Harvard Municipal Vulnerability Preparedness

Workshop 2

April 25, 2019

HARRIMAN

Workshop Agenda

6:00 Welcome and Introductions

6:10 Workshop #1 Findings and Workshop #2 Overview

6:30 Small Group Discussion

- Introductions within the group, identify person for report out
- Develop actions to address Harvard's vulnerabilities and reinforce strengths
- Prioritize actions and identify associated timeframes

7:15 Break

7:30 Continue Small Group Discussion

8:00 Small Group: Report Outs

8:15 Determine Overall Priorities

8:30 Wrap up and Next Steps

Introductions

- MVP Core Group
  - Christopher Ryan, Director of Community and Economic Development
  - Liz Allard, Land Use Administrator
  - Kara Minar, Select Board
  - Sharon McCarthy, Board of Health
  - Eric Broadbent, Harvard Energy Advisory Committee
  - Kerri Green, Agricultural Advisory Commission
  - Justin Brown, Planning Board
  - Jarrett Rushmore, Planning Board

- Harriman – MVP Facilitators
  - Emily Keys Innes, Director of Planning
  - Jess Wilson, Urban Designer and Planner

Review Workshop 1

What is the MVP Program?

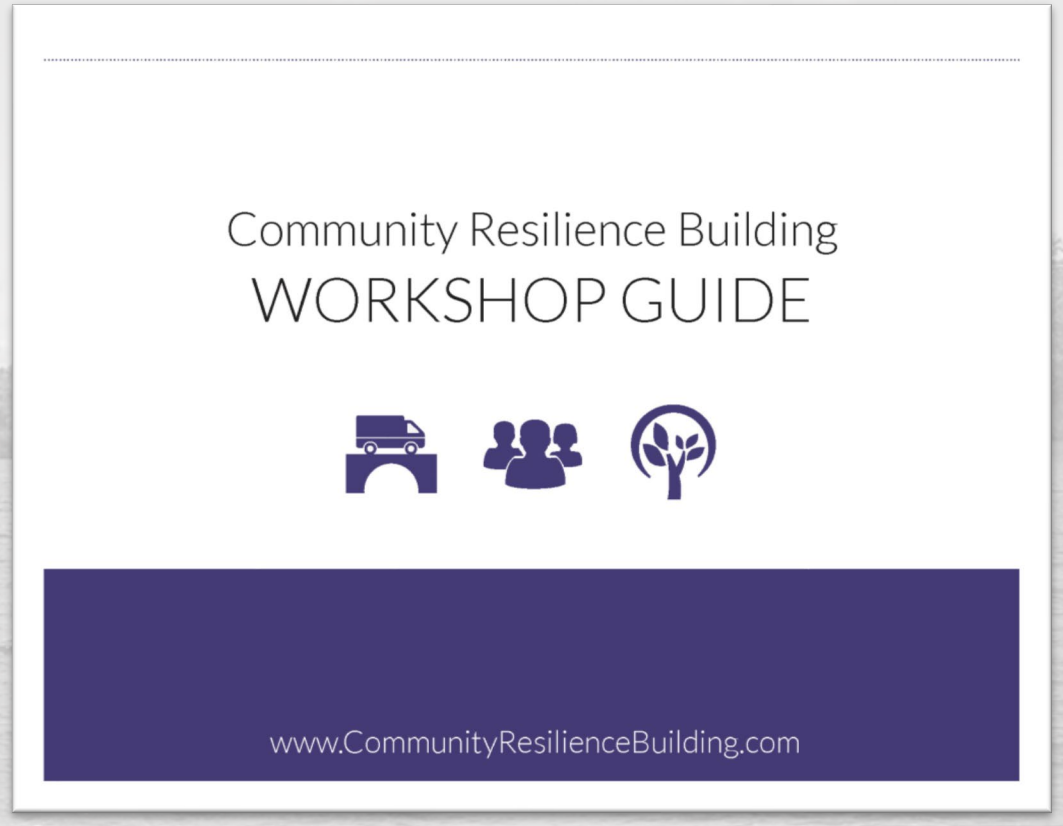
- A component of MA Executive Order 569 (2016)
- Grant funding for technical support to
  - Complete vulnerability assessments
  - Develop action-oriented resiliency plans

Why is the Town Participating?

