

**Planning for Climate Change: Municipal
Vulnerability Preparedness Program
Town of Harvard**

Agricultural Workshop 2

March 9, 2019

Workshop Agenda

- 9:00 Welcome and Introductions
- 9:05 MVP Overview
- Agricultural Workshop #1 and Farmer Interviews
- Group Discussion: Vulnerabilities
- 9:30 Strategies for Climate Change: Mitigation and Adaptation
- 10:15 Group Discussion: Strategies and Questions and Answers
- 10:45 Break
- 11:00 Strategies and Priorities
- 12:30 Report Outs and Next Steps

Introductions

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

- Harriman
 - Emily Keys Innes, AICP, LEED AP ND, MSVP TSP *Associate and Senior Urban Planner*
 - Steve Cecil, AIA, ASLA *Principal*
 - Jessica Wilson *Urban Designer/Planner*

- University of Massachusetts-Amherst
 - Dan Cooley *Professor of Plant Pathology*

Municipal Vulnerability Preparedness (MVP) Program Overview

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
- 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

Overview of Climate Change

- 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 geographical 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

Risk/Risk Management

- Defining risk, understanding risk, and managing risk
 - Rational actor paradigm: making the optimal choice based on an understanding of maximizing the benefit and minimizing the losses
 - Behavioral economics: studies why people don't always make the rational choice
- Define your risk by understanding where/how you are vulnerable
- Understand the strategies that can reduce your vulnerability
- Identify the cost of implementing the strategy vs. the cost of doing nothing
- **Know that you will never have perfect information, and that reducing vulnerability/risk is a series of actions over time, not a single decision**
- Resources
 - **Risk, Uncertainty and Rational Action**; Carlo C. Jaeger, Thomas Webler, Eugene A. Rosa, Ortwin Renn
 - **The Resilience Dividend: Being Strong in a World Where Things Go Wrong**, Judith Rodin
 - **Antifragile: Things that Gain from Disorder**, Nassim Nicholas Taleb

Agricultural Workshop #1: February 2

- Purpose
 - Introduce the impacts of climate change in the local watersheds (state data provided by watershed)
 - Introduce the impacts of climate change on agriculture (crops and livestock)
 - Review the results of the agriculture survey
 - Identify hazards and vulnerabilities



Agricultural Workshop #1: February 2

- Discussion goals (state process)
 - Identify top hazards to agriculture from climate change
 - Identify related vulnerabilities in terms of impacts to infrastructure, society, and environment



Agricultural Workshop #1: Findings

- Small Group Discussions
- Comments Cards from meeting
- Follow-up interviews with farmers
 - Frank Carlson, Carlson Orchards
 - Chris Green, Westward Orchards
 - Linda Hoffman, Old Frog Pond
 - Laura McGovern, Dunroven Farm
 - Paul Willard, Willard Farm
 - Waiting to talk to Pam Lawson of Doe Orchards

Agricultural Workshop #1: Small Groups

- Top Four Hazards

- Excessive moisture/flood
- Extreme storm events
- Storm event timing
- Temperature variability

- Increased precipitation
- Weather extreme
- Temperature variation

- Pests! (Deer, gypsy moth)
- Invasive vegetation
- Inconsistent temperatures
- Precipitation Extremes
- Fire

Agricultural Workshop #1: Small Groups

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Agricultural Workshop #1: Small Groups

- Top Hazards
- **Temperature**: extremes and variability
- **Precipitation**: extremes and variability

Agricultural Workshop #1: Small Groups

Vulnerabilities: Identified by Groups

- Lack of town water
- Above ground utilities/ Lower energy resilience
- Well depth/water quality
- Lack of awareness
- Municipal fiscal sustainability/local tax structure
- Regulatory (assessing, zoning)
- Economic (tourism, limits to, local goods/services)
- Agricultural use of conservation lands
- Development surrounding
- Public Health
- Water quality (wetlands, water resources)
- Plant threats (invasives, leaf canopy, blight extension)
- Insect threats (invasives, pests, pollinators)
- Disease threats (blight, stress, animal diseases)
- Wildlife (increased predators, dispersers, climate status)
- Better road design/engineering
- Trees
- Tree undergrowth
- Storage
- Reduced production
- Increase in minimum wage by 2023
- Contaminants (runoff and applications)
- Varietals not viable
- Crops
- Livestock

