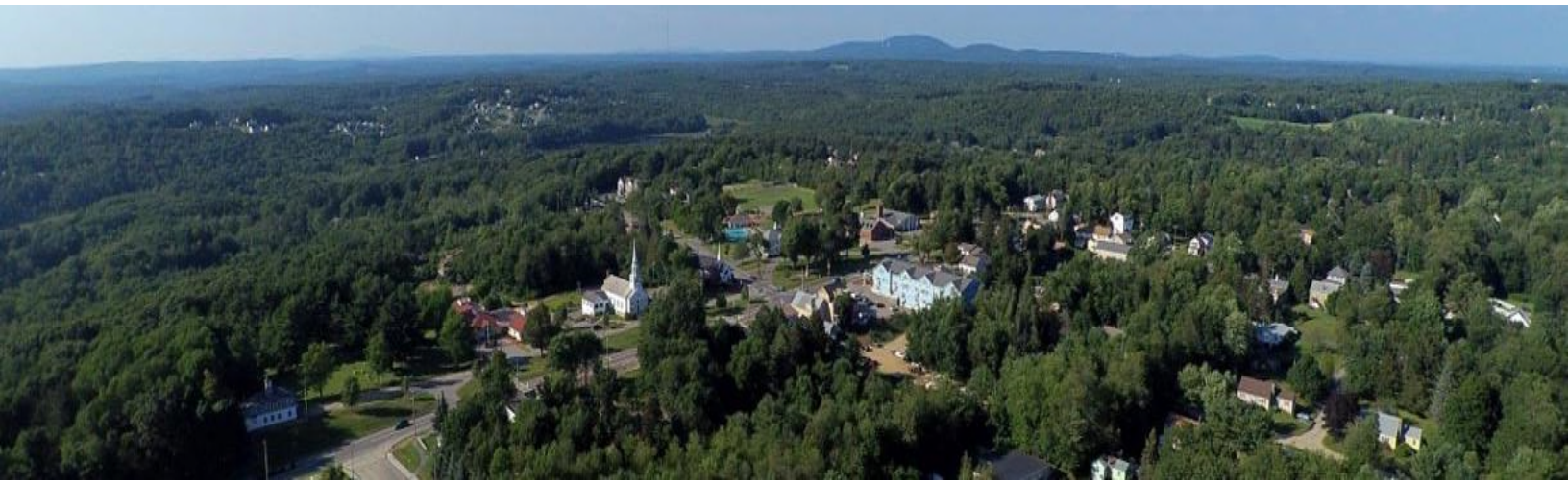

View of Rutland from townofrutland.org.

Community Resilience Building Workshop

Summary of Findings

May 2020

Weston & Sampson

100 Foxborough Boulevard, Suite 250
Foxborough, Massachusetts 02035
tel: 508-698-3034

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View of Long Pond from bostonkayaker.com.

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1.0 OVERVIEW

As the geographical center of Massachusetts, Rutland will be spared many of the challenges facing coastal communities as they adapt to climate changes; however, the town will experience some effects that will impact the local environment, the economy, public safety, and quality of life. Massachusetts will witness increased temperatures, drier summers with more intermittent droughts, increased inland and coastal flooding, and higher, often intense, precipitation in winter and spring months.[1] This section offers an overview of the specific current and projected impacts of climate change based on current science.

Global and National Climate Trends

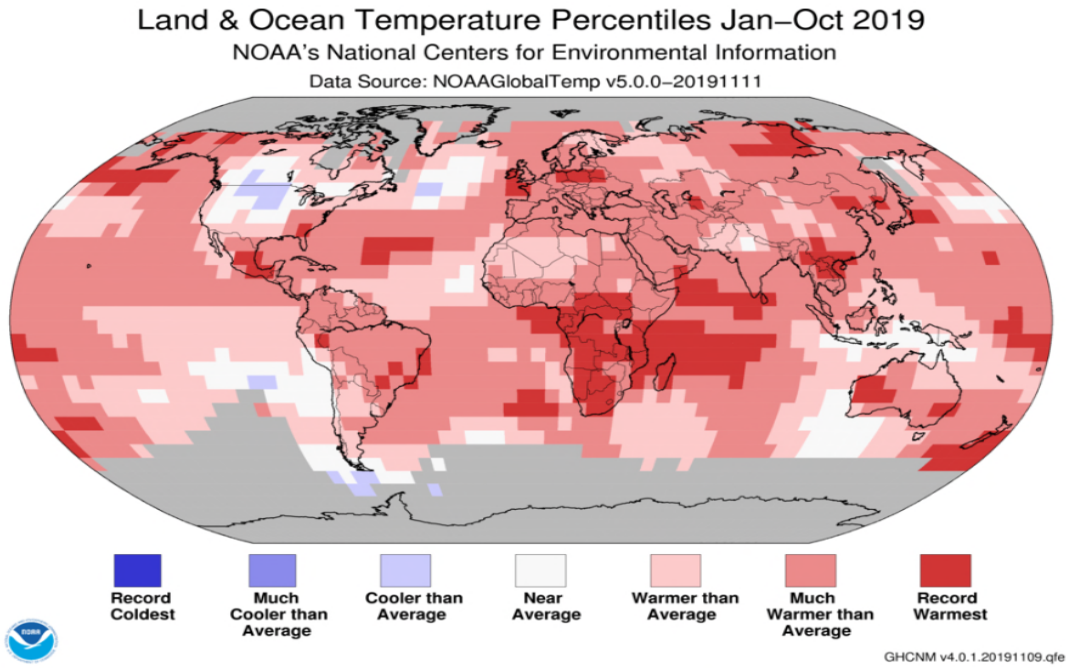
The NOAA National Centers for Environmental Information (NCEI) monitors climate changes at the global and national scale and posts observations and assessments online.[2] Based on data cited in the Global Climate Report (October 2019), the website presents the following facts:

- "The global land and ocean surface temperature departure from average for October 2019 was the second-highest for the month of October in the 140-year NOAA global temperature dataset record, which dates back to 1880."
- "The 10 warmest Octobers have all occurred since 2003; however, the five warmest Octobers have all occurred since 2015."
- "The Arctic sea ice extent for October 2019 was the smallest on record at 1.04 million square miles, or 32.22%, below the 1981–2010 average, according to an analysis by the National Snow and Ice Data Center (NSIDC) using data from NOAA and NASA."

As the graphics on the next page illustrate, every country in the world experienced warmer temperatures in 2019 – and in many places, temperatures reached record highs. At the national level, temperatures varied as many northwestern and midwestern states experienced cooler than average temperatures, and the eastern half of the United States saw warmer temperatures (including Massachusetts). Most notable is the southeastern U.S., which felt record-setting higher temperatures.[3] In addition to temperature changes, the nation is also seeing more rain and snow. January to October 2019 was the wettest period on record.[4] Precipitation in this period increased in most states, including all of New England, and much higher or record-setting precipitation occurred throughout the Midwest.[5]

While we often hear of it as a future event, ***climate change is happening now***, and the intent of this Municipal Vulnerability Preparedness Plan is to summarize the observations that are currently visible, offer an overview of climate projections for upcoming years, and focus on the equipment, expertise, communications, and other resources that Rutland will require to adapt to worsening climate conditions.

[1] resilientma.org
[2] https://www.ncdc.noaa.gov/sotc/
[3] NOAA NCEI Global Climate Report, October 2019.
[4] Ibid.
[5] Ibid.



Figures 1 (above): NOAA Map of Land and Ocean Temperature Percentiles (January - October 2019).

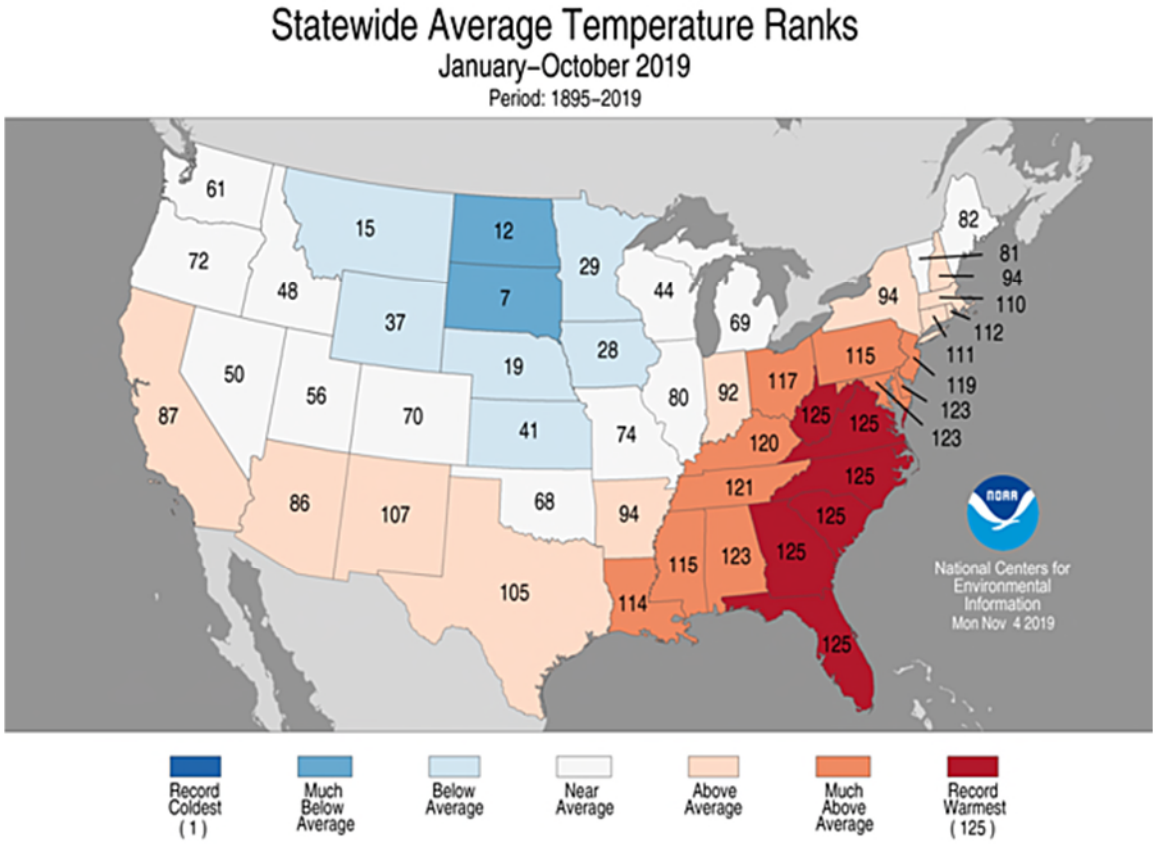


Figure 2 (above): NOAA Map of Statewide Average Temperature Ranks (January – October 2019).

1.1 Environmental Risk in Rutland

Considering the full scope of Rutland's environmental risks can lead to a comprehensive set of strategies to prepare for extreme weather events that are predicted with climate change and mitigate their impacts. Rutland is well-positioned to engage in such a study. The town recently completed its Hazard Mitigation Plan (HMP), a process designed by FEMA to push communities to research and reflect on past natural hazards and their aftermath and to prepare for future hazards. With climate change, the town must consider the effects of future hazards, such as rising temperatures, intermittent heavy precipitation (in summer and winter), increased wind events, invasive species, etc. We are already seeing these changes, but public policy and awareness have been slow to respond. To use a local example, annual temperatures in Worcester County have increased by two degrees Fahrenheit since 1970. Annual average temperatures in Rutland could increase further in future decades, possibly 3.5 degrees by 2030, and by almost 11 degrees by the end of the century.[6] With these temperature changes, winter snowpack will decrease, and the number of extremely hot summer days will increase. The MVP process requires town leadership and residents to consider how climate changes such as these will affect their particular local infrastructure, society, and the environment strengths and vulnerabilities, and then devise ways to adapt.

1.2 Land Use in Rutland

Located in Worcester County, Rutland is bordered by six communities: Barre, Hubbardston, Princeton, Holden, Paxton, and Oakham. The Town consists of 36 square miles, of which 35 square miles are land and 1 square mile is water. The town is located within the Chicopee and Nashua Watersheds. The Town of Rutland is situated among a large expanse of forest, much of which is state-owned, and includes 3,151 housing units. The housing density is about 740 people per square mile, much fewer than the Massachusetts average of 871 people per mile.[7] Rutland's scenic rural setting is both a strength and a vulnerability. Forests are vulnerable to invasive species, infestation, the loss of trees to rising temperatures and drought, wildfires, and the depletion of local habitats that depend on a regular balance of temperatures and precipitation to thrive.

1.3 Demographics in Rutland

The needs of vulnerable populations should be carefully considered when planning for environmental risk. Vulnerable populations can include the elderly, children, residents with language barriers, residents with special needs, and residents with low or moderate-income. As of the 2017 American Community Survey, Rutland's population consists of about 8,463 people. Other demographic facts about Rutland:

- 25 percent of the population is under the age of 18, and 11.4% are over the age of 65.
- While only 2 % of the total population of Rutland live below poverty, but those who do include 20% of children and 7% of seniors.[8]
- 32% of the population meets the U.S. Department of Housing & Urban Development definition of low- to moderate-income.
- 97% of the population drives to work (compared with 78% for Massachusetts overall).

[6] Northeast Climate Adaptation Science Center, 2018. Please refer to the list of Works Cited and Additional Resources in Sections 7.5-7.6 for more information on climate change projections and adaptation plans in Massachusetts, Worcester County, and Rutland.
[7] American Community Survey, 2013-2017, viewed through policymap.com.
[8] American Community Survey, 2016, viewed through policymap.com.

2.0 COMMUNITY RESILIENCE BUILDING WORKSHOP: SUMMARY OF FINDINGS

Rutland's Multi-Hazard Mitigation planning process provided a review of the natural hazards that the town has faced historically, relying on experience as an indicator for the future. Climate change planning looks forward and requires town residents and staff to imagine new climate scenarios and to identify which aspects of their community are the most vulnerable, and which hazard present the greatest threat.

The MVP program helps support Massachusetts communities in preparing for extreme weather and implementing priority resilience projects. Eligible communities complete the MVP program, become certified, and apply for MVP Action grant funding. As a participating community, Rutland can use this funding to improve resilience and preparedness for natural and climate-driven hazards; collaborate with stakeholders regarding climate change, natural hazards, and impacts; and increase education, planning, and implementation of priority actions.

