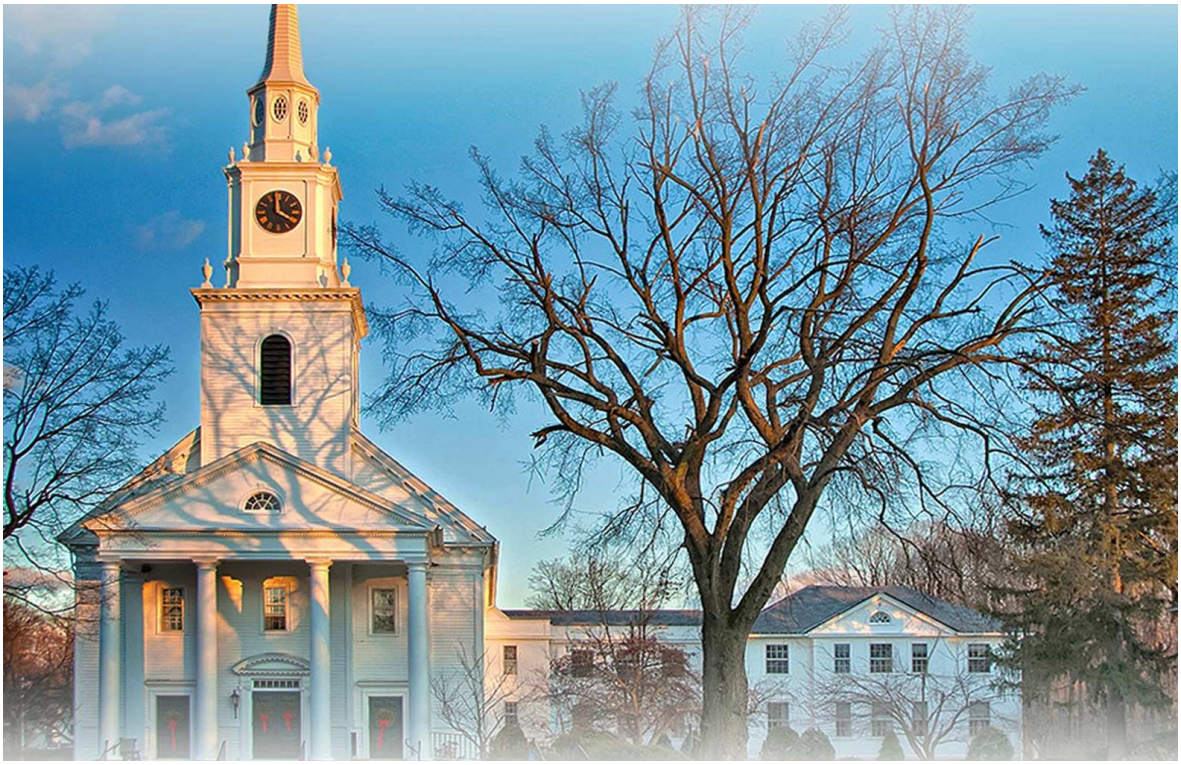
TOWN OF LONGMEADOW

May 23, 2019

Municipal Vulnerability Preparedness
Community Resiliency Building Workshop



SUMMARY OF FINDINGS

Prepared and Presented by

Pioneer Valley Planning Commission
Chief John Dearborn, Town of Longmeadow

This project and the following report is made possible through funding from the Massachusetts Executive Office of Energy and Environmental Affairs' Municipal Vulnerability Preparedness (MVP) Grant Program.

Cover image courtesy of the Town of Longmeadow's website.

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OVERVIEW

The Pioneer Valley Town of Longmeadow has experienced firsthand the urgent need for increased resilience to extreme weather and natural hazards. Recent weather-related events, such as the October snow storm of 2011, the 2016 drought, and the extreme cold spells in the winter of 2017-2018, have compelled the Town to proactively plan and mitigate the potential future risks of natural hazards such as these. Developed from a community driven process, Longmeadow's priority climate change adaptation actions will reduce the exposure and vulnerability of its citizens, infrastructure, and ecosystems. This commendable work also contributes to the greater climate resilience of the entire Pioneer Valley region.