Agricultural Workshop #1: Small Groups

Vulnerabilities: Potential Impacts from Climate Change

- Lack of town water
- Above ground utilities/ Lower energy resilience
- Well depth/water quality
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- **Public Health**
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Agricultural Workshop #1: Small Groups

Vulnerabilities: Unrelated to Climate Change

- **Lack of town water**
- Above ground utilities/ Lower energy resilience
- **Well depth/water quality**
- **Lack of awareness**
- **Municipal fiscal sustainability/local tax structure**
- **Regulatory (assessing, zoning)**
- **Economic (tourism, limits to, local goods/services)**
- **Agricultural use of conservation lands**
- **Development surrounding**
- Public Health
- Water quality (wetlands, water resources)
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- Varietals not viable
- Crops
- Livestock

Agricultural Workshop #1: Follow-up Calls

Vulnerabilities: All

- Limited irrigation
- Decreasing margins
- Few distributors
- Standing water/soaked pastures
- Increase in price of supplies (hay, packing boxes, etc.)
- Labor – supply, cost of
- Local regulations
- Property taxes
- Variability of temperatures in a single season
- Restrictions on agritourism
- State building codes
- Financing for mitigation/adaptation
- Need people to buy product
- Quality of hay, other feed
- Succession planning

Agricultural Workshop #1: Follow-up Calls

Vulnerabilities: Potential Impacts from Climate Change

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Agricultural Workshop #1: Follow-up Calls

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- Variability of temperatures in a single season
- **Restrictions on agritourism**
- **State building codes**
- **Financing for mitigation/adaptation**
- **Need people to buy product**
- Quality of hay, other feed
- **Succession planning**

Agricultural Workshop #1: Small Groups

Vulnerabilities: What are we missing?

Climate Change?

Other, Agriculture-Specific?

Agricultural Workshop #1: Comment Cards

- **12 responses**

- Did you find today's workshop helpful?
- What did you learn that you didn't know?
- What did you want to learn that you did not?
- What else would you like us to think about as we prepare for the next workshop?

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Agricultural Workshop #1: Saturday, February 2, 2019

Thank you for attending today's workshop. Please take the time to fill out the short survey below and return it to the presenters.

Did you find today's workshop helpful? Yes!

What did you learn that you didn't know? A lot! The graphs were awesome from the surveys. Discussion very informative.

What did you want to learn that you did not? _____

What else would you like us to think about as we prepare for the next workshop?

Please put additional comments on the back.

Agricultural Workshop #1: Comment Cards

- Did you find today's workshop helpful?
 - Yes (5)
 - Yes very much so
 - Good Start!
 - Yes: a good insight into issues that others are concerned about
 - Yes helps sort out your thoughts
 - Yes but frustrating
 - Interesting
 - Yes!

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Agricultural Workshop #1: Saturday, February 2, 2019

Thank you for attending today's workshop. Please take the time to fill out the short survey below and return it to the presenters.

Did you find today's workshop helpful? Interesting

What did you learn that you didn't know? Some specifics about the degree, kind and location of farms in Harvard

What did you want to learn that you did not? What crop/varieties/resources are there to accommodate climate change

What else would you like us to think about as we prepare for the next workshop?
I think we need several different maps that can be overlaid to compare/contrast/analyze challenges/opportunities/resources here in Harvard.