Rutland's MVP application outlined the impact of extreme weather events and pledged to incorporate findings from the MVP Project into future updates of the Town's Hazard Mitigation Plan, and into considerations by the Planning Board, Zoning Board of Appeals, Board of Health, and Conservation Commission. On November 7, 2019, the Town of Rutland worked with Weston & Sampson to host a

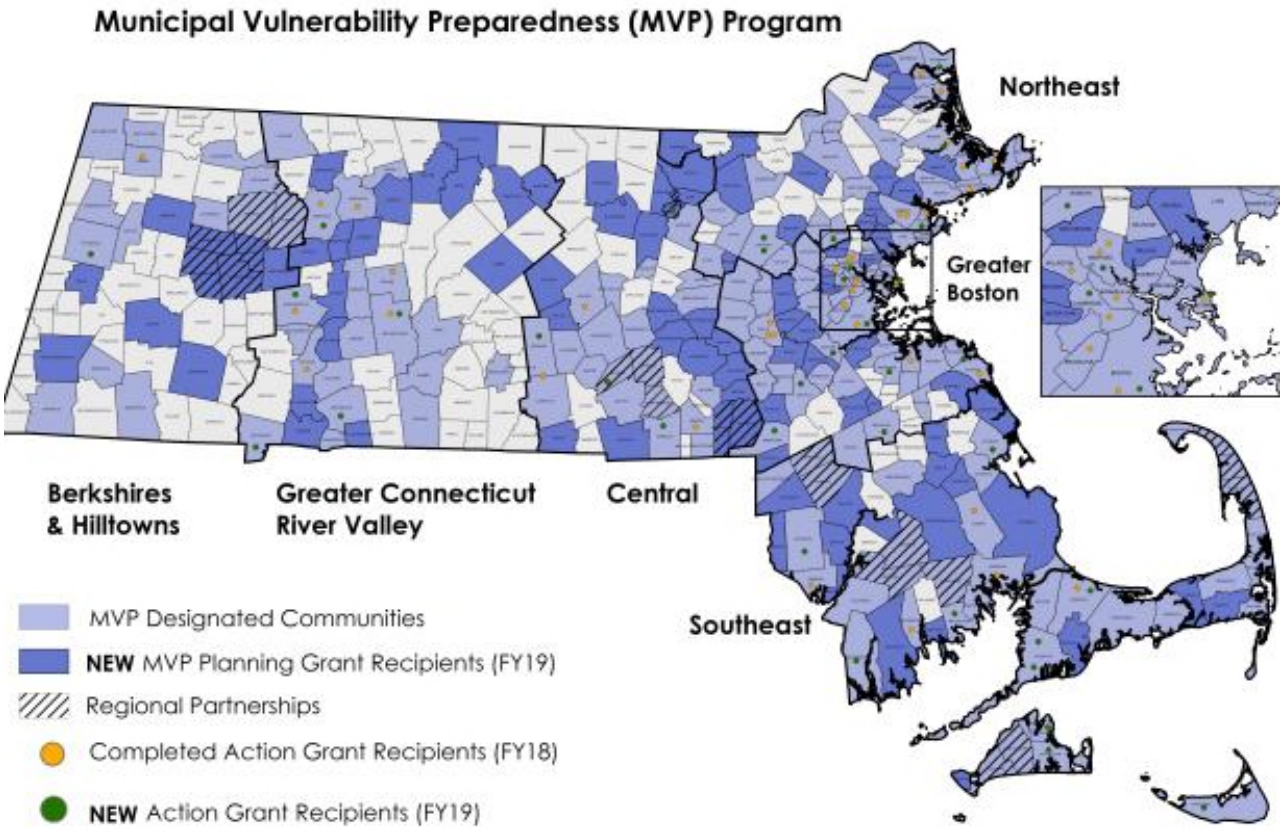


Figure 3: A map of communities participating in the MVP Program (mass.gov)

Community Resilience Buildings (CRB) workshop as part of the MVP Program. The Workshop's central

objectives were to:

- Define top local, natural, and climate-related hazards of concern
- Identify existing and future strengths and vulnerabilities
- Develop prioritized actions for the community
- Identify immediate opportunities to collaboratively advance actions to increase resilience

The municipal leadership involved in this workshop included the Town Manager, Public Works Director, Fire Chief, Police Chief, and representatives from the Conservation Commission. These stakeholders worked alternatively in large and small groups to identify hazards, at-risk areas, and recommendations related to environmental risk and climate adaptation. This report summarizes the CRB workshop process and findings.

Figure 4: Participants at the CRB Workshop

3.0 TOP HAZARDS AND VULNERABLE AREAS

Natural hazards in Rutland include extreme heat, sea-level rise and storm surge, heavy precipitation, wind, drought, snow and ice, and erosion. A 2019 Risk Assessment ranked the following natural hazards from high to low risk:

Table 1: Rutland Natural Hazards Risk Assessment	
Natural Hazard	Community Risk Rating
Wildfire/Brush Fires	High
Winter Storms (blizzard/snow/ice)	High
Severe Thunderstorms, Lightening	Moderate
Winds	Moderate
Extreme Temperatures	Moderate
Flooding	Low
Tornadoes	Low
Hurricanes	Low
Earthquakes	Low
Drought	Low
Dam Failures	Low

Figure 5: Table based on the Rutland Multi-Hazard Mitigation 2019, which was modified from the 2013 Massachusetts State Hazard Mitigation Plan

3.1 Top Hazards from the Workshop

All climate risks were presented and discussed during the CRB workshop. The top hazards identified by participants during the workshop include:

Flooding (Extreme Precipitation, Dam Failure)

Extreme Wind/Storms

Drought

Winter Storms

3.1.1 Extreme Precipitation

Rutland's 2019 Hazard Mitigation Plan describes the town's prior experience with precipitation and flooding and notes that this condition historically resulted from hurricanes, nor'easters, severe rainstorms, and thunderstorms. Furthermore, the HMP cites dam failure as a significant potential hazard. According to resilientma.org, the Commonwealth now receives approximately 48 inches of rain per year on average, with average monthly rainfall between three and four inches for all regions of the state. As the HMP notes, climate change will exacerbate current conditions, and these changes are already becoming apparent. The total average annual precipitation across the Northeastern states has

increased by approximately 10 percent in the last fifty years. As the map to the right indicates, climate change projections for the year 2030 indicate that the town overall will see a .17 rise in the average number of days where precipitation is greater than 2 inches within 24 hours, with the eastern portion of the town (the Nashua Basin) possibly experiencing such storms even more frequently.

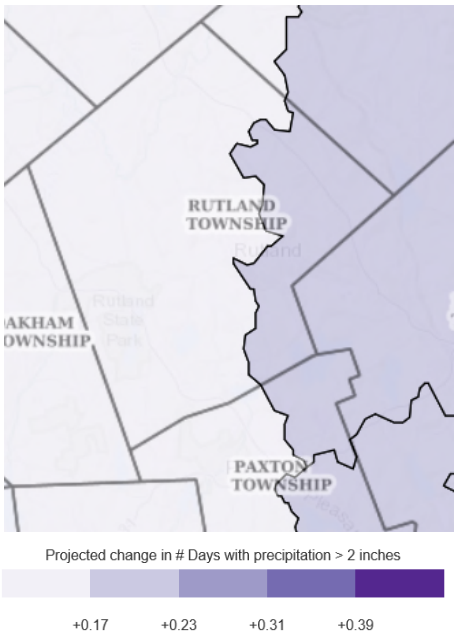


Figure 6: Map of Project Change in Days with Precipitation Greater Than Two Inches (Nashua Basin)

Source: resilientma.org Data Map.

3.1.2 Extreme Wind/Storms

According to the HMP, thunderstorms are a regular occurrence in Rutland and are considered a high risk. Thunderstorms are deemed severe when they contain hail larger than 1-inch in diameter, have winds gusting over 50 knots, (57.5 mph), or spurs tornadoes.[9] Aside from heavier precipitation impacts described above, thunderstorms can bring heightened risk for lightning strikes, and unpredictable strong winds. Scientists have observed that rising temperatures associated with climate change are shifting energy in the atmosphere so that there is more energy to fuel thunderstorms.[10] Since 1979, the energy to fuel local thunderstorms has risen 13%.[11]

Tornadoes inspire fear because of their tremendous power, seemingly random appearance, and ability to decimate large areas with little notice. Worcester County has been affected by tornados, but these are infrequent and have not resulted in large scale damage or injury. Tornadoes are considered low risk in the HMP. Tornado occurrences have not been tracked as long as other weather patterns, with records only going back to the 1950s. In the mid-1990s, Doppler radar enabled meteorologists to detect tornado formation and warn the public of these conditions. Since 1950, Massachusetts averages about 2 tornadoes per year.[12] No dramatic increases have been observed in the frequency and size of tornadoes in the state or elsewhere. Scientists have noted, however, that we are seeing fewer days with tornadoes, but on those days in which tornadoes occur, there are more of them.[13]

Microbursts are defined by the National Weather Service as "a localized column of sinking air (downdraft) within a thunderstorm and is usually less than or equal to 2.5 miles in diameter." Microbursts are associated with thunderstorms and wind speeds of over 100 mph have been recorded in Massachusetts.[14] Wider bursts are "macrobursts." Both micro and macrobursts can occur in an

[9] NOAA National Severe Storms Laboratory, Severe Storms 101-Thunderstorms (https://www.nssl.noaa.gov/education/svrwx101/thunderstorms/).
[10] Massachusetts Institute of Technology. (2019, February 18). Climate change makes summer weather stormier yet more stagnant: Rising temperatures feed more energy to thunderstorms, less to general circulation. *ScienceDaily*. Retrieved December 17, 2019 from www.sciencedaily.com/releases/2019/02/190218153218.htm
[11] Ibid.
[12] National Climatic Data Center, NCEI, U.S. Tornado Climatology (https://www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology)
[13] NOAA National Severe Storms Laboratory, Research News, October 2014.
[14] Massachusetts State Hazard Mitigation and Climate Adaptation Plan (September 2018) 4-255.

organized, fast-moving row, called a "derecho."[15] It is unclear if tornadoes and microbursts will become more frequent or intense with climate change. They are included in the adaptation discussion because of their association with severe thunderstorms and the stress that they place on emergency management, municipal, and utility staff and budgets.

3.1.3 Drought

According to the HMP, Massachusetts has experienced seven major droughts between 1930 and 2016, not including the 2019 drought (HMP, p.43). For Rutland, the water supply is a chief concern because many Rutland residents are on private wells and the municipal water supply does not have a reserve. Drought is currently ranked low in the HMP, but this concern reflects existing conditions, not those of climate change. Based on the data in resilientma.org, climate change is projected to result in increased intermittent droughts. Much of the state will experience an increase in consecutive dry days, with the Nashua Basin area potentially seeing more.

Drought can affect agriculture and stress habitats as water sources for wildlife shrink. As the map to the right indicates, Rutland is home to several vernal pools, temporary bodies of water that last for weeks or months. These pools provide critical and unique seasonal habitat for animals such as spotted salamanders, wood frogs, snails, clams, dragonflies, and turtles. A combination of drought and rising temperatures could devastate fishing stocks and related recreation. For example, brook trout, which live in the cold water streams around Rutland (pictured, right), can die if streams temperatures exceed 68 degrees Fahrenheit for extended periods. Additional stressors from climate change, such as invasive aquatic species, pests, and diseases, and changes in hydrology could contribute to a

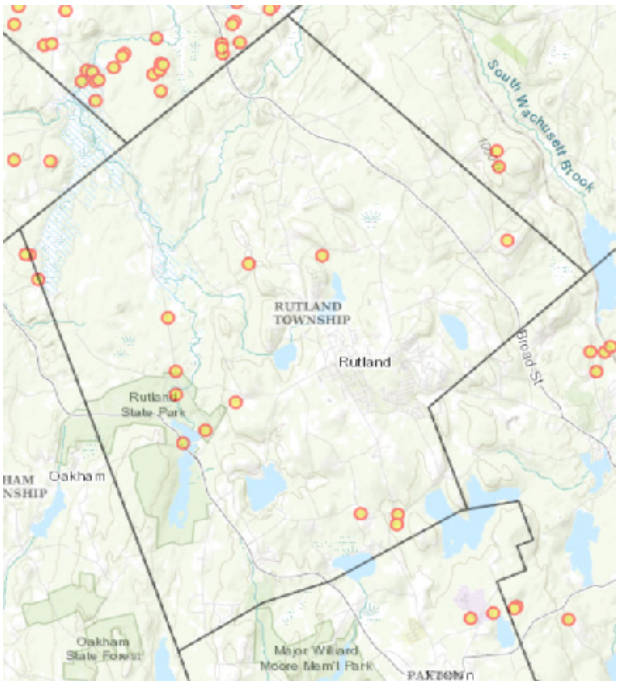


Figure 7 above: Rutland's vernal pools.

Source: resilientma.org Data

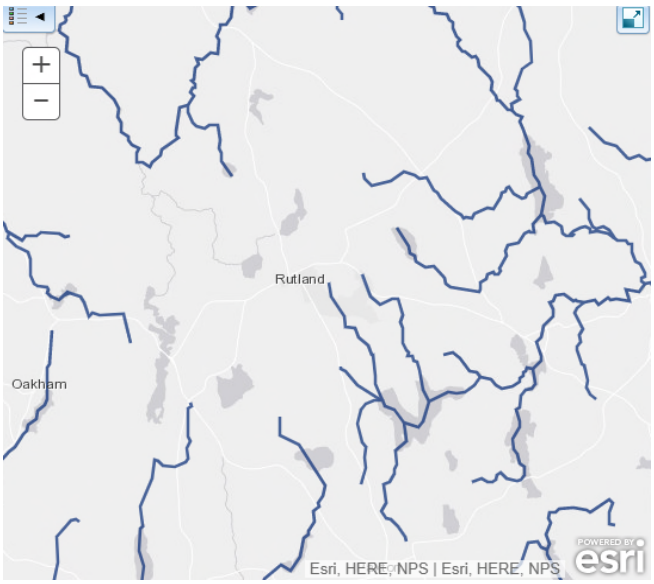


Figure 8 above: Map of brook trout habitat in the Rutland vicinity.