- Increasingly more unpredictable and severe weather is occurring
- Impact on Town infrastructure and services; impact on public health
- Agriculture is a significant part of the town's composition and identity – dedicated MVP component focusing on agriculture
- Completion qualifies Harvard for access to further grant funding

Workshop Process

A. Prepare for the Workshop
B. Characterize Hazards
C. Identify Community Vulnerabilities and Strengths
D. Identify and Prioritize Community Actions
E. Determine the Overall Priority Actions
F. Put it All Together
G. Move Forward



Identify and Prioritize Community Actions

- Actions and Next Steps
- Prioritization
- Timeframe for Action

(Today)

Community Resilience Building Workshop Risk Matrix

H-M-L priority for action over the Short or Long term (and Ongoing)
V = Vulnerability S = Strength

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

Features	Location	Ownership	V or S	Coastal Flooding SLR/Storm Surge	Inland Flooding and Rain Events	Ice and Snow	Wind	Priority H - M - L	Time Short Long Ongoing
Infrastructural									
Town Campus	Specific	Town	V	Verify risk from flooding events; Identify alternative locations during peak flooding; Verify maintenance plan annually				H	S
Evacuation Routes - Roads	Town-wide	Town/State	V	Install highly visible signage for evacuation routes; Develop and implement communication program				H	S
Nursing Homes/Elderly Care Facilities	Multiple	Private	V	Improve power generation; Review building codes and zoning for existing and future facilities				H	S
Homeowners Associations/Neighborhoods	Town-wide	Town/Private	V	Engage Neighborhood Associations and develop cooperative response plan with Town: Advance "Neighbor helping Neighbor" Program; Develop comprehensive neighborhood-based emergency plans				H	S
Electrical Distribution System	Multiple	CL&P/Town	V	Within floodplain area, establish plan to address protection and long-term relocation of equipment	Upgrade transformers; Maintain power line protection zone (tree trimming)			H	O-L
Dams (inland and coastal)	Multiple	Private	V	Prevent possibility of catastrophic dam failure; Identify and remove dams to minimize downstream flooding due to failure				H	L
Railway and State Bridges	Multiple	Amtrak/State	V	Improve communications between parties; Expand green/gray infrastructure and improve bridge structures; Assess vulnerability and prioritize infrastructure improvement list				M	S
Septic Systems	Town-wide	Private	V	Assess opportunities for community systems or alternative treatment technology; Upgrade regulations to reduce contamination in water ways				M	L
State Roads/Intersections	Town-wide	State/Town	V	Coordinate with DOT, volunteers, public works to improve response; Need signage to warn of flooding risk in critical intersections				M	L
Wharves and Shore Infrastructure	Shore	Town-State-Private	V	Establish community dialogue regarding retaining/relocating infrastructure; Advance comprehensive shoreline management plan				L	S
Waste Water Treatment Facility	Specific	Town	V	Conduct alternative siting feasibility study; Relocate to low risk area within next 25 years.				L	L
New Ambulance Center	Specific	Town	S	Continue to support services in budget; Add additional staff and vehicle in next annual cycle					Ongoing
Zoning Regulations (maintain large lot size)	Multiple	Town	S	Current building codes control development in risky areas; Consider additional zoning incentives (TDRs) to reduce risk to residential units					Ongoing
Business District (power generators)	Specific	Town/Private	S	Downtown business district with power generators in place; Prioritize pharmacy and gas stations					Ongoing

Climate Change

- “It's pretty clear that climate change is starting to have a very significant impact on our communities, on our infrastructure, on personal property, on real property and on community property.”
  - Charlie Baker, Governor of Massachusetts

- “Every company, investor, and bank that screens new and existing investments for climate risk is simply being pragmatic.”
  - Jim Yong Kim, Former President of the World Bank

- “Climate change is a key problem facing people.”
  - David Malpass, Current President of the World Bank