Recognizing the importance of both mitigation and adaptation strategies to deal with the challenges of climate change, the Town of Longmeadow used the Municipal Vulnerability Preparedness (MVP) Planning grant as an opportunity to build on existing programs with these same goals. The Town has an active Energy Task Force, is a certified Green Community, and has passed zoning amendments to accommodate context-sensitive solar development. In 2018, the Town formed a planning team comprising the Town Manager, Fire Chief, Deputy Fire Chief, and Director of Public Works, which pursued and received funding from the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) to advance a Community Resilience Building (CRB) workshop under the MVP program.

The core directive of the MVP program is to engage community stakeholders to facilitate the education, planning, and ultimate implementation of priority climate change adaptation actions. Completion of the MVP process will enable the Town to achieve MVP certified community status from EOEEA by June of 2019 and receive preference for future state grants.

This report provides an overview of the top hazards, current concerns and challenges, strengths, and proposed actions to improve the Town of Longmeadow's resilience to natural and climate-related hazards as identified at the CRB workshop. The summary of findings provided in this report is supported by more detailed analyses in the Town's 2016 Natural Hazard Mitigation Plan.

COMMUNITY RESILIENCE BUILDING WORKSHOP

The Town of Longmeadow employed the Community Resilience Building framework, a unique "anywhere at any scale" community-driven process, to host two four-hour workshops on February 25 and 26, 2019. The list of workshop invitees and workshop content was guided by input from the core MVP planning team, and comprised Town elected officials, community members, and consultants from the Pioneer Valley Planning Commission. The workshop's central objectives were to:

- Affirm community consensus of the local meaning of extreme weather and local natural and climate-related hazards;
- Identify existing and future vulnerabilities and strengths;
- Develop and prioritize actions for the Town and a broad stakeholder network;
- Identify opportunities for the community to advance actions to reduce risk and increase resilience.

Workshop participants identifying community vulnerabilities
Source: PVPC

Approximately 21 participants from town boards and committees, land holding conservation agencies, community organizations, local businesses, and other interest groups attended the workshop, which included a combination of large group presentations and small group activities. Pioneer Valley Planning Commission began the day with a presentation outlining the workshop process and goals, updating participants on past and ongoing local planning efforts, and presenting new state-provided climate projection data to provide both decision-support and risk visualization. Participants then broke out into three small groups and assumed different participatory roles and responsibilities to engage in a rich dialogue, sharing ideas and experiences.

TOP HAZARDS & VULNERABLE AREAS

Leading up to the workshop, the PVPC staff team worked with input from the Town MVP planning team to identify the top four natural hazards for Longmeadow. These hazards were selected based on findings from previous planning processes, stakeholder input, and new climate change projections. Severe winter weather with snow, ice, and wind was identified as a hazard of greatest concern by most team members, as was severe weather with resulting storm water, riverine, and culvert flooding. Extreme temperatures were universally identified as a top hazard, and environmental changes associated with changing temperatures and precipitation patterns, including invasive species and vector-borne disease, drought, and wildfire, were identified as the other hazards of concern.

The team developed a workshop theme of "Trees, Wind, and Bugs" to easily communicate categories encompassing these four hazards. During the CRB workshop, participants had an opportunity to approve these selections as the hazards that have the greatest impacts on Longmeadow's operations and natural resources, and on residents' safety and wellbeing.

TOP HAZARDS

- Severe winter weather, including snow, ice, blizzard, and wind
- Severe weather, including precipitation-based events leading to localized road and riverine flooding, as well as thunderstorms and high wind events
- Invasive species and vector-borne disease
- Extreme heat and cold

AREAS OF CONCERN

Infrastructure: Pole-based electricity and communication lines, town and state-owned paved roads, quantity of streets with single entry points (cul-de-sac developments), culverts, dams, sewer and drinking water pump stations

Natural Resources: Shade and street trees, invasive species, substantial number of waterbodies and watercourses within town limits, the Connecticut River Floodplain and the Fannie Mae Stebbins Wildlife Refuge (part of the Sylvio O. Conte Wildlife Refuge), quantity and pervasiveness of dingles threatened by erosion throughout town

Human and Social: Aging population, assisted living facilities, lack of neighborhood organizations, Town communication systems lacking effectiveness, large pet population

CURRENT CONCERNS & CHALLENGES BY HAZARD

The Town of Longmeadow faces multiple challenges related to the impacts of climate change and natural hazard-related weather events. In recent years, the Town has experienced a series of disruptive and dangerous weather events including the severe snow storm of 2011 and the arctic cold weather in

the winter of 2017-2018. As Longmeadow is located downstream from the confluences of the Westfield and Connecticut Rivers and the Chicopee and Connecticut Rivers, there was sufficient concern in 2011 over potential flooding impacts during the heavy rains of Hurricane Irene for the Town to institute a voluntary 12-hour evacuation along West and Dunn roads. Ultimately, no damage was sustained, but local emergency managers remain aware that Longmeadow's location in the watershed increases its vulnerability during extreme precipitation events.