Source: Massachusetts Action Climate Wildlife Tool

[15] Ibid.

depletion in fish distribution and population, along with other types of wildlife.[16]

3.1.4 Winter Storms

The HMP cites severe winter storms as a "very high" probability of occurrence.[17] 58 high impact storms have occurred in the Northeast Corridor since 1958, based on NOAA data. According to the HMP, 30 of these storms affected Rutland with over ten inches of snow. Predictions for how climate change may affect blizzards are not clear. According to resilientma.org, however, the higher level of moisture in the northbound air currents flowing over the Atlantic Ocean will likely contribute to more frequent blizzards in the future. Blizzards are extremely costly and damaging. Sudden snow and ice can create power outages and disrupt telecommunications. Roads become unsafe or impassible, hindering emergency service and repair crews. Melting snow and ice can also create post-storm flood hazards, and damage infrastructure. These disruptions affect municipal resources, business, and employment, and public and property.

3.2 Vulnerable Areas

During the CRB workshop, participants discussed vulnerable geographical areas of Rutland that would be of particular concern during a hazard event. The areas of greatest concern include the town's only water supply, Mauschopauge Pond. The pond is vulnerable to an array of hazards, but contamination and drought are the hazards most likely to affect human health. Nearby agricultural uses (including a dairy farm and horse show) have raised questions about potential runoff into the pond.

Table 2: Vulnerable Areas in Rutland	
High Hazard Concerns	Type of Hazard
Mauschopauge Pond	flooding, drought, contamination from stormwater runoff
Street Network	flooding, ice, seismic activity
Forest	wildfires, drought, invasive species

Figure 9: Mauschopauge Pond and surrounding agricultural lands.

Source: Google Earth

[16] Massachusetts Wildlife Climate Action Tool webpage (https://climateactiontool.org/species/brook-trout).
[17] HMP, p. 17.

4.0 CURRENT CONCERNS/CHALLENGES PRESENTED BY HAZARDS AND CLIMATE CHANGE

Specific Categories of Challenges

The main areas of concern were grouped within the following three categories or "features:" infrastructural, societal, and environmental.

4.1 Infrastructural

Concerns within the infrastructural category include:

- Roadways
- Drinking water
- Dams
- Municipal buildings
- Town storage for tree waste
- New development (southern/western portions of town)

4.2 Societal

Concerns related to the societal category include:

- Communication between emergency personnel
- Communication between town departments and committees and communication between town and community
- Commuting population (out of town)
- Shelters
- Vulnerable populations (Hawthorne, group homes, schools/boarding school, seniors, high-density areas) – and a growing population

4.3 Environmental

Concerns related to the environmental category include:

- Farmers
- Forest habitat
- Street trees
- Air quality
- Groundwater
- Surface water
- Fish and wildlife populations
- Agricultural runoff
- Beavers on Pommogusset Road
- Rail Trail
- Open Space

5.0 CURRENT STRENGTHS AND ASSETS

Despite the risks that Rutland faces, participants in the workshop were able to identify several existing strengths and assets within the town. Those examples include:

5.1 Infrastructural

- Transportation/road network
- Water supply/treatment storage
- Sewer system

5.2 Societal

- Schools/daycares
- Healthcare
- Faith-based organizations
- Essential personnel (communication between emergency personnel)
- Communication between town departments and committees and communication between town and community
- Shelters

5.3 Environmental

- Forest habitat and street trees
- Air quality
- Groundwater and surface water
- Brook trout (fish and wildlife populations)
- Farmers
- Rail Trail
- Open space

Figure 10: Fall view beyond the Rutland Community Solar Array. Photo source: Nameste Solar website (https://www.namastesolar.com/portfolio/rutland-community-solar/)

6.0 TOP RECOMMENDATIONS TO IMPROVE RESILIENCE

After listing vulnerabilities, hazards, and possible actions, participants ranked their recommendations from high to low priority. A summary of findings from the final group matrix is included below.



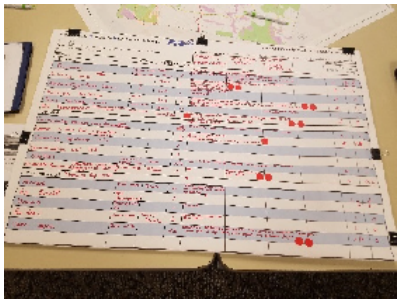


Figure 11. Participants created matrices of risks and vulnerabilities at each table, before consolidating their findings into one matrix and ranking priority actions.

6.1 Highest Priorities

Table 3: Recommendations for MVP Actions	
New Development	Update the town's development regulations (master plan, bylaws, and other regulations) to ensure that they do not exacerbate climate change impacts or place unsustainable stress on municipal services and supplies (such as water supply or fire services). Regulations should include: • Require nature-based design solutions for stormwater controls. • Conserve open space and habitat. • Conserve/add street trees or replace dying trees. • Pocket parks in high-density areas. • Community engagement. • Strategies and recommendations for alternate modes of transportation (such as raising roads). • Requirements for tree-trimming.
Municipal Personnel	Review and ensure communications are in place among municipal personnel and community caregivers or networks (such as faith-based communities, schools, etc.). Ensure that transportation is available for personnel in emergencies.
Transportation/Road Network	Create a plan for maintaining an open road network in changing weather conditions or emergencies. This plan should include: • A management plan for plowing and the storage of storm debris. • A review of transportation conditions near dams and alternative

	protocols or designs in case of dam failure. • A review of washout risks for dirt/gravel roads. • Recommendations for dust control from calcium chloride on gravel/dirt roads. • Recommendations for structural improvements for gravel/dirt roads. • Include a debris/brush management plan and identify storage areas for large scale debris
Water Supply/Treatment/Storage	Create a comprehensive water supply, treatment, and storage plan to ensure the availability and quality of the public drinking water supply. The plan should address: • Back-up power, access, such as a rental generator for severe storms. • Water conservation education for the public and advice on alternative household supplies • Identify alternate water supply • Relocate intakes in case of seismic disturbance • Regional partnership with Holden (alternative water supply) • Assess infiltration issues
Dam failure	Assess the likelihood of dam failure and the potential impacts of failure. The assessment should include recommendations for needed repairs, protocols, material, and equipment necessary to mitigate dam failure, as well as a schedule for inspections. Additionally, the management of the growing beaver population should be reviewed as well.
Sewer System	Assess the sewer system and review the risks of blockage (drought conditions) and provide recommendations for back-up power (seismic or other disturbance) and access.
Elderly Meal Site	Coordinate and communicate protocols to ensure that food services for elderly residents are available during an emergency, including transportation and financial resources.
Schools/Daycares	Coordinate and improve communications with parents, public, and private schools to ensure the safety of children during emergencies, and to prepare for future climate change impacts (such as rising temperature). Coordination should focus on aspects such as accessibility of schools, alternative power, and water sources, and building condition (in case of seismic or other disturbance). Potential flooding sources (such

	as dams) should be evaluated in proximity to schools.
Faith-Based Organizations/Social Organizations/Health Care Facilities	Coordinate with faith-based organizations to create a stronger communication network with residents, and to ensure that services provided through such organizations can continue in an emergency. Challenges that this effort should address include accessibility, back-up power sources, alternative water sources, and transportation.
Groundwater and Surface Water Resources	Create a plan to ensure that groundwater and surface water resources are protected from contamination, erosion, stormwater runoff, and agricultural runoff (particularly at Mauschopauge Pond). Include an extensive public education program to promote the conservation of these resources.
Forest/Open Space/Natural Resources/Habitat and Recreation	Consider planning for open space conservation and integrating open space and recreational opportunities into development regulations (such as pocket parks in high-density areas), tree replacement programs, and connecting trails into the town center. Find mechanisms for funding (such as participating in the Community Preservation Act) and ways to engage and educate the community about conservation and forest fire prevention.

6.2 Additional Priorities

RECOMMENDATIONS	
Power Lines	Create standards and a schedule for tree-trimming and monitor progress. Coordinate and communicate with National Grid and include tree-trimming protocols into development standards to ensure private developments are protected.
Bridges (Route 68)	Create a schedule for bridge inspections and a protocol for lowering water levels if a washout is predicted. In the long term, assess and (if needed) design and construct alternate paths.
Municipal Buildings	Develop building-specific emergency action plans, ensuring that ADA issues are addressed, and create a building committee to keep the communication and schedules moving forward. Examine heating issues with underground storage tanks (USTs) at the annex and community

	center.
Emergency Communications	Establish an Emergency Operations Committee and create a master plan that discusses how describes emergency communications among town departments, and between the town staff and the community. Include public outreach and education as part of the plan.
Emergency Shelters	Evaluate staffing needs for emergency shelters and create a training program for new staff.
Vulnerable Populations/Group Homes	Develop a plan that specifically addresses the needs of vulnerable populations (Hawthorne Hill, group homes, school, seniors, high-density areas, growing population areas). Ensure transportation to and from facilities in case of emergencies. Ensure that facilities are not located near dams or along roads that may washout.
Agriculture	Coordinate a committee to identify agricultural needs, land management practices, and usage. Task the committee by providing public education and outreach on agricultural best practices.

Figure 12: Route 122 during the 2008 ice storm. Photo by Christine Peterson, *The Telegram*.

7.0 REFERENCES

7.1 CRB Workshop Invitees and Participants:

Name		Affiliation	
Joe	Buckley*	Director, Public Works	Town of Rutland
Seth	Knipe*	Fire Chief	Town of Rutland
Neil	Viner*	DPW/Water Division	Town of Rutland
Nick	Monaco*	Police Chief	Town of Rutland
Michael	Nicholson*	Town Administrator	Town of Rutland
Norman	Anderson	Chair, Planning Board	Town of Rutland
Dick	Williams*	Planning Board By-Law Subcommittee	Town of Rutland
Glenn	Kauppila	Chair, Agricultural Commission	Town of Rutland
Kevin	Jarvi	Chair, Board of Assessors	Town of Rutland
Scott	Gilroy	Chair, Board of Health	Town of Rutland
Sheila	Dibb	Chair, Board of Selectmen	Town of Rutland
Harry	Sechman*	Chair, Capital Improvements Committee	Town of Rutland
Peter	Craine	Chair, Conservation Commission	Town of Rutland
Patricia	LaChance	Chair, Council on Aging	Town of Rutland
Suzanne	Smith	Chair, Cultural Council	Town of Rutland
Thomas	Ruchala	Chair, Finance Committee	Town of Rutland
Michael	Sullivan	Chair, Development & Industrial Commission	Town of Rutland
Jeffrey	Stillings	Member, Board of Selectmen	Town of Rutland
Mitchell	Ruscitti	Member, Board of Selectmen	Town of Rutland
Leah	Whiteman	Member, Board of Selectmen	Town of Rutland
Wayne	Walker	Member, Board of Selectmen	Town of Rutland
William	Cassanelli	Building Inspector	Town of Rutland
Nancy	Nichols*	Director, Council on Aging	Town of Rutland
David	George*	Town Planner/Community Development Coordinator	Town of Rutland
Nicholas	Monaco	Police Chief	Town of Rutland
Jennifer	Ford	Animal Control Officer	Town of Rutland
Michael	Moriarty	Director, Regional Emergency Communication Center	Town of Rutland
Anita	Carlson	Town Clerk	Town of Rutland
Kevin	Shaughnessey	Manager, Community and Customer Manager	National Grid
KerryAnn	Goldsmith	Executive Director	Devereaux School
Paula	Davison		MA DCR

Randy	Jordan	Member, Agricultural Commission	Town of Rutland
Raffia	Qutab	Physician	Rutland Family Health Center
Kimberly	Ferguson	State Representative	MA Legislature
Anne	Gobi	State Senator	MA Legislature

* Weston & Sampson / Caroline Wells
* Weston & Sampson / Tara McManus
* Weston & Sampson / Deanna Lambert
* Weston & Sampson / Pat Cotton
* MA Executive Office of Energy and Environmental Affairs / Hillary King

Notes:
Asterisks (*) are placed next to attendees

7.2 Citation

Town of Rutland. 2019. *Community Resilience Building Workshop Summary of Findings*. Prepared by Weston & Sampson. Rutland, Massachusetts.

7.3 Workshop Project Team:

Town of Rutland, Municipal Leadership:
Michael Nicholson, Town Manager

Town of Rutland, Core Team Members:
Joe Buckley, Director of Public Works
Seth Knipe, Fire Chief
Neil Viner, Water Department
Nick Monaco, Police Chief

Note: for contact information for the Core Team Members, please refer to the meeting minutes included in Appendix E.

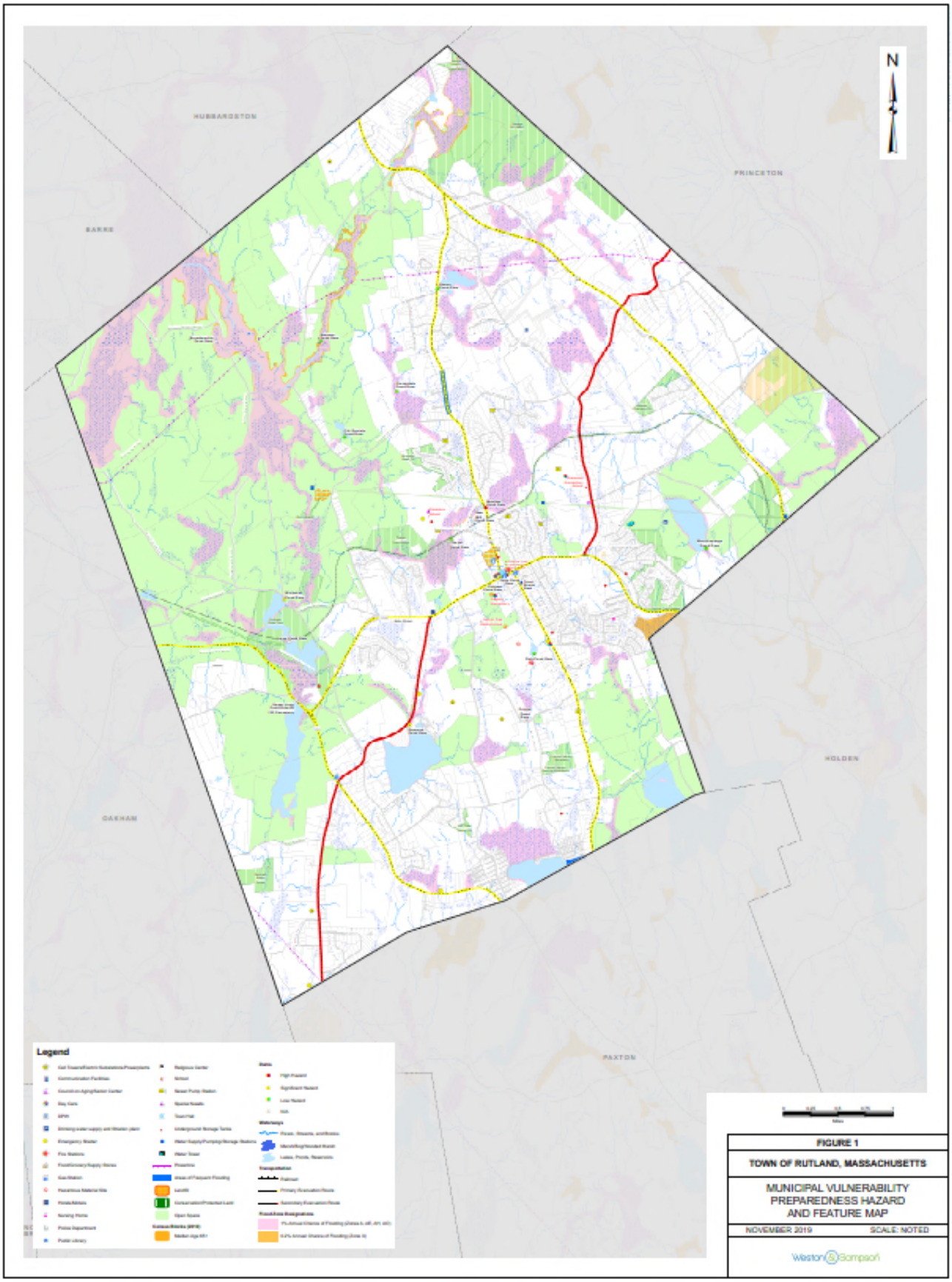
Weston & Sampson, Team Assisting with the Workshop:
Caroline Wells, Presenter/Facilitator
Tara McManus, Project Manager/Table Facilitator
Deanna Lambert, Table Facilitator
Pat Cotton, Table Facilitator

7.4 Acknowledgements

A special thanks to the Massachusetts Executive Office of Energy and Environmental Affairs for providing the grant that funded this project, particularly Hillary King, MVP Central Regional Coordinator. Additional thanks to all the participants and the Workshop Project Team for a successful event.