Additional comments on the back

Agricultural Workshop #1: Comment Cards

- **What did you learn that you didn't know?**

- How forests are impacted and how they impact surrounding land
- That a lot of people have concerns that I do
- Deer population is 50% above level
- Agricultural use of conservation land an option?
- Good discussion of impacts to animal husbandry
- Some
- Specifics about the degree, kind, and location of farms in Harvard
- How different issues can interact
- Interconnectedness
- Little forest business in Harvard
- Maple sugar affected by deer
- Takes me time to get thoughts together! I'll email.
- A lot! The graphics were awesome from the survey. Discussion very informative.
- Temp graphics pictures and precipitation projections.

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Agricultural Workshop #1: Saturday, February 2, 2019

Thank you for attending today's workshop. Please take the time to fill out the short survey below and return it to the presenters.

Did you find today's workshop helpful? Good Start!

What did you learn that you didn't know? Agricultural use of conservation land an option?

What did you want to learn that you did not? More about helpful regulation for small commercial farms. Bylaws, regulation

What else would you like us to think about as we prepare for the next workshop? ticks + mosquito risks for farm workers; heat risks etc. climate change + health of farm workers.

Please put additional comments on the back.

Agricultural Workshop #1: Comment Cards

- **What did you want to learn that you did not?**
 - That it is going to be tough to resolve most issues
 - **More about helpful regulation for small commercial farms. Bylaws, regulations difficult to find**
 - **What crop/varieties resources are there to accommodate climate change**
 - **Actions to be done**

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Agricultural Workshop #1: Saturday, February 2, 2019

Thank you for attending today's workshop. Please take the time to fill out the short survey below and return it to the presenters.

Did you find today's workshop helpful? YES VERY MUCH SO

What did you learn that you didn't know? THAT A LOT OF PEOPLE HAVE CONCERNS THAT I DO.

What did you want to learn that you did not? THAT IT IS GOING TO BE TOUGH TO RESOLVE MOST MOST ISSUES

What else would you like us to think about as we prepare for the next workshop? EDUCATE THE TOWN GOV. & TOWN CITIZENS

Please put additional comments on the back.

Agricultural Workshop #1: Comment Cards

- **What else would you like us to think about as we prepare for the next workshop?**
 - Help guide the discussion by framing the categories with some examples
 - Narrow the concerns
 - **Drinking water supply threats?**
 - **Financing**
 - I think we need several different maps that can be compared/contrast/analyzed to identify challenges/opportunities/resources here in Harvard
 - **Education and outreach to entire Town. How to teach Town about role of agriculture in Town's fabric/history?**
 - **Ticks and mosquito risks for farm workers; heat risks, etc.; climate change and health risks for farm workers**
 - **Any outside of Harvard entities that are stakeholders should be included. Sudbury Valley Trustees (SVT) and maybe Oxbow rep?**
 - **Educate the Town government and Town citizens**

Introduction to Climate-Change Strategies

Switch to Climate Change and Agriculture in Harvard: Adaptation Strategies, Tactics, and Tools

Small Group Discussion/Continued Focus Group

Temperature

Precipitation

Economic/
Market

Regulatory

Other

Small Group Discussion/Continued Focus Group

Temperature

Precipitation

Economic/
Market

Regulatory

Other

Vulnerabilities: How are you vulnerable to these pressures?

Small Group Discussion/Continued Focus Group

Temperature

Precipitation

Economic/
Market

Regulatory

Other

Strategies: How could you mitigate/adapt to these pressures?

Small Group Discussion/Continued Focus Group

Temperature

Precipitation

Economic/
Market

Regulatory

Other

Partners: Whose help do you need and what is that help?

Small Group Discussion/Continued Focus Group

Temperature

Precipitation

Economic/
Market

Regulatory

Other

Prioritize: What are the five most important strategies to you?

Next Steps

- Write up notes for this meeting!
- Main MVP workshop scheduled for March 21 and April 4
 - These will follow the state format using the grid and steps we began last time
- Report for review by the MVP Committee
- Public Listening Session (not yet scheduled)
- Comments from the listening session added as an appendix to the report
- Submission to state for review