Impacts from storms with high winds and/or accumulation from freezing precipitation are exacerbated by increasingly weakened forest and tree health due to influxes of harmful pests in local forests. Unhealthy trees and their limbs are more likely to be brought down by the weight of snow, ice, or water and under the force of wind, increasing the risks of prolonged power outages and hazards to residents and infrastructure. The magnitude and intensity of these events over the course of just a few years has increased awareness of natural hazards along with climate change and motivated communities like Longmeadow to comprehensively improve resilience at the individual and municipal level.

Longmeadow's MVP workshop participants were generally in agreement that the Town and region are experiencing more intense and frequent storm events, the impacts of which affect the daily activities of all residents. There was also a common concern about the challenges of being prepared for future severe weather events, including the ability to shelter residents close to home; the resilience of the transportation network to changing weather and temperature fluctuations and the need for the system to remain operational for emergency travel, at a minimum; and the desire to ensure that the town's elderly residents know about and can access existing resources available to them. Furthermore, participants established a common directive to improve the efficiency and efficacy of communication systems throughout town, both in times of emergency and in day-to-day operations.

SPECIFIC CATEGORIES OF CONCERNS & CHALLENGES

TRANSPORTATION INFRASTRUCTURE

The specific issues identified within Longmeadow's transportation network were culvert functionality, limited street connections/emergency access points, the Amtrak railroad location in the Connecticut River floodplain, and the close proximity of I-91 and US Route 5 to each other. Road passability is important for residents (who may need to evacuate, travel in case of emergency, or maintain daily routines), for emergency response, and for maintenance of roadside infrastructure such as electrical lines. On streets with only one ingress/egress, passability can be a challenge should downed trees or flooding pose barriers. For residents in town that are elderly, mobility-limited or health-impaired, or who live on roads with only one access point, such blockages can be effectively stranding.

The Amtrak rail location in the Connecticut River floodplain means that the passenger and freight line is vulnerable to riverine flooding, and could halt the travel of goods and people should a flood event occur. I-91 and US Route 5 are also of concern, as the Federal Emergency Management Agency identifies parallel portions of these roadways as being within Longmeadow Brook's Special Flood Hazard Area (SFHA), indicating risk of inundation by the 1-percent-annual-chance flood event. It should be noted that

FEMA's Flood Insurance Rate Maps that delineate the SFHA are based on prior rainfall data, and do not consider new climate projections for higher intensity rainfall events. Should a flood inundate both I-91 and US Route 5, north-south travel to and from Longmeadow could be cut-off. This scenario is exacerbated by the fact that MA-192, another major road providing a southerly connection to Connecticut, also traverses Longmeadow Brook's SFHA. A major flood event at Raspberry Brook would push traffic off of these three high volume roads and onto the local connector and neighborhood residential streets nearby.

Electrical Distribution System

Electricity is one of the most critical pieces of infrastructure in modern societies. Electrical service outages in town can be caused by, or exacerbate the impacts the effects of, any of the hazards prioritized during the Longmeadow MVP process. In 2011, a record early snow storm downed tree limbs and electrical wires, blocking roads and leaving some residents without power for days. There was broad consensus during the workshop that the community is at risk as long as the electrical distribution system is highly vulnerable to prolonged interruptions from storm events. Residents who are less technologically savvy, or who rely on electrical power for medical- or life-support, are particularly vulnerable to the secondary impacts of a power outage, including prolonged exposure to extreme cold or heat.

Longmeadow's Subdivision Rules and Regulations require the burying of utilities in any new subdivision, reducing vulnerability to damage by wind or trees. However, the town is essentially built out and few additional residences will benefit from these regulations. Buried utility lines face their own challenges, and workshop participants identified a need to improve drainage around existing underground electrical vaults and cables.

Above ground electrical infrastructure is vulnerable to damage from heavy winds and freezing precipitation.