APPENDIX A

Workshop Base Map


N
HUBBARDSTON
PRINCETON
BARRE
HOLDEN
OAKHAM
PAXTON
Legend
FIGURE 1
TOWN OF RUTLAND, MASSACHUSETTS
MUNICIPAL VULNERABILITY PREPAREDNESS HAZARD AND FEATURE MAP
NOVEMBER 2019
SCALE: NOTED
Weston & Sampson

APPENDIX B

Workshop Agenda

Town of Rutland:

Municipal Vulnerability Preparedness Program

Community Resilience Building Stakeholder Workshop
Rutland Public Library
280 Main Street, Rutland, MA 01543

Wednesday, November 6, 2019
8:00 am – 12:00 noon

AGENDA

7:30 am – 8:00 am	Sign-In and Coffee
8:00 am – 8:10 am	Welcome and Introductions
8:10 am – 8:45 am	Presentation: MVP Workshop Purpose and Overview on Climate Change Science, Vulnerability and Actions
8:45 am – 9:00 am	BREAK – MOVE into SMALL GROUPS
9:00 am – 10:40 am	Small Group Exercise – Matrix and Maps
10:40 am – 11:00 am	BREAK
11:00 am – 11:20 am	Report Out
11:20 am – 11:40 am	Summary Discussion – what hazards and features did the group come up with?
11:40 am – 12:00 pm	Wrap Up & Introduction to Workshop DAY TWO

APPENDIX C

Workshop Presentation

TOWN OF RUTLAND

Community Resilience Building Workshop

Wednesday, November 6th, 2019

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CORE TEAM	RUTLAND MVP TEAM	MVP FACILITATORS
Michael Nicholson		Caroline Wells
Joe Buckley		Tara McManus
Seth Knipe	Hilary King	Pat Cotton
Neil Viner	MVP Central Regional Coordinator	Deanna Lambert
	Commonwealth of MA	

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WORKSHOP OUTLINE

PRESENTATION:

- MVP Program
- Overview of Climate Change Data
- Characterization of Hazards

- BREAK – Move to Small Groups

INDIVIDUAL TABLES:

- Identify Top Hazards
- Identify Community Features (both vulnerability and strengths)

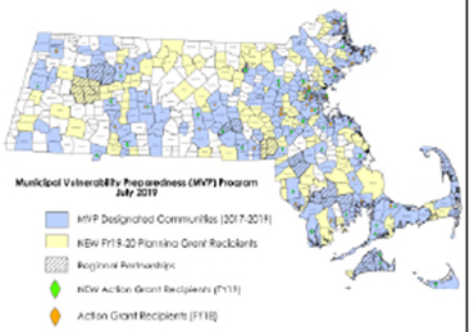
- BREAK -

LARGE GROUP DISCUSSION:

- What hazards did the group come up with?

3

MUNICIPAL VULNERABILITY PREPAREDNESS PROGRAM (MVP)



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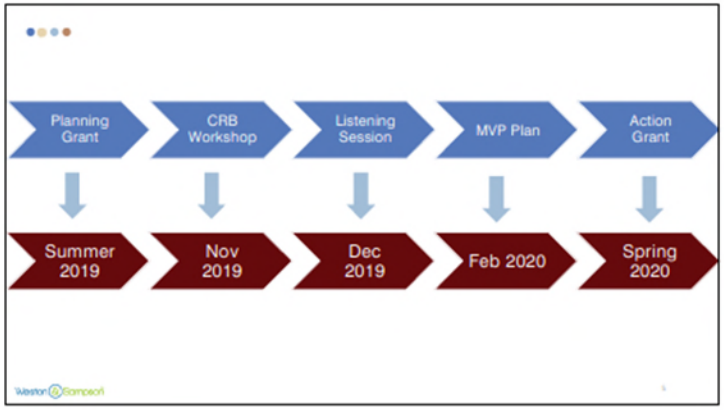
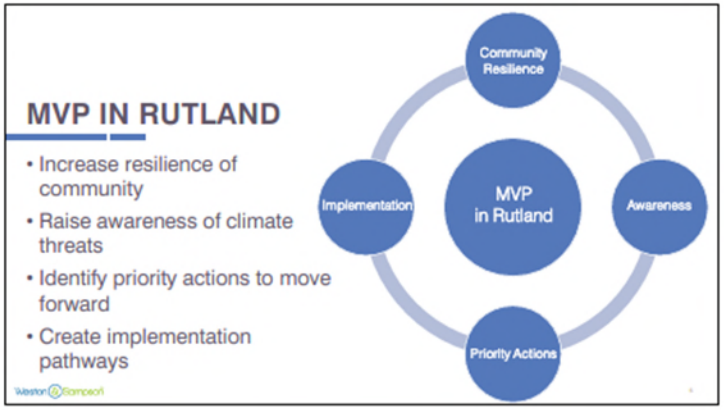

Planning Grant
CRB Workshop
Listening Session
MVP Plan
Action Grant
Summer 2019
Nov 2019
Dec 2019
Feb 2020
Spring 2020

5


MVP IN RUTLAND
• Increase resilience of community
• Raise awareness of climate threats
• Identify priority actions to move forward
• Create implementation pathways
Community Resilience
Implementation
MVP in Rutland
Awareness
Priority Actions

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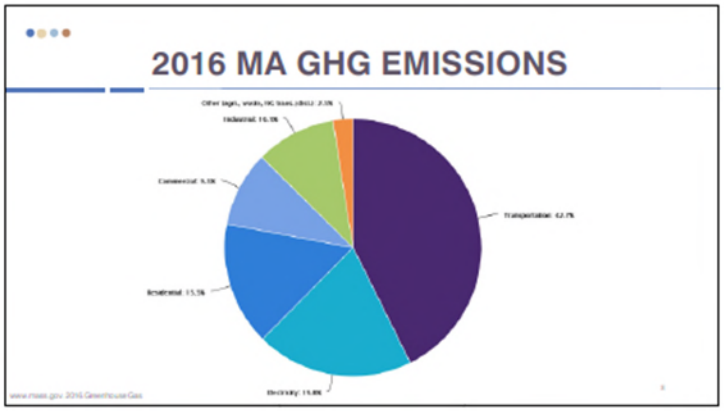
CLIMATE CHANGE & HAZARDS
IN RUTLAND AND NEW ENGLAND

7

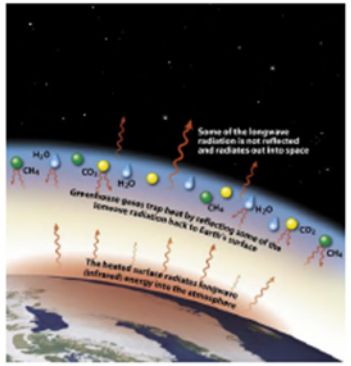

2016 MA GHG EMISSIONS

8

GREENHOUSE GASES (GHG)

- Act as a blanket
- Examples: carbon dioxide and methane

Climate mitigation ensures there is less to adapt to and is a key component of our community's resilience



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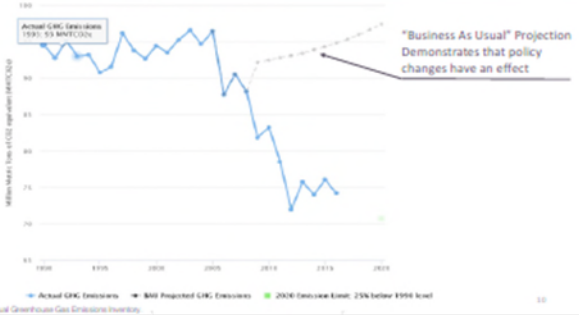
1990-2016 GHG EMISSIONS



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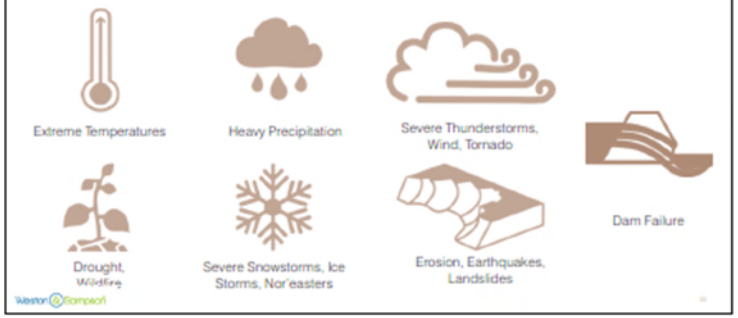
HAZARDS IN RUTLAND



11

Current Hazards in Rutland (HMP)

Hazard	Probability of Future Event	Location of Occurrence
Severe Snowstorms/Ice Storms/Nor'Easters	High	Large
Wildfires/Brush Fires	Very Low	Large
Severe Thunderstorms, Lightening, Wind, Tornadoes	High	Small
Dam Failure	Medium	Small
Drought	Medium	Large
Extreme Temperature	High	Large

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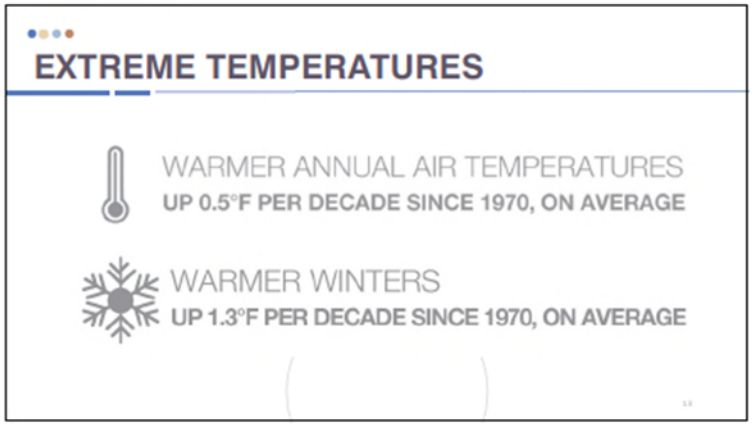
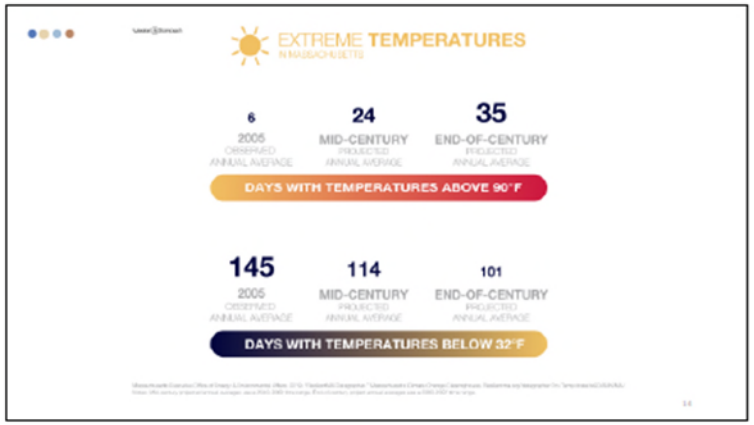
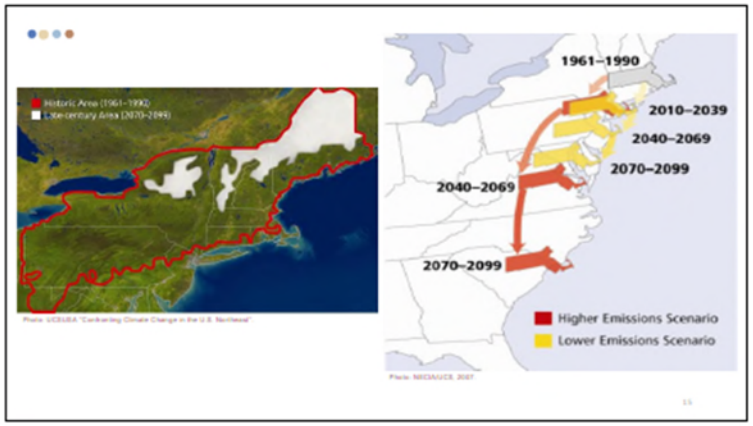

EXTREME TEMPERATURES
WARMER ANNUAL AIR TEMPERATURES
UP 0.5°F PER DECADE SINCE 1970, ON AVERAGE
WARMER WINTERS
UP 1.3°F PER DECADE SINCE 1970, ON AVERAGE