- “The effects of a changing climate are a national security issue with potential impacts to Department of Defense (DoD) missions, operational plans, and installations. … To achieve these goals, DoD must be able to adapt current and future operations to address the impacts of a variety of threats and conditions, including those from weather and natural events. To that end, DoD factors in the effects of the environment into its mission planning and execution to build resilience.”
  - *Report on Effects of a Changing Climate to the Department of Defense*, January 2019

Review of Terminology

- Climate change
  - A change in the state of the climate … whether due to natural variability or as a result of human activity
- Natural hazard
  - Natural events that threaten lives, property, and other assets
  - Often can be predicted; they tend to occur repeatedly in the same geographic locations because they are related to weather patterns or physical characteristics of an area
- Risk
  - The potential for an unwanted outcome resulting from a hazard event
- Vulnerability
  - The propensity or predisposition to be adversely affected
  - A function of exposure, sensitivity, and adaptive capacity

Definitions from the *Massachusetts State Hazard Mitigation and Climate Adaptation Plan*, 2018

A *hazard* is the sun.

There is *risk* for sunburn.

The *vulnerability* includes the length of *exposure* to the sun, how *sensitive* the skin is to it.

Actions to address vulnerability include staying in the shade or wearing sunblock.

Overview of Climate Change - MA

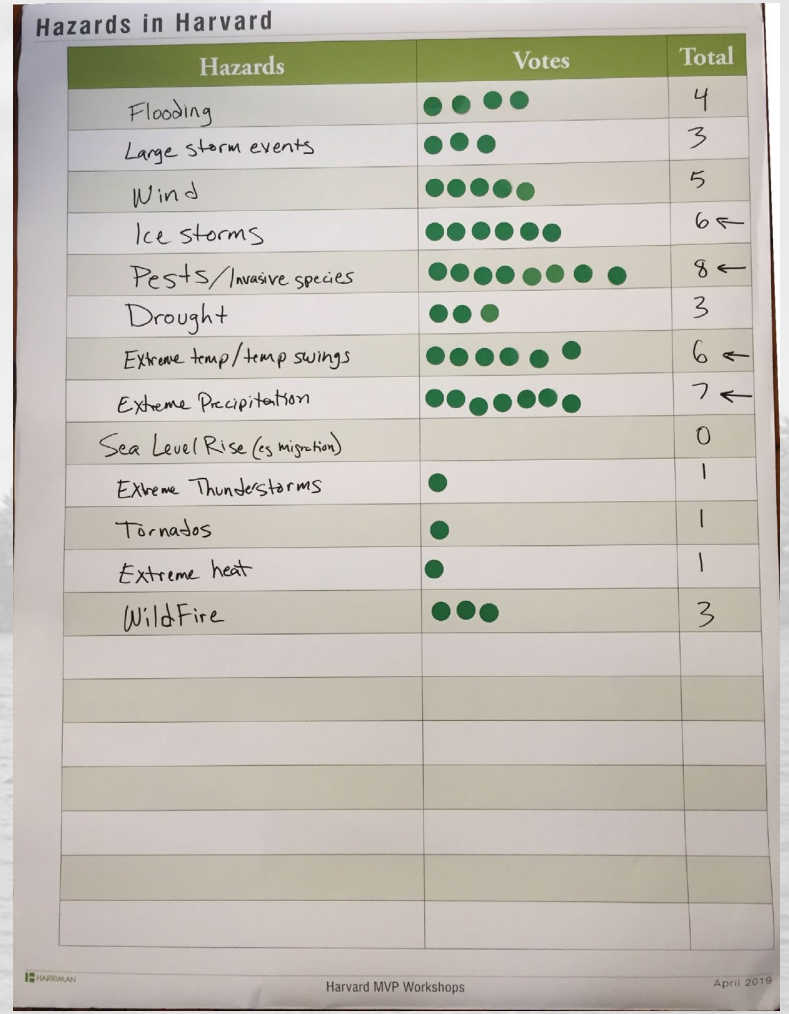
- Summarized by the MA Executive Office of Energy and Environmental Affairs
  - resilientMA.org - clearinghouse of climate science maps, data, documents
  - “Downscaled” to major watershed basin (Harvard is in the Merrimack, Nashua, and Sudbury-Assabet-Concord (SuAsCo) watersheds)