Communication Networks

Longmeadow currently now subscribes to Code Red, a community multi-platform emergency notification system that can distribute information to any residents who sign up for alerts but which only helps those residents who know about it and sign up. The town has found resident participation to be lacking and also feels as though the new program does offers sufficient options for customization.

Longmeadow is working toward initiating this new program (Code Red), through which they hope to reach a greater base of the town's population and provide greater options for customized subscriptions.

In addition to updating the reverse Code Red system, workshop participants noted a need to foster neighborhood-level communications systems, both formal and informal. Participants expressed concern over the growing social isolation that they feel is symptomatic of modern lifestyles, and recognized the need to institutionalize a system of checking in on one another when preparing for a winter storm or during power outages. The Fire Chief noted that during one storm event, a resident from down the road walked to all the Fire Station to report that the man's immediate next door neighbor was elderly and may need to be checked in on. This experience was frustrating because the man could have checked in on his neighbor just as easily, but was relying on the Town's services instead. The needs for improved community gathering spaces, neighbor-to-neighbor relationship building, and increased diversity of communication methods were highlighted.

VULNERABLE POPULATIONS[1]

Longmeadow's most significant social challenge is that approximately 21% of its population is over 65 years of age. Senior populations may be more difficult to reach in event of emergency due to lack of mobility, physical or mental impairments, and/or social isolation. Seniors are generally more vulnerable to the effects of extreme temperatures, and therefore power outages.

Thirteen percent of Longmeadow residents aged five or older speak a language other than English at home. Workshop participants were uncertain as to which languages are most represented in this group. A lack of funding, in addition to ignorance regarding which languages the Town should target, have kept Longmeadow from offering translated versions of its website or communication system. English as a Second Language (ESL) populations can be especially vulnerable in times of emergency due to linguistic challenges in outreach and perhaps different cultural norms.

Just fewer than four-percent of Longmeadow residents are low-income, and may lack the financial capacity to evacuate in an emergency, afford air conditioning units or increased heat costs, or keep up with day-to-day costs of living when weather disrupts the local economy.

EMERGENCY OPERATIONS

The Town has several emergency shelters, with the Longmeadow High School as the primary designated emergency shelter, outfitted with full backup power. Longmeadow also has an MOU with JGS Lifecare to provide special needs sheltering. Plans are underway to develop further MOUs with elderly housing facilities located in Town. Two of local elderly facilities have recently added emergency power to one

[1] All data in this table is sourced from the US Census Bureau:
https://www.census.gov/quickfacts/fact/table/longmeadowcdpmassachusetts/BZA010216

building each and could, with some development, act as a standalone short term shelter. All of these facilities are ADA accessible. Longmeadow emergency professionals are currently working on developing town-wide evacuation protocols. The Town is also in the process of designing and building a new Senior Center. Longmeadow Emergency Management has requested that this facility also be equipped with emergency power. It is unclear at this point if this will fit into the current project budget. Grant funding to equip this facility has also been researched and it has been determined that the facility, at this point, does not qualify. If this facility is ultimately equipped with emergency power, it would provide a great alternative shelter location, warming center, cooling center and a rally point in the case of an evacuation. Currently the Fire Department is the Town's rally point for evacuations. This facility also houses the Town's Emergency Operations Center.

Wastewater and Drinking Water Resources

The Town of Longmeadow sits over a medium yield aquifer and at one time drew part of its supply from two public wells. Since the late 1970s, however, the Town has received 100 percent of its drinking water from the City of Springfield's source, which originates at Cobble Mountain and Borden Brook reservoirs in Granville and Blandford. The Longmeadow connection to the Springfield system is at one location via two parallel pipelines on Magawiska Lane in Springfield. Springfield Water and Sewer Commission (SWSC), which manages supply, has not yet had to place water restrictions on the residents of Longmeadow; however, there were daily check-ins between SWSC and the Town during the 2016 drought. The drought did affect Baggot Farms, a Connecticut-based agricultural operation that leases substantial acreage from the Town.

The drought also led to some concern about wildfires, and the Town significantly decreased open burning permits to residents and eventually plans to phase out open burning altogether.

Wastewater is pumped from Longmeadow to SWSC's treatment plant at Bondi's Island. The Town's wastewater pump station is located in the Connecticut River floodplain, and there is some concern that a major flood would impair its function or cause catastrophic damage to the structure. Although SWSC receives the town's sewage, Longmeadow owns the pump station and the transmission line that crosses the Connecticut River.