13


EXTREME TEMPERATURES
IN MASSACHUSETTS
6
2005
OBSERVED
ANNUAL AVERAGE
24
MID-CENTURY
PROJECTED
ANNUAL AVERAGE
35
END-OF-CENTURY
PROJECTED
ANNUAL AVERAGE
DAYS WITH TEMPERATURES ABOVE 90°F
145
2005
OBSERVED
ANNUAL AVERAGE
114
MID-CENTURY
PROJECTED
ANNUAL AVERAGE
101
END-OF-CENTURY
PROJECTED
ANNUAL AVERAGE
DAYS WITH TEMPERATURES BELOW 32°F

14


1961–1990
2010–2039
2040–2069
2070–2099
2040–2069
2070–2099
Higher Emissions Scenario
Lower Emissions Scenario

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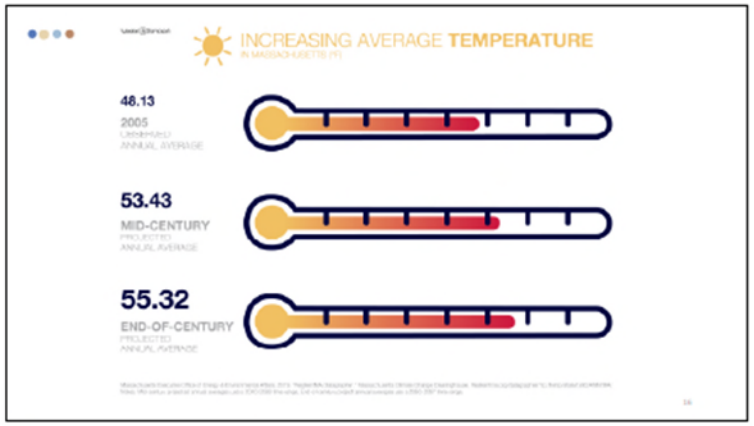
INCREASING AVERAGE TEMPERATURE
48.13
2005
ANNUAL AVERAGE
53.43
MID-CENTURY
PROJECTED
ANNUAL AVERAGE
55.32
END-OF-CENTURY
PROJECTED
ANNUAL AVERAGE

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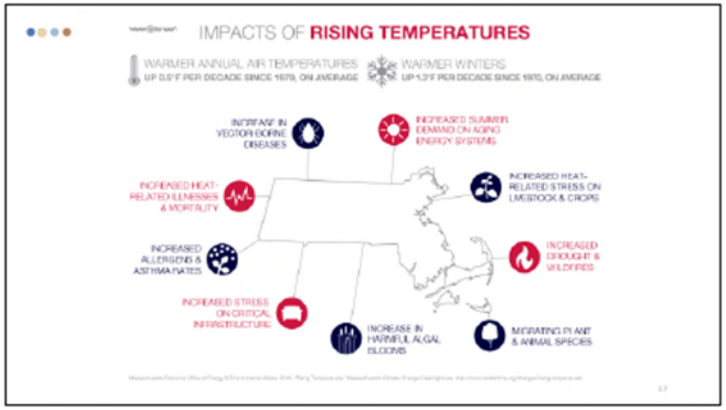
IMPACTS OF RISING TEMPERATURES
WARMER ANNUAL AIR TEMPERATURES
UP 0.5°F PER DECADE SINCE 1970, ON AVERAGE
WARMER WINTERS
UP 1.2°F PER DECADE SINCE 1970, ON AVERAGE
INCREASE IN VECTOR-BORNE DISEASES
INCREASED SUMMER DEMAND ON AGING ENERGY SYSTEMS
INCREASED HEAT-RELATED ILLNESSES & MORTALITY
INCREASED HEAT-RELATED STRESS ON LIVESTOCK & CROPS
INCREASED ALLERGENS & ASTHMA RATES
INCREASED DROUGHT & WILDFIRES
INCREASED STRESS ON CRITICAL INFRASTRUCTURE
INCREASE IN HARMFUL ALGAL BLOOMS
MIGRATING PLANT & ANIMAL SPECIES

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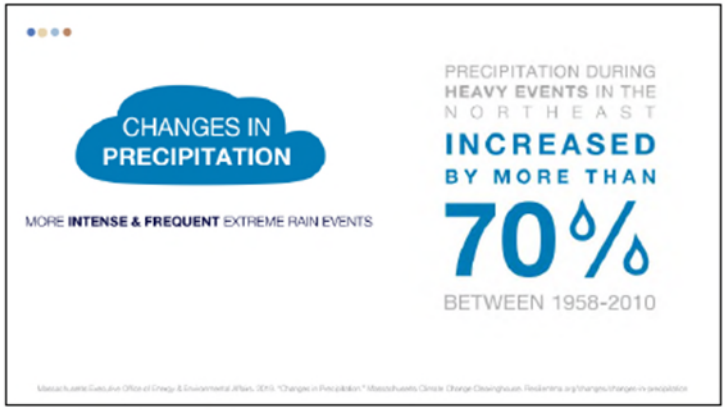
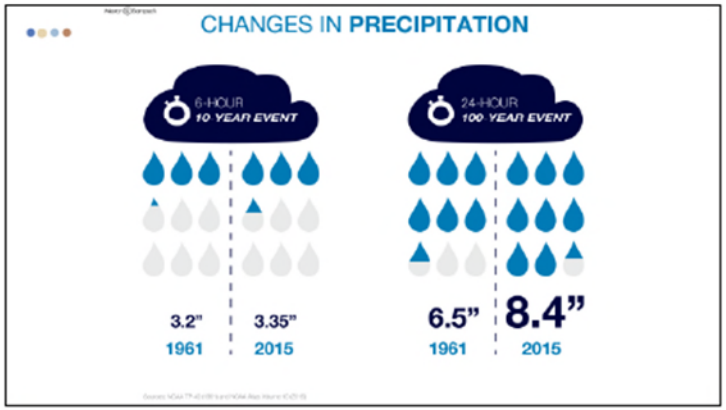
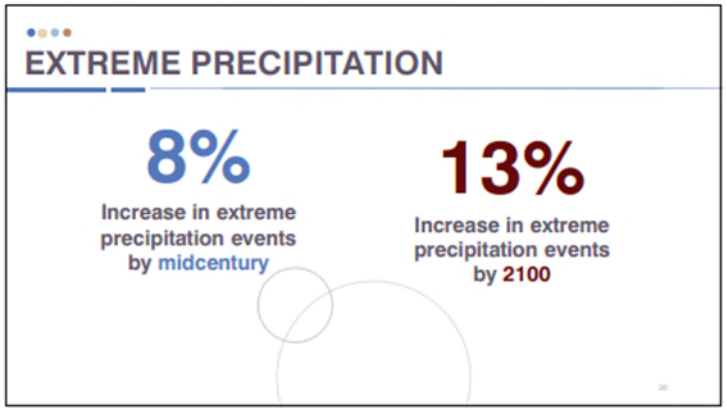

CHANGES IN PRECIPITATION
MORE INTENSE & FREQUENT EXTREME RAIN EVENTS
PRECIPITATION DURING HEAVY EVENTS IN THE NORTHEAST
INCREASED BY MORE THAN
70%
BETWEEN 1958-2010

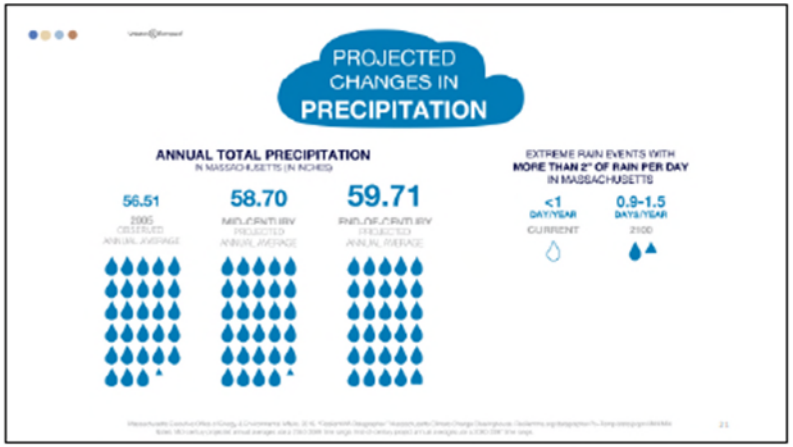
18


CHANGES IN PRECIPITATION
6-HOUR 10 YEAR EVENT
24-HOUR 100 YEAR EVENT
3.2"
1961
3.35"
2015
6.5"
1961
8.4"
2015

19


EXTREME PRECIPITATION
8%
Increase in extreme precipitation events by midcentury
13%
Increase in extreme precipitation events by 2100

20



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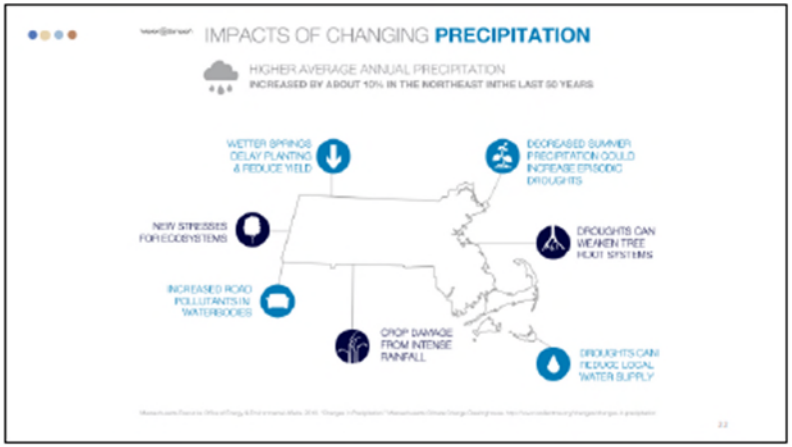

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FLOODING

ZONE	ANNUAL CHANCE	FLOODPLAIN
A, AE, A1-A30	1% ANNUAL CHANCE	100-YEAR FLOODPLAIN
X	0.2% ANNUAL CHANCE	500-YEAR FLOODPLAIN

"By 2050, Boston could experience the current 100-year riverine flood every two to three years on average"

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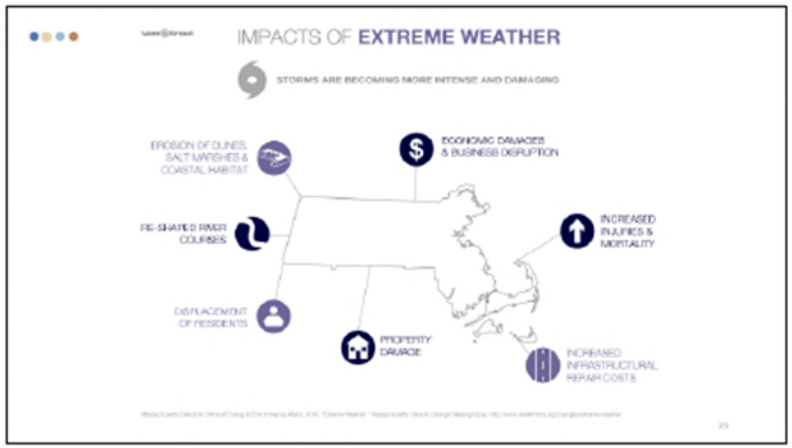
WINTER STORMS

The blizzard of 2013 left nearly **400,000 Massachusetts residents without power**

"Heavy blizzards are among the **most costly and disruptive** weather events for Massachusetts communities."

24


IMPACTS OF EXTREME WEATHER
STORMS ARE BECOMING MORE INTENSE AND DAMAGING
EROSION OF DUNES, SALT MARSHES & COASTAL HABITAT
ECONOMIC DAMAGES & BUSINESS DISRUPTION
RE-SHAPED RIVER COURSES
INCREASED INJURIES & MORTALITY
DISPLACEMENT OF RESIDENTS
PROPERTY DAMAGE
INCREASED INFRASTRUCTURAL REPAIR COSTS

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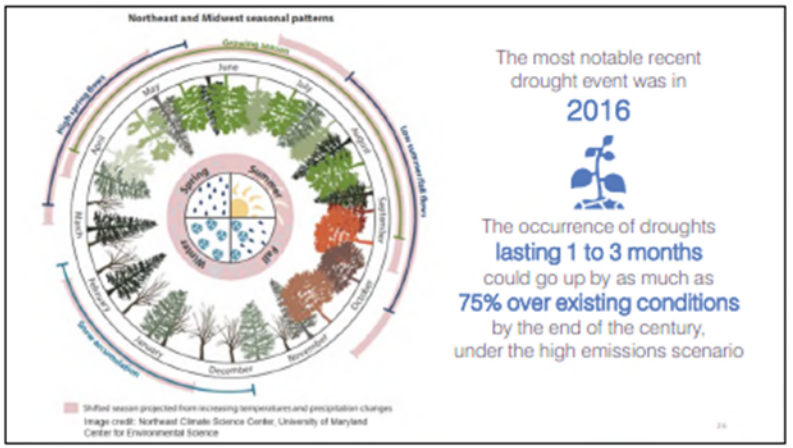
Northeast and Midwest seasonal patterns
Growing season
High spring flows
Low summer/fall flows
Snow accumulation
June
July
August
September
October
November
December
January
February
March
April
May
Spring
Summer
Fall
Winter
Shifted season projected from increasing temperatures and precipitation changes
Image credit: Northeast Climate Science Center, University of Maryland Center for Environmental Science
The most notable recent drought event was in
2016
The occurrence of droughts
lasting 1 to 3 months
could go up by as much as
75% over existing conditions
by the end of the century,
under the high emissions scenario

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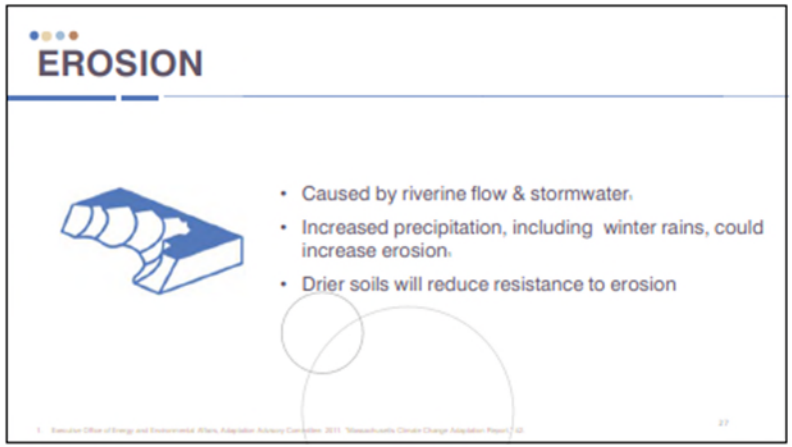
EROSION
Caused by riverine flow & stormwater.
Increased precipitation, including winter rains, could increase erosion.
Drier soils will reduce resistance to erosion

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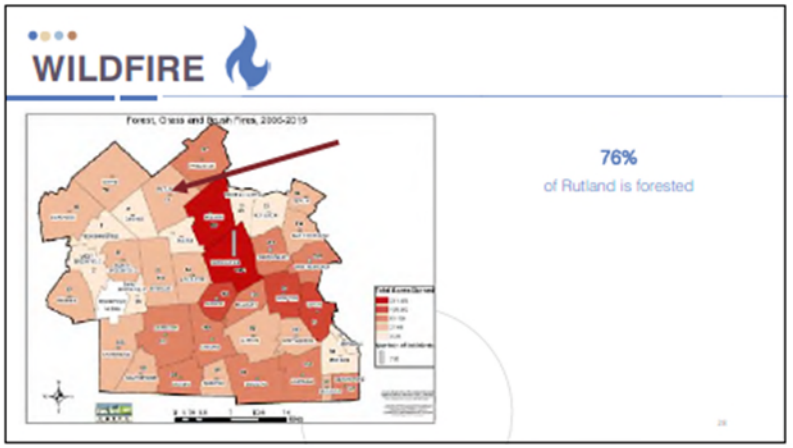
WILDFIRE
Forest, Grass and Brush Fires, 2000-2015
76%
of Rutland is forested

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HURRICANES AND EARTHQUAKES

HURRICANE
Sandy
and nor'easters
cause downed trees and power lines

Upward trend in North Atlantic hurricane activity since 1970

Nor'easters along the Atlantic coast are increasing in frequency and intensity

EARTHQUAKE
30-40
Earthquakes occur in New England each year, although most are not felt.

