comments, do not hesitate to contact me via email or cell # 781-518-4120.

Sincerely,

Dee Campbell-Tompkins, BSN, MPH
Sent from my Samsung Galaxy smartphone.

This email has been scanned for spam and viruses by Proofpoint Essentials. Click here to report this email as spam.