- Temperature projections
  - Average, maximum, and minimum temperatures are expected to increase
  - Days with daily maximum temperatures over 90°F are expected to increase

- Precipitation projections
  - Precipitation will be more variable
  - “Extreme” precipitation events are likely to occur more often

Top 4 Hazards in Harvard

- Pests/Invasive Species
- Extreme Precipitation
- Extreme Temperatures/Temperature Swings
- Ice Storms


Hazards in Harvard

Hazards	Votes	Total
Flooding	●● ●●	4
Large storm events	●●●	3
Wind	●●●●●	5
Ice storms	●●●●●●	6 ←
Pests/Invasive species	●●●●●●●●	8 ←
Drought	●●●	3
Extreme temp/temp swings	●●●●●●	6 ←
Extreme Precipitation	●●●●●●●	7 ←
Sea Level Rise (eg migration)		0
Extreme Thunderstorms	●	1
Tornados	●	1
Extreme heat	●	1
WildFire	●●●	3

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Vulnerabilities and Strengths in Harvard

- Agriculture was mentioned as both a strength and a vulnerability in the first workshop two weeks ago; the specific strength and vulnerabilities for agriculture have been brought into the matrix.

- We have combined the two tables from the first workshop and you will be working today on the strengths and vulnerabilities in each category.

Small Groups

1. Group introductions: Name, organization/department.
2. Identify a spokesperson (not the facilitator or scribe).
3. Review strengths and vulnerabilities; add anything that is missing.
4. Identify actions to address community vulnerabilities and reinforce strengths.
5. Prioritize actions and identify a timeframe for each action.
   - Choose your group's top 4 priority actions for reporting to the group and voting

Identify Actions: Examples

Infrastructural

- Secure new generators for critical facilities
- Integrate future risks into capital improvement plans
- Improve access in high-risk locations
- Install flood-proof manhole covers
- Conduct alternative site feasibility study for at-risk waste-water treatment facility. Relocate to low risk area within next 25 years.
- Assess vulnerability and prioritize infrastructure and improvement list.

Identify Actions: Examples

Societal

- Increase hazard awareness in high-risk areas through education and outreach
- Foster a neighbor-helping-neighbor program across the community
- Reconfigure evacuation routes and update signage.
- Create and distribute extreme weather flyers and communicate available services
- Identify level and location of housing units vulnerable to flooding. Develop long term plan to address vulnerabilities.
- Conduct feasibility analysis for regional shelter. Construct within 15 years.

Identify Actions: Examples

Environmental

- Protect and manage parks and lands located in flood zones
- Stabilize vulnerable slopes with native vegetation
- Protect and manage lands in flood zones
- Manage and diversify age structure for forest in Town
- Assess and identify key vulnerabilities from tree fall

Prioritize Actions: Devens

Highest Priority Actions

- Provide the ability for more staff coverage for the Fire Department during extreme weather events.
- Engage military in Emergency Operations Center (EOC) exercises.
- Perform more regular maintenance of existing culverts throughout Devens and specifically along Willow Brook, Patton Road, and Barnum Road to reduce flood issues, as well as seek funding for culvert improvements throughout Devens.
- Develop a resource-and-supply relocation plan for organizations that provide community resources and services.
- Develop a relocation plan for the Women's Shelter, Veterans Housing and all other social services within Devens to ensure that the facilities can be accessed at all time.
- Promote Code Red, by encouraging more local employees (and not just employers) to subscribe to the system.
- Develop multi-lingual and accessible emergency management messaging.