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HAZARD POTENTIAL OF DAMS

Hazard Classification of Rutland Dams			
Dam Name	Hazard Class	Ownership	Last Inspection Date
Dams in Rutland			
Moulton Pond Dam	High	Private	3/6/2017
Edson Pond Dam	Low	Private	1/28/2014
Demond Pond Dam	High	Public	7/24/2019
Stevens Pond Dam	High	Private	8/15/2018
Thayer Pond Dam	Significant	Public	8/5/2019
Muschopauge Pond Dam	Low	Public	8/5/2019

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As an FYI: Boston Sea Level Rise Projections (ft)

Increased coastal flooding

Permanently inundated low-lying coastal areas

Increased shoreline erosion

Emission Scenario	2030	2050	2070	2100
Intermediate	0.7	1.4	2.3	4.0
Intermediate-High	0.8	1.7	2.9	5.0
High	1.2	2.4	4.2	7.6
Extreme	1.4	3.1	5.4	10.2

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CHECK IN: NEED A BREAK?

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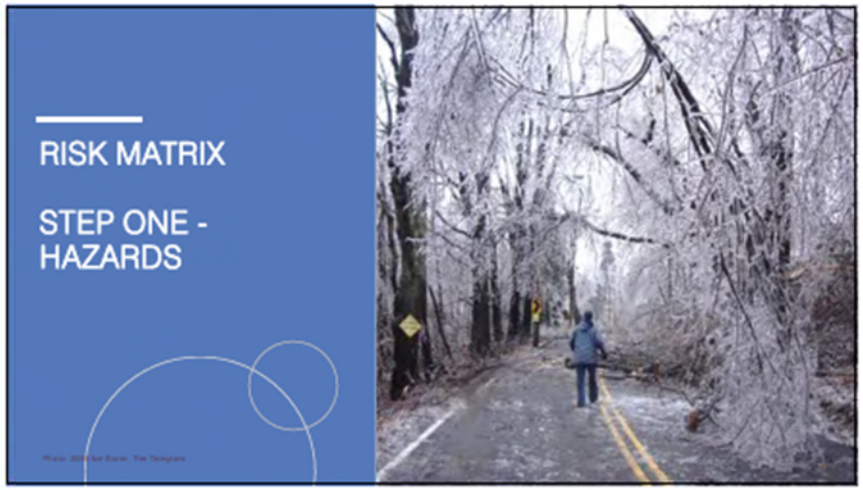
RISK MATRIX
STEP ONE -
HAZARDS

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RISK MATRIX

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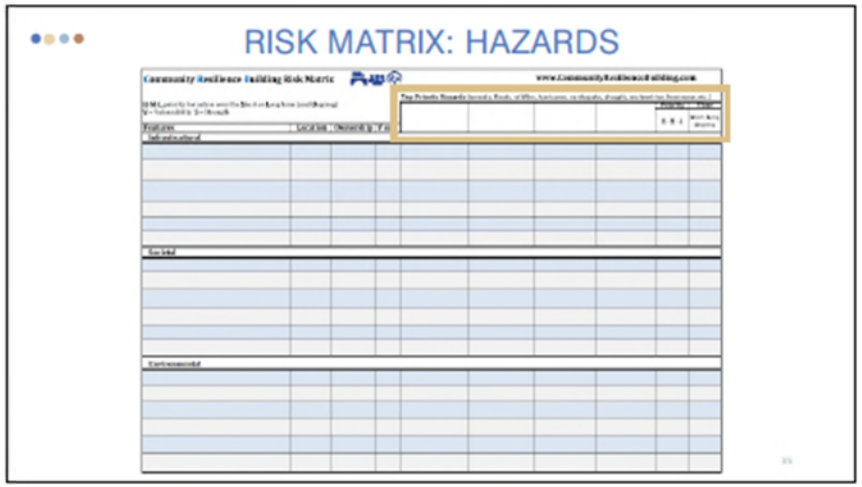
RISK MATRIX: HAZARDS

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IDENTIFY HAZARDS

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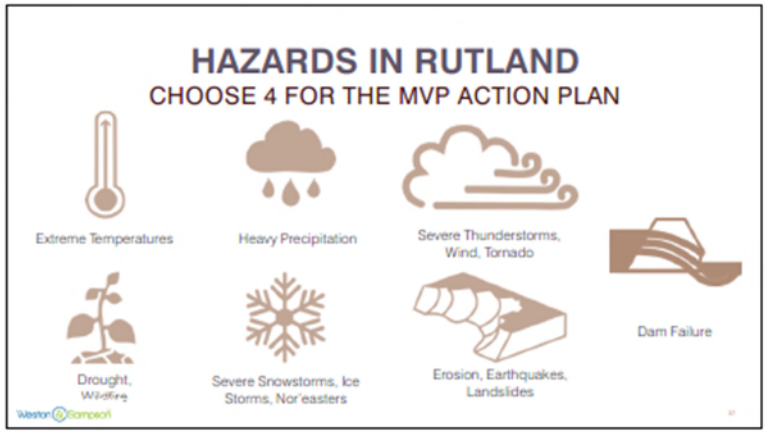
HAZARDS IN RUTLAND
CHOOSE 4 FOR THE MVP ACTION PLAN
Extreme Temperatures
Heavy Precipitation
Severe Thunderstorms, Wind, Tornado
Dam Failure
Drought, Wildfire
Severe Snowstorms, Ice Storms, Nor'easters
Erosion, Earthquakes, Landslides

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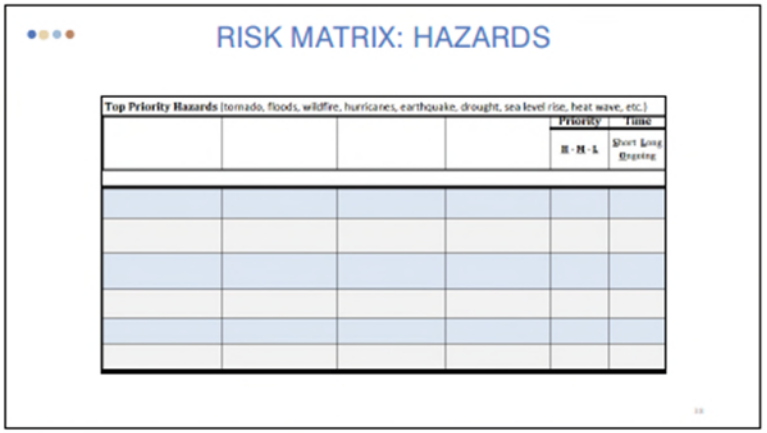
RISK MATRIX: HAZARDS
Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)
Priority
Time

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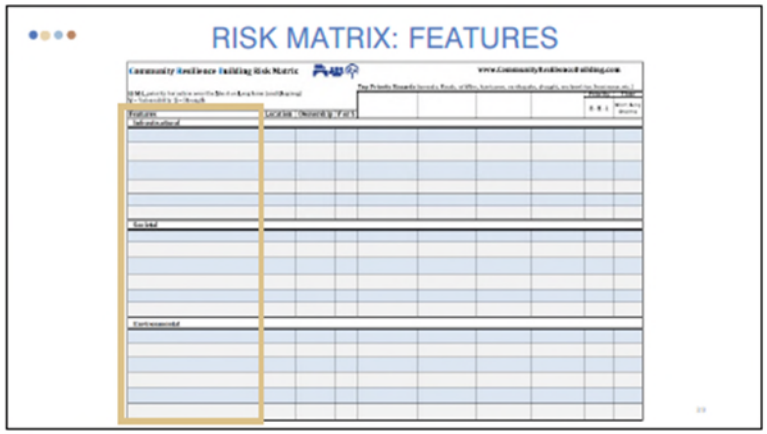
RISK MATRIX: FEATURES

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RISK MATRIX: FEATURES

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RISK MATRIX: FEATURES

FEATURES	LOCATION	OWNERSHIP	VULNERABILITY OR STRENGTH
Infrastructural	Town wide	State	Vulnerability
Societal	Multi- vs. Single-neighborhood	Town	Strength
Environmental	Specific location	Private	Both
		Shared	

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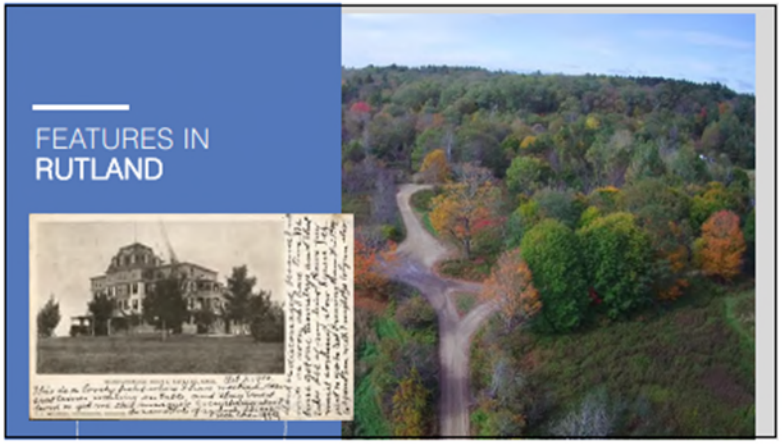
FEATURES IN RUTLAND



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INFRASTRUCTURAL FEATURES

Police Department

Fire Department

Wastewater Treatment & Collection

Dams

Roadways

Water Supply

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INFRASTRUCTURAL FEATURES

CRITICAL FACILITIES:
Emergency Response

1. **Emergency Operations Center/Police Station**
   Rutland Police Dept./EOC 232 Main Street
2. **Fire Station**
   Fire Headquarters 240 Main Street
3. **Communications Facilities**
   Rutland Public Safety Building w/ dispatch, comm. tower & server, 240 Main Street
   Communications Tower, Campbell Street
   3 Comm. Towers being built, Main Street
   Cluster Communication Hub, 108/112 Campbell Street
4. **Highway Department**
   DPW Headquarters w/ gas & diesel pumps, and salt shed, 17 Pennsylvania Road
5. **Primary Evacuation Routes**
   Main Street
   Pennsylvania Road

Source: All Hazards Mitigation Plan

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INFRASTRUCTURAL FEATURES

CRITICAL FACILITIES: Emergency Response

1. **Emergency Operations Center/Police Station**
   Rutland Police Dept./EOC 232 Main Street
2. **Fire Station**
   Fire Headquarters 240 Main Street
3. **Communications Facilities**
   Rutland Public Safety Building w/ dispatch, comm. tower & server, 240 Main Street
   Communications Tower, Campbell Street
   3 Comm. Towers being built, Main Street
   Charter Communication Hub, 108/112 Campbell Street
4. **Highway Department**
   DPW Headquarters w/ gas & diesel pumps, and salt shed, 17 Pommogussett Road
5. **Primary Evacuation Routes**
   Main Street
   Pommogussett Road
   Maple Avenue
   East County Road
   Barre Paxton Road
6. **Secondary Evacuation Routes**
   Glenwood Road
   Wachusett Street
   Pleasantdale Road
7. **Emergency Shelters**
   Naquag Elementary, 285 Main Street
   Rutland Lgr. Ltd., 92 Maple Avenue
   Rutland Sportsman's Club, 75 Pleasantdale Road
   Rutland Fire Dept., 240 Main Street
   Town Hall, 250 Main Street
   Devereaux Foundation, 60 Miles Road
   Congregational Church, 264 Main Street
   St. Patrick's Church, 290 Main Street
   Ladd's Restaurant, 64 Barre Rd & Rte. 122
   Treasure Valley/Boy Scouts, 394 Pleasantdale Road
   Central Tree Middle School (warming station), 281 Main Street

Source: All Hazards Mitigation Plan.

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INFRASTRUCTURAL FEATURES

CRITICAL FACILITIES: Non-Emergency Response

1. **Town Facilities/Services**
   Town Hall, 250 Main Street
   Senior Center, 53 Glenwood Road
   Rutland Public Library, 280 Main Street
   Town Pool, Memorial Drive
   Cemetery, Main Street
   Cemetery, Barre Paxton Road
   Capped Landfill, 0 Chamock Road
   Rutland Regional Animal Control, 17 Pommogussett Road
2. **Utilities**
   Drinking water supply & filtration plant, State Hospital Road North
   Water Towers, Wheeler Road
   Electricity - Williams Power Corp, Miles Rd, Moulton Mill Rd, Pommogussett Road
   Anaerobic Digester, Muschopauge Road
   Verizon central access point, 27 Maple Avenue
   AA Transportation, 175 East County Road, Rte. 68
   Bus Depot, East County Road
3. **Sewer Pumping Stations**
   Miles Road
   11 Bernard Road
   8 Millbrook Street
   65 Glenwood Road
   281 Main Street
   12 Valley View Circle
   Chamock Hill Road
4. **Quabbin Aqueduct Vents**
   Pine Plain Road
   Chamock Hill Road
   Watson Lane
   Near East County Road, near Holden border
5. **Solar Fields**
   East County Road
   Pleasantdale Road
   Swartz Road
   Kenwood Drive

Source: All Hazards Mitigation Plan.