Tree Canopy/Street & Shade Trees

Although, as a whole, Longmeadow residents are protective of the community's robust street tree inventory, workshop participants did note that tree limbs growing among utility lines pose a threat to the electrical grid (as explored further in Electrical Distribution System section).

Further, Emerald Ash Borer and Elm Bark Beetles, both invasive species, pose a threat to the strength and viability of these trees. The Town is currently conducting a monitoring program for these insects, but the damage they are already inflicting to Longmeadow's trees have caused weakened limbs to fall.

Many of the street trees are old and large, and grow adjacent to street right-of-ways and/or residences. Falling limbs and downed trees pose a threat to human safety and can inflict serious property damage.

Falling tree limbs pose a threat to infrastructure, property, and human safety.
Source: Fire Chief Dearborn

DAMS

There are three dams in Longmeadow: the Turner Park Dam and the Laurel Park Dam are owned by the Town, and the Longmeadow Country Club Dam is privately owned. Owners are responsible for operation, inspection, and maintenance, but costs can be high so that dams often fall into disrepair.

According to the Longmeadow Conservation Commission, the Laurel Park Dam is unregulated, but was at one time registered with Massachusetts Office of Dam Safety (ODS) as a dam until circa 2000, when ODS no longer required the structure to be inspected. More clarification on the status of this structure in necessary, especially if the Town decides to dredge Laurel Pond.

The Longmeadow Country Club Dam has been identified by Massachusetts Department of Conservation and Recreation as a “Significant Hazard Dam,” indicating that the nature of the downstream area is such

that failure of the dam would likely cause loss of life and serious damage to homes, industrial or commercial facilities, important public utilities, and main highways or railroads. This rating requires an emergency action plan and routine inspections every 5 years. The dam is listed under state records as in "Fair" condition as per the most recent Phase I inspection in November 2016, and the Town does not have an emergency action plan on record at this point. Participants noted that the Country Club will be receiving significant revenues as a result of a deal with the Tennessee Gas Pipeline and that timing is good to ensure that their dam is up to code.

The Turner Park Dam is rated as a low hazard dam, requiring inspections every 10 years. According to ODS, the last inspection of the Turner Park Dam was in 2009, indicating a need for re-inspection this calendar year. Workshop participants were concerned that the Turner Park Dam is upstream of the Longmeadow Country Club Dam, and should the former fail, Country Club Pond would flood MA-192.

CURRENT STRENGTHS & ASSETS

As a result of Longmeadow's broad experience with extreme weather and the impacts of climate change, workshop participants were quick to point out their community's strengths in responding to the challenges identified above. Reinforcing and expanding upon these strengths and community assets is a common theme to the proposed actions presented later in this report to increase resiliency against the impacts of climate change.

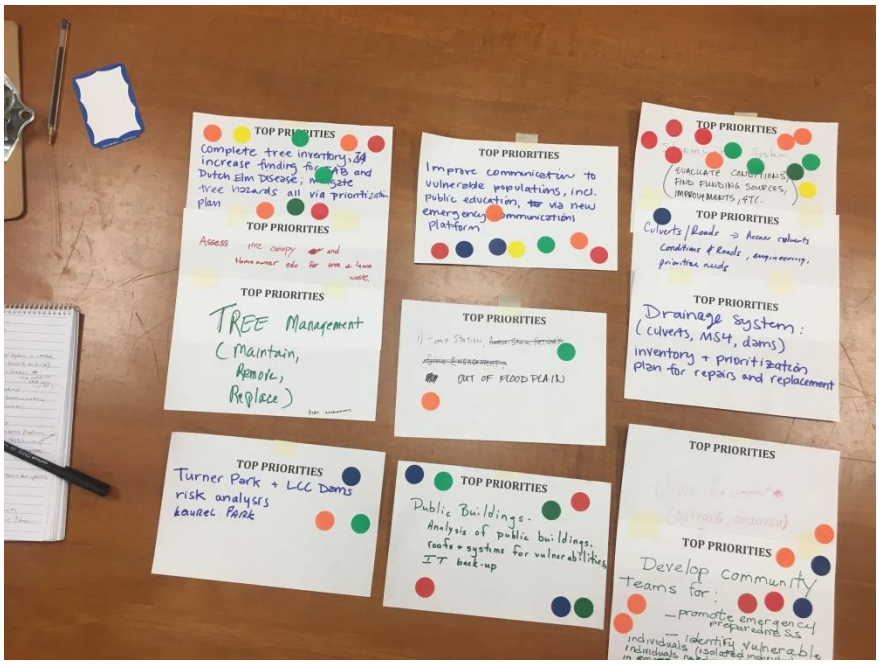
Some of the key strengths discussed included:

- Residents are proud and protective of Longmeadow's robust tree canopy cover, including publically-owned street trees and shade trees. This canopy cover not only contributes to a sense of place, but provides ecosystem services such as cooling ambient air temperature, stormwater management, and removing airborne particulates.
- The new Senior Center has several spaces that will make it a robust asset for emergency use. With a full commercial kitchen, staff and volunteers provide lunches for Center patrons and deliverable meals for homebound residents. The Center is designed with a large gymnasium that could be used as a significant shelter space should the need arise, and the Town's public health nurse and social services will both be housed at this facility. The new Senior Center is also geographically distant from the high school, providing an alternative option should one part of town not be appropriate for a shelter location in any given emergency.
- The new Department of Public of Works will be moved out of its current location on Pondside Road to Dwight Road, moving it out of the Connecticut River flood plain. The new modern facility will house all of the DPW's vehicles inside, reducing the vulnerability of the fleet to weather-related damage. This facility will have emergency power, and will house the Town's fuel depot for municipal operations. This site will also be Longmeadow's back-up or alternate Emergency Operations Center (EOC). The current EOC is designed to be cloud-based with portable supporting equipment for both on-grid and off-grid operations.

- Longmeadow's proximity to the Connecticut River and the Fannie Mae Stebbins Wildlife Refuge ("the meadows") is considered an asset. The protected floodplain provides flood storage, recreational opportunities, and valuable habitat.
- The town boasts a large faith network, which provides a cohesive sense of community among members of the various denominations.

TOP RECOMMENDATIONS TO IMPROVE RESILIENCE

Workshop participants identified more than 50 actions that the Town of Longmeadow, in collaboration with neighboring municipalities, regional partners and state agencies, should take to improve resilience to the impacts of climate change. Toward the end of the workshop, each small group presented its three top priority actions to the large group. These actions were grouped with like actions from other small groups, and then voted on by the large group.



Priority actions from each small group were voted on by all participants. Source: PVPC

The following priority recommendations were developed at the three small group tables, and are presented here in no specific order:

- Conduct a town-wide inventory of roadways, culverts, bridges, and other transportation and stormwater infrastructure to assess condition, identify vulnerable infrastructure in need of maintenance, repair, or replacement, and prioritize projects for investment.
- Improve communication to vulnerable populations via new emergency communications platform (Code Red).
- Increase civic engagement and develop community teams for promoting emergency preparedness and identifying vulnerable individuals and/or those who many need additional assistance in the event of an emergency.

- Study the feasibility of hardening the sewer pump station to floods or relocating it out of the Connecticut River floodplain.
- Conduct a risk analysis for the three dams in town.
- Conduct an analysis of public buildings' roofs and other infrastructure, including IT systems, for vulnerabilities.
- Complete the ongoing tree inventory and develop a maintenance plan, including increasing funding for Emerald Ash Borer and Dutch Elm Disease mitigation.

The entire suite of recommendations can be categorized into the following categories:

- Communications/Social Resilience
- Energy Distribution System / Energy Efficiency
- Transportation
- Drinking Water/Wastewater/Stormwater Management
- Open Space and Land Management
- Emergency Management

All recommended MVP actions were shared with the public at a public listening session on May 22, 2019, where the audience confirmed broad support for the top priority actions identified as part of the CRB workshop. Participants also suggested that assessing the community's stormwater infrastructure and developing a street tree assessment and prioritization plan were the best projects to move forward with for the next round of MVP Action Grants. Materials from the Public Listening Session are provided in Appendix E.

A full list of the final recommendations, organized by high, medium, and low priority within the above categories is provided below. Note that some actions span categories, and have been located with the category that PVPC considered the most suitable at the time of this writing.