Prioritize Actions: Concord

Highest Priority Actions: Prioritized by category

- **Promote and highlight low impact development and green infrastructure.**
- **Prioritize action plan for police/fire/CPW facilities located in the floodplain.**
- **Find ways to improve cell service throughout the town to ensure ongoing communication.**
- **Rehabilitate or build new bridges and dams to account for climate projections and the 100-year flood, starting with South Bridge.**
- **Expand database and educational outreach to seniors and medically vulnerable to collect information on critical needs, including prescriptions**
- **Inventory and develop a needs assessment for vulnerable populations to expand plans for emergency preparedness**
- **Review existing communication and preparedness and response protocols and plans (from businesses, schools, town) to ensure they are aligned**
- **Develop an integrated resource management plan for the town.**
- **Educate people and encourage ecosystem health by utilizing updated emerging threats and best practices.**
- **Create an economic action plan/partnership between public and private agricultural sites.**
- **Take action through policies and programs to increase water efficiency and minimize the use of fresh water for irrigation.**

Prioritize Actions: Littleton

Highest Priority Actions

- Use available groundwater and surface water level data to develop GIS-based groundwater mapping, and provide Littleton Water Department with a template for future data so that it can be directly loaded into the GIS mapping database.
- Apply extra MVP funds to review of the Littleton regulatory code for improvements that could be made to further support and encourage LID in future development projects in Littleton
- Replacement of shade trees
- Establishment of contiguous open space and conservation land

Prioritize Actions: Stow

Highest Priority Actions

- Conduct a Water Supply Vulnerability Assessment and Educate the Public on Water Supply
- Update the Hazard Mitigation Plan
- Develop a Hazard Transportation and Communication Plan
- Develop Programs to Increase Resiliency of the Farming Community

Prioritization and Urgency

Prioritization Considerations

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

Example Timeframes

- Current projects to reduce flooding are an *ongoing (O)* action
- Ensuring evacuation procedures are updated annually is a *short-term (S)* action
- Elevating a road or replacing a bridge are *long-term (L)* actions

2019 MVP Action Grants

- To implement priority climate adaptation actions identified by MVP Communities
- Who's eligible?
  - Municipalities with MVP designation
  - Municipalities completing MVP process who have completed workshop(s) and have identified prioritized actions
- Applications were due April 19, 2019
- Funding: $5 million for 2018, $10 million for 2019
  - May request up to $2 million
  - Awards are expected to range from $25,000-$2 million
  - Regional proposals may request up to $5 million
- Match: At least 25% of total project cost required

MVP Action Grants

- Projects to build resilience, are proactive and clearly demonstrate efforts to redesign, re-evaluate, or reconsider and incorporate new climate change data
- Projects are encouraged to use nature-based strategies to address climate change impacts
- Many of these projects might also be funded through existing grant programs
  - e.g., EEA's Dams and seawalls, CZM's coastal resiliency, DER's culvert replacements

MVP Action Grants – Project Categories

- Detailed Vulnerability and Risk Assessment
- Public Education and Communication
- Local Bylaws, Ordinances, Plans, and Other Management Measures
- Redesigns and Retrofits
- Nature-Based Storm-Damage Protection, Drought Prevention, Water Quality, and Water Infiltration Techniques
- Nature-Based, Infrastructure and Technology Solutions to Reduce Vulnerability to Extreme Heat and Poor Air Quality
- Nature-Based Solutions to Reduce Vulnerability to other Climate Change Impacts
- Ecological Restoration and Habitat Management to Increase Resiliency

MVP Action Grants

- 2018: 39 Applications for Action Grant
- Projects included:
  - Marsh resiliency
  - Wastewater and drinking water infrastructure
  - Climate migrants

Report Out from Small Groups

- Choose your group's top 4 priority actions for reporting to the group and voting

Identify Top Priority Actions

- Review the top actions identified by the small groups
- Place your dots next to the actions you feel are the highest priorities within Harvard

Next Steps

- Develop Workshop Summary of Findings Report
- Community Listening Session
- Submit materials to the state, become an “MVP Community”
- To maintain MVP Community designation, the Town must provide the Commonwealth with a yearly progress report outlining the steps they have taken towards implementing their priority actions
  - For example: Pursue funding for priorities and projects; update existing local plans using the outcomes of the workshop

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