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INFRASTRUCTURAL FEATURES

CRITICAL FACILITIES: Special Populations

1. **Special Needs Populations/Schools/Daycare**
   (Please note: The EMD has a list of current daycare facilities but these can change locations and addresses frequently; so this list should be revisited periodically.)
   Naquag Elementary/The Safe Place Daycare, 285 Main Street
   Glenwood Elementary (and daycare), 65 Glenwood Road
   Daycare, 60 Miles Road
   Central Tree Middle School, 281 Main Street
   Little Wonders Learning & Child Care Center, 180 Maple Avenue
   Small Steps, 264 Main Street
   Daycare, Birchwood Road
   Daycare, Edith Lane
   Daycare, Valley View Circle
   Daycare, Orchard Hill Drive
   Daycare, Bristol Drive
   Daycare, Edson Avenue
   Daycare, Nancy Drive
   Daycare, Juniper Lane
   Daycare, Central Tree Road
   Daycare, Wildbrook Drive
   Daycare, Grizzly Drive
   Daycare, E County Road
2. **Faith-Based Institutions**
   St. Patrick's Church, 258 Main Street
   First Congregational Church, Main Street
3. **Cemeteries**
   Main Street
   Barre Paxton Road
   Behind Rutland Public Library, 280 Main Street
4. **Historic Buildings/Sites**
   According to the Massachusetts Cultural Resources Information System (MACRIS) online database accessed in July 2016, there are 3 Areas, 13 Buildings, 3 Burial Grounds, 5 Objects, and 2 Structures listed for Rutland. Besides cemeteries, the Local Team did not specifically identify these sites as Critical Facilities or Infrastructure.
5. **Employment Centers**
   Based on data obtained from the Massachusetts Executive Office of Labor and Workforce Development (EOLWD), the following table shows the largest employers in Rutland.

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SOCIETAL FEATURES

Population	Rutland	Massachusetts
2010	7,973 residents	6,547,790
2018	8,463 residents	6,902,149
Age		
Under 18 years:	28%	20%
65+ years:	9%	17%
Education		
Bachelor's degree or higher:	45%	42.1%
Additional Information		
Median household income:	$100,962	$74,167
Persons in poverty:	2.3%	10.5%
With a disability:	6.9%	7.9%
Language other than English spoken at home:	3.94%	23.1%

Source: U.S. Census Bureau, 2013-2017 ACS Estimates

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ENVIRONMENTAL FEATURES

Reservoirs

Trails

Rutland's Open Space

- 20% of the town is open space
- Open spaces include:
  - Middlesex Fells Reservation

Horn Brook Pond

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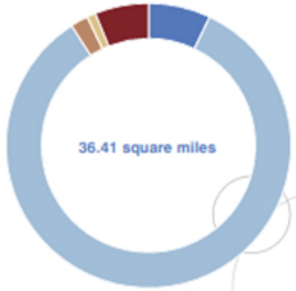
Rutland's Land Use



- Residential Housing
- Open Space, Recreation, or Water Use
- Water
- Built Environment
- Agriculture

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DATA RESOURCES

Within Rutland and Throughout Massachusetts

Massachusetts Climate Change Projections, 2018

Massachusetts State Hazard and Climate Adaptation Plan, 2018

Massachusetts Climate Change Adaptation Report, 2011

All Hazards Mitigation Plan, Rutland, 2019

US Census, American Community Survey, 2013-2017

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20 MINUTE BREAK!

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APPENDIX D

Participant Matrices

Final Matrix, Page 1
Final Matrix, Page 2

Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.org

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

H-M-L priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

Features	Location	Ownership	V or S	Severe Storms	Drought	Dam Failure	Earthquake/ Seismic Activity	Priority H-M-L	Time S Long O ngoing
Infrastructural									
Transportation/ road network	Town-wide	Town/ state/ private	V/S	Plow, open, debris management		Identify/ update		H	O/L
Water supply/ treatment storage	Muschapauge Pond/ RD	Town	V/S	Backup power, access, rental generator	Water conservation, education, alternatives	Prep material & equip, alternate supply, conservation measures	Intake relocation	H	All
Sewer system	Partial town-wid	Town/ DCR	V/S	Sanitary concerns	Blockage risks		Prep material, equip., backup power	H	All
Dams/ power lines	Town-wide	Town/ state/ national grid	V/V	Preemptive lowering, monitor / trimming regulations (bylaws)	Plan inspection / N/A	N/A / monitor and inspect		M	O
Bridges (RT 68)	RT 68	Town/ state	V	Inspections, washouts open, monitor water levels			Prep material, equip. to address alternate path	M	O
Gravel/ dirt roads	Town-wide	Town/ DCR/ private	V	gravel and dirt, identify washout risks, manage	Dust control calcium chloride	Identify & manage washout risks	Structural?	M/L	O
Societal									
Elderly/ meal site	53 Greenwood, various	Town/ private	V	Shelters, food services, welfare checks, transp.				H	O
Group homes	Various	State/ private	V	Specialized transp.				M	O
Schools/ daycares	Town/ private	Various	V/S	Accessibility, power, comms	Alternative water source	Monitor & check	Inspect	H	O
Healthcare	Maple Ave, Main ST	Private	V/S					L/M	O
Faith based organizations	Main ST	Private	V/S					H	O
Essential personnal	Various	Town/ state/ fed/ private	V/S	Communications, transport				H	O
Environmental									
Forest habitat/ street trees	Town-wide	Town/ state/ private	V/S	Debris management lay down yards	Brush management, forest fires education			L	O
Air quality	Town-wide	Everyone	V/S	Replace damaged trees				L	O
Groundwater	Town-wide	Everyone	V/S	Contamination/runoff stormwater management	Conservation/education	Erosion control, pollutant education		H	O/L
Surface water	Town-wide	Town/ state/ private/ Worcester	V/S					H	O/L
Brook trout (fish & wildlife populations)	Town-wide	N/A	V/S	Prohibit excessive development				L	O
Beavers	Town-wide	N/A	V	Evaluate dams, change legislation				H	S

Weston & Sampson

Community Resilience Building Risk Matrix

www.CommunityResilienceBuilding.org

H-M-L priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

Top Priority Hazards (tornado, floods, wildfire, hurricanes, earthquake, drought, sea level rise, heat wave, etc.)

Features	Location	Ownership	V or S	Drought	Rain/ Wind Storms	Winter Storm/ Wind/ Ice		Priority H-M-L	Time Short Long Ongoing
Infrastructural									
Roadways	Town-wide/ center of town	Town/ state	V	Seek funding for future improvements, reverse 911, public education/outreach prior to emergencies, identify equip./staffing needs in master plan, coordinate with DCR at roads with dams in DCR land				M	O/S/L
Drinking water	Town-wide	Town	V	Regional partnership with Holden, alternative water supply, already raised rates 10% to fund pipe repacements, assess infiltration issues ●●				H	S
Dams	Town-wide	DCR/ town/ private	V	Coordinate repairs with DCR (Muschopauge)				M	O
Municipal buildings	Town-wide	Town	V	Emergency action plans (building specific), address ADA concerns, heating issues with USTs at annex and community center, develop building committee ●●				M	L
Town storage (tree waste)	Town-wide	Town	V			Identify temporary tree waste location		L	L
New development (southern/ western portions of town)	Town-wide	Town/ private	V	Change bylaws./rags, update/create master plan, update services, identify rural water supply/fire supply sources, stormwater committee ●●●				H	O
Societal									
Communication between emergency personnel			V/S	Establish an EOC				M	O
Communication between town departments and committees and communication between town and community			V/S	Master plan, education between departments, public outreach/education, Town Admin currently does outreach to community on public access TV ●				M	O
Commuting population (out)			V						
Communication with DCR			V						
Shelters	Naquag, Central Tree	Town	V/S	Evaluate staffing needs for shelters, training program for volunteers				M	L
Vulnerable populations (Hawthorne, group homes, boarding school, seniors, high density areas, growing population (>10,000))	Town-wide	Private	V		Master plan to focus on these areas ●●			M	O/L
Environmental									
Farmers	Town-wide	Private	V/S	Identify needs/usage, coordinate with committee, public outreach/education ↓				L	L
Agricultural runoff	Near Muschopauge	Private	V	↓				L	L
Beavers	Pommogusset Rd		V	Relocate				L	O
Railtrail	Town-wide	Town/ private	S	Partner to connect railtrail to town center				L	O
Open space	Town-wide		V/S	Community Preservation Act, preserve land, community engagement, "pocket parks"- small parks in high density areas, bylaws, tree replacement program ●●				M/H	O

APPENDIX E

Annotated Maps from Participants

APPENDIX F

Core Team Meeting Notes

Meeting October 2, 2019 Agenda and Minutes

Municipal Vulnerability Preparedness Planning Grant Project
Core Team Meeting
Agenda

Rutland Department of Public Works, 17 Pommogussett Road, Rutland, MA 01543
Wednesday, October 2, 2019
10:00 am

1. Introductions

2. Project Overview
   a. MVP Planning Grant
      i. Municipal and stakeholder driven process
      ii. Workshop(s) to identify strengths and vulnerabilities
      iii. Matrix and report identifying MVP Key Actions
   b. MVP Action Grants

3. Core Team Role
   a. Develop schedule
   b. Organize implementation of the Community Resilience Building Workshop
   c. Inform community priorities/Determine how decisions from Workshop will be used

4. Community Resilience Building Workshop(s)
   a. Overview of climate projections
   b. Map of key resources/assets
   c. Discuss hazards and key features (infrastructure, society, environment)
   d. Prioritize MVP Key Actions
   e. MVP Risk Matrix

5. Data Needs and Sources
   a. Interviews with municipal officials
   b. Applicable reports and materials
      i. Town of Rutland Hazard Mitigation Plan 2019 Update (CMRPC)
      ii. Comprehensive Plan?
      iii. Emergency operation plans?
      iv. Other ongoing planning efforts?
   c. Critical assets and infrastructure

W&S Action Item: Review materials and incorporate into Workshop and Report(s)
Rutland Action Item: Identify and provide any additional resources

Weston & Sampson

6. Workshop Participants
    a. Prepare list of workshop invitees, for example:
        i. Rutland Town Government (Town Administrator, Board of Selectman, Planning, Public Works, Conservation, Health, Building Department, Council on Aging, Fire, Police, Emergency Management Agency, and more)
        ii. State Government (Agencies, State Representatives, State Senators, MAPC)
        iii. Federal Government (US Environmental Protection Agency, Army Corps of Engineers)
        iv. Institutions (hospitals, schools, other)
        v. Businesses (Chamber of Commerce, realtors, and more)
        vi. Neighborhood/Community/Environmental Groups
        vii. Neighboring Communities
    b. Invitations and RSVPs
    c. Table Assignments

> ***W&S Action Item:*** Draft invitation to stakeholders
> ***Rutland Action Item:*** Finalize list of invitees; send invitation and track RSVPs, assign participants to tables

7. Workshop Schedule
    a. One 8-hour or two 4-hour meetings
    b. Weekday or weekend
    c. Day or evening

> ***Rutland Action Item:*** Determine format and schedule of Workshop

8. Workshop Materials
    a. Draft PowerPoint
    b. Draft map for discussion at tables
    c. Other

> ***W&S Action Item:*** Finalize Workshop materials based on Core Team input
> ***Rutland Action Item:*** Help to fill mapping and PowerPoint gaps

9. Workshop Staffing
    a. Facilitators – Weston & Sampson
    b. Note-Takers – Town of Rutland (Core Team)

> ***W&S Action Item:*** Identify table facilitators
> ***Rutland Action Item:*** Identify table note-takers

10. Wrap Up and Next Steps

Weston & Sampson

Summary of Meeting
Municipal Vulnerability Preparedness Planning Grant

Core Team Meeting
Department of Public Works
Wednesday, October 2, 2019
10:00 pm – 12:30 pm

Introductions

The meeting was attended by Joe Buckley, the Director of Public Works for Rutland, and Seth Knipe, the Rutland Fire Chief. Caroline Wells, Tara McManus, and Pat Cotton attended from Weston & Sampson.

Project Overview

We discussed the certification process for the MVP, noting that by creating an approved MVP Plan, the Town of Rutland will become an "MVP-Certified" community and will then be able to apply for Action Grants. Caroline handed out the latest flyer from the MA Office of Energy and Environmental Affairs (EEA) on the Action Grant program. Caroline also handed out a proposed schedule which shows Rutland's MVP Plan completed in December. Although accelerated, this process will position Rutland to apply for the next round of Action Grants. The team briefly discussed potential projects that could arise from the Action Grant, including potential culverts and road crossings that are flood-prone.

Core Team Role

Caroline outlined the Community Resilience Building Workshop. The MVP grant process requires an 8-hour session, and the Core Team felt that a 2-day workshop of four hours each would be the best option for Rutland. The Team reviewed calendars and determined that Wednesday, November 6th and Thursday, November 7th would be the most optimal dates. The Team preferred morning sessions from 8 to noon. The basement of the Public Library will be the venue. Joe said that the Town can handle the invitations. Caroline will send a list of the names, departments, agencies, etc. that the Core Team decided to invite. Three tables will be set up, and donuts and coffee and/or lunch will be provided. Caroline said that she will revise the schedule to move the CRB Workshop to November but did not believe this would affect the Final Report delivery.

The Core Team passed around the Community Resilience Building Workshop Risk Matrix that the attendees will work on at the workshop. This information will be used to build the Summary of Findings from the Workshop. These Findings will be made public, and a Listening Session will be held for any further comment from public members. The Listening Session can be with the Board of Selectmen, if desired, or a special session. If comments are received, the Core Team will review them, and they will be included in the Final Report.

Community Resilience Building Workshop

Caroline discussed the basics of the CRB Workshop. She would begin with a PowerPoint presentation on projected impacts from climate change in Massachusetts and Rutland in particular. The group would be divided into different tables, and they would be tasked with completing the Risk Matrix. At the end, each team will report their highest priority actions and work on identifying urgency and timing. As noted previously, WSE and the Core Team will recap the workshop activities and priorities in the Summary of Findings.