HIGH PRIORITY ACTIONS

CATEGORY	ACTION
COMMUNICATIONS / SOCIAL RESILIENCE	Continue to engage private institutions in emergency planning and collaborate on dissemination of information & programmatic resources.
	Research and evaluate opportunities to promote neighbor–to-neighbor programs throughout town, and support their efforts. Encourage neighbors to engage in micro-preparedness by getting to know each other and identifying local residents who should be checked in on during or after emergency event.
	Identify vulnerable residents via outreach campaigns and develop communication strategies appropriately to encourage use of existing CoA programs and services, and conduct outreach and education campaign to reduce stigma associated with using social services.
	Model increased services needs as senior population grows and develop plan for necessary expansion of services.
	Improve outreach to kin of seniors who are unable to be reached effectively themselves (shut-ins, technophobic).
	Improve utilization of Code Red: study which strategies have broadest impact and incorporate best practices.
	Communicate with parents when they should or shouldn't rush to the schools in event of an emergency.
	Study and identify which populations in Longmeadow may need translation services and identify ways to have translation services on hand; research best practices for communicating with hard-to-reach populations with different linguistic/cultural needs and norms.
	Continue to pursue funding options for construction of new middle school with climate control.
EMERGENCY MANAGEMENT	Ensure IT continuity/backup at the DPW.
	Assess condition of all dams in town, and pursue emergency action plan (EAP) regarding the Longmeadow Country Club dam. Work with MA Office of Dam Safety to enforce the creation of an EAP for the LCC Dam and enforce regular inspections.
	Continue to develop and train around shelter-in-places strategies in schools and residential facilities.
	Finish construction of new DPW building.
	Continue to increase energy efficiency of municipal buildings and ensure back-up power at key sites with the goal of developing a continuum of sheltering capacity.

ENERGY DISTRIBUTION SYSTEM / ENERGY EFFICIENCY	Prioritize tree maintenance and work with utilities to ensure ongoing tree work is prioritized.
	Conduct an analysis of building roof conditions, thermal imaging, basement flooding, and HVAC and building mechanics.
	Continue to work with utilities to identify key locations to prioritize burying existing utility infrastructure.
	Encourage Verizon and Eversource to locate guy wires connected to trees and replace with guy poles.
	Promote opportunities for renewable energy generation and cogeneration/microgrid in public and private settings.
	Explore opportunities to modernize rolling stock and transition to more fuel efficient vehicles.
TRANSPORTATION	Conduct an inventory and prioritization plan for culvert and road maintenance.
	Continue to support Tri-Town Trolley system between East Longmeadow, Hamden, and Longmeadow.
	Work with MassDOT to follow through with Longmeadow Curve project (the Route 91 interchange which incorporates Route 91 North and South, Route 5 at the north end of Longmeadow / Forest Park, the Route 91 south end bridge ramps and the Springfield Longhill Ave and Columbus Ace ramps. MassDOT has proposed a conceptual project to improve the traffic pattern at this location, which would eliminate the many merging and crossing lanes, and would also add a south bound ramp onto 91 directly from Longmeadow).
DRINKING WATER / WASTEWATER / STORMWATER MANAGEMENT	Conduct an inventory and prioritization plan for stormwater system maintenance.
	Explore funding sources for stormwater sampling and compliance with the 2016 MS4 permit.
	Conduct educational outreach to community at large about stormwater concerns and the actions residents can take to reduce flow into the stormwater system.
	Assess the feasibility of hardening the sewer pump station to floods or relocating out of the floodplain.
	Advocate for release of funding from Capital Bond Bill for dredging Laurel Pond to improve storage of stormwater runoff.
	Review deeds and map easements to access stormwater system infrastructure that extends from rights-of-way across private properties to outfalls. Arrange further easements where necessary.

OPEN SPACE AND LAND MANAGEMENT	Continue programs to protect parcels and open space in the Connecticut River floodplain, including the taking of tax delinquent parcels.
	Raise awareness about the invasive species that pose a threat in Longmeadow, including treatment and control options.
	Prioritize adoption of a bylaw or other action to stop open burning of waste.
	Increase funding/identify grant opportunities for tree planting and maintenance.
	Follow through with Emerald Ash Borer and Dutch Elm Disease treatments.
	Reduce illegal dumping of yard waste, etc., in dingles via communication, education, and outreach campaigns.
	Study problem of dingle erosion and soil stability throughout the town.

MEDIUM PRIORITY ACTIONS

CATEGORY	ACTION
COMMUNICATIONS / SOCIAL RESILIENCE	Conduct education campaign on signs & symptoms of heat and cold weather related illnesses.
	Maintain strong communication network between Town and faith network.
	Explore new technology to replace overburdened cellular service. Create community task force to monitor situation and assess bylaws.
	Coordinate with PVPC on