Data Needs and Sources

Since Rutland recently completed its Hazard Mitigation Plan (HMP), the Town has already begun the process of reviewing hazards. Caroline noted that she did not see a master plan on the Town's website, and that if the Town has an emergency operation plan, that would be helpful.

The Core Team discussed critical assets and infrastructure as well as other potential hazards to highlight in the MVP process. Among the items mentioned:

- Rutland has no alternative water supply, only Muschopauge Pond. Tara discussed the assessment of the pond for algae. The Core Team talked about the buffer around the reservoir and who may own it.
- Fire is always a potential threat, especially given how much of the area is forested. DCR participation is critical here.
- The Summer Cottage area is accessed through private roads, with only one way in and out. 200-300 people are in this area. The Core Team felt that their participation was important and would contact their neighborhood association.
- No natural gas exists in town; so this is not an issue directly (Rutland should consider any impacts from adjacent towns who have natural gas).
- Extreme heat/freezes may be an issue.
- The Team discussed local developers who are also large landowners, and how landslides could become an issue. Also, future water/sewer connections should be discussed.
- The Team felt that Main Street/Route 122a was ok (Turkey Hill to Demond), but this is the only access in and out of town. Flooding in the spring and melting snowpack (especially with high groundwater) could be an issue in the future.
- Treefall and road washouts could be a future concern.
- The Town has a number of dirt roads which should be examined.
- The Town has a few updates in the Capital Improvements Program (mapping of water lines with hydrants and sewers).
- They do not have as-builts.
- The solar array may also have impacts from climate change (erosion, etc.).
- A culvert near The Heights should be considered.
- The Team reviewed impacts from previous winter and summer storms and potential issues (2011 Halloween snowstorm and the 2012 hurricane).

- Snow storage is a need (Caroline added that they may need to revisit their development regulations)
- The Core Team discussed fuel delivery, and how many days they would have to operate if a prolonged weather event cut off suppliers.
- The Team discussed the need for determining which roads to open and close.
- Debris storage may be an issue after a prolonged weather event. They need a place that can hold debris for some time (so they do not have to move the same pile around)
- The Core Team noted that the town does not have hotels, and they would need to review their emergency facilities. They have a cooling station and they have a shelter with cots (the school gym).
- The Team would also want to know about chemical storage for water treatment and other public safety needs.
- They noted that there was no propane storage in the last storm. The nearest supplier is in Barre. They have a 2-day supply.

Workshop Participants

Caroline kept a list of the workshop invitees:

Joe	Buckley	Director, Public Works	Town of Rutland
Seth	Knipe	Fire Chief	Town of Rutland
Michael	Nicholson	Town Administrator	Town of Rutland
Norman	Anderson	Chair, Planning Board	Town of Rutland
Glenn	Kauppila	Chair, Agricultural Commission	Town of Rutland
Kevin	Jarvi	Chair, Board of Assessors	Town of Rutland
Scott	Gilroy	Chair, Board of Health	Town of Rutland
Sheila	Dibb	Chair, Board of Selectmen	Town of Rutland
Harry	Sechman	Chair, Capital Improvements Committee	Town of Rutland
Peter	Craine	Chair, Conservation Commission	Town of Rutland
Patricia	LaChance	Chair, Council on Aging	Town of Rutland
Suzanne	Smith	Chair, Cultural Council	Town of Rutland
Thomas	Ruchala	Chair, Finance Committee	Town of Rutland
Michael	Sullivan	Chair, Development & Industrial Commission	Town of Rutland
Jeffrey	Stillings	Member, Board of Selectmen	Town of Rutland
Mitchell	Ruscitti	Member, Board of Selectmen	Town of Rutland
Leah	Whiteman	Member, Board of Selectmen	Town of Rutland
Wayne	Walker	Member, Board of Selectmen	Town of Rutland
William	Cassanelli	Building Inspector	Town of Rutland
Nancy	Nichols	Director, Council on Aging	Town of Rutland
David	George	Town Planner/Community Development Coordinator	Town of Rutland
Nicholas	Monaco	Police Chief	Town of Rutland
Jennifer	Ford	Animal Control Officer	Town of Rutland

Michael	Moriarty	Director, Regional Emergency Communication Center	Town of Rutland
Anita	Carlson	Town Clerk	Town of Rutland
Kevin	Shaughnessey	Manager, Community and Customer Manager	National Grid
KerryAnn	Goldsmith	Executive Director	Devereaux School
Paula	Davison		MA DCR
Randy	Jordan	Member, Agricultural Commission	Town of Rutland
Raffia	Qutab	Physician	Rutland Family Health Center
			AA Transportation (school buses)
Kimberly	Ferguson	State Representative	MA Legislature
Anne	Gobi	State Senator	MA Legislature
			Chamber of Commerce

Caroline will send the list and a sample invitation for the Town to email or mail invitations. We will need RSVPs so we know how many people to expect and how to assign tables.

Workshop Schedule

2 days (November 6th and 7th) from 8:00 am – noon at the Rutland Public Library.

Workshop Materials

Caroline discussed the PowerPoint, and Tara brought a draft map for review. Each of the breakout tables will have maps for participants to use as reference or mark in areas of concern. Weston & Sampson will bring flipcharts/markers, maps, and a laptop/projector with the presentation. The Town will secure the location and food.

Workshop Staffing

Weston & Sampson will provide the facilitators. Note takers will be selected from the Tables or the Core Team.

Wrap up and Next Steps

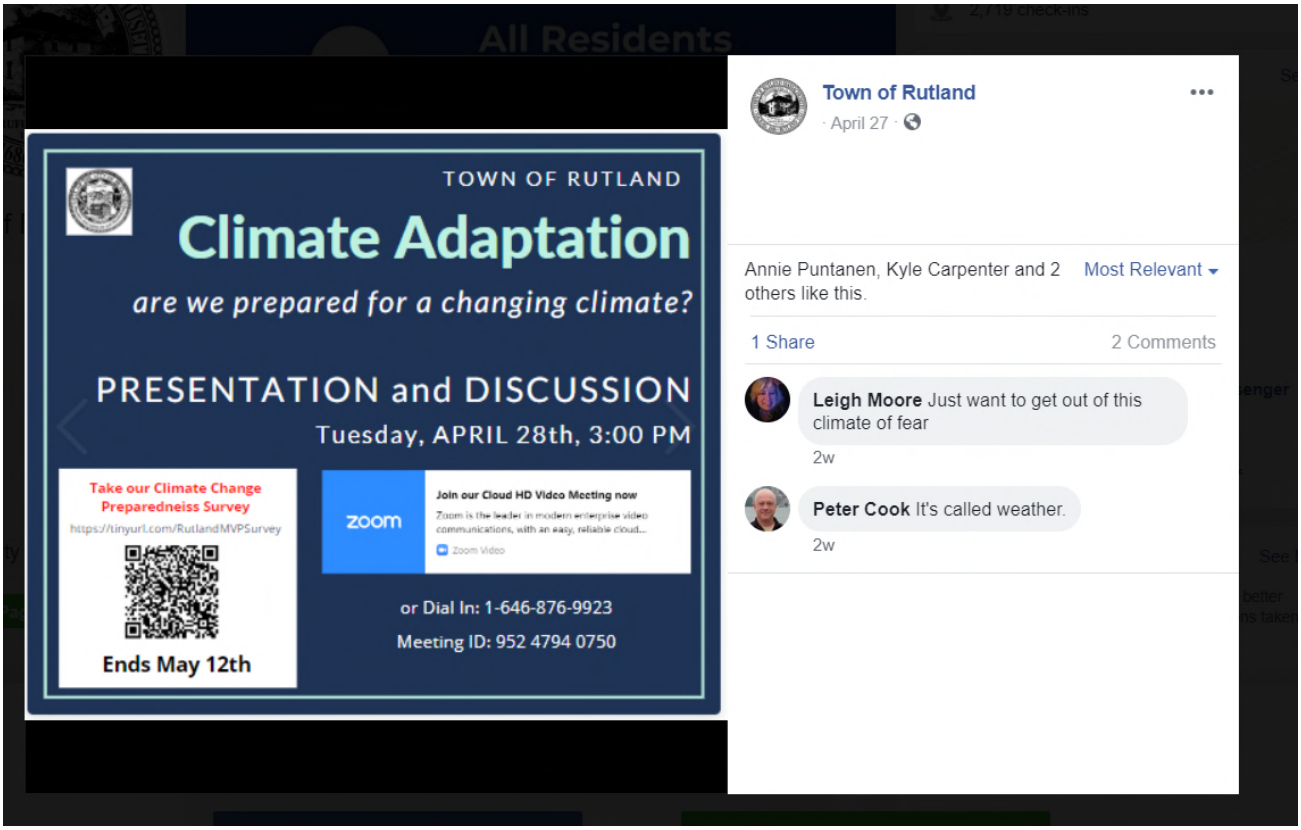
Caroline will send out the participation list and meeting notes. She will confirm with the Town that the Workshop location has been set.

APPENDIX G

Public Listening Session Webinar

APRIL 2020

Listening Session Advertisement (Town Facebook page)



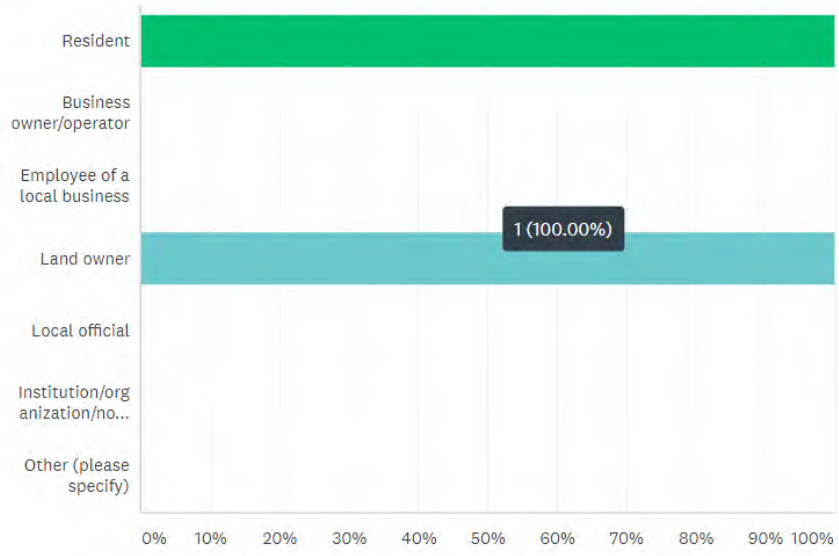
APPENDIX H

Survey Monkey Responses

April 28 – May 14, 2020

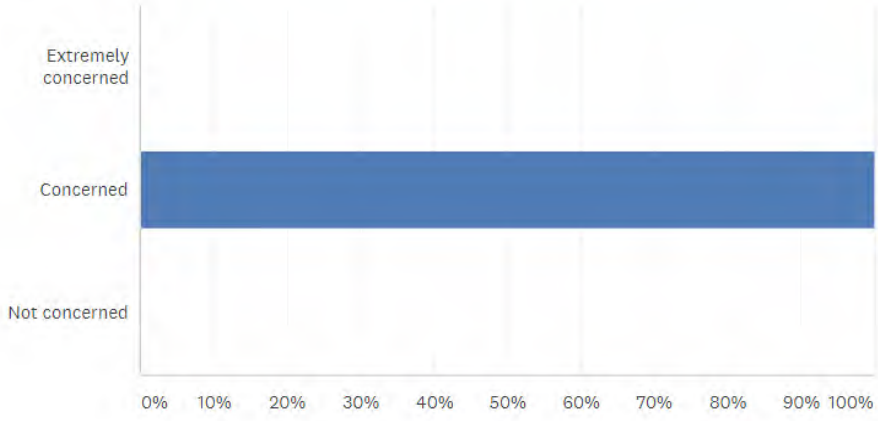
Which options below best define your role(s) in Rutland? (please select all that apply)

Answered: 1 Skipped: 0



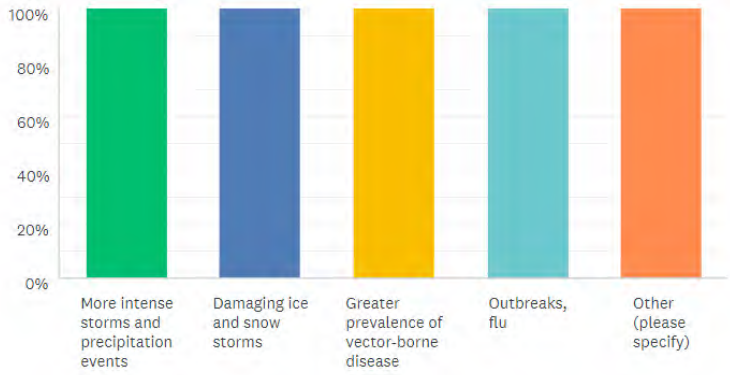
How concerned are you about climate change's effects on Rutland?

Answered: 1 Skipped: 0



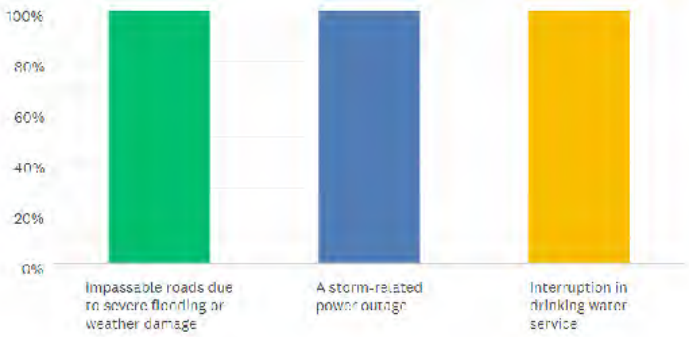
Which of the following observed climate changes have ALREADY impacted you or your organization? (Check all that apply).

Answered: 1 Skipped: 0



In the last five years, have you directly experienced any of the following (select all that apply)?

Answered: 1 Skipped: 0



Where is Rutland most vulnerable to climate-related hazards? Check all that apply.

Answered: 1 Skipped: 0

ANSWER CHOICES	RESPONSES	
Availability of utilities	100.00%	1
Damage, contamination, or loss of ecosystems & natural resources	100.00%	1
Business interruptions	100.00%	1
Human injury, illness, or the loss of life	100.00%	1
Ability to maintain order and/or to provide public amenities	100.00%	1
Damage to personal property	100.00%	1
Damage to agriculture	100.00%	1
Total Respondents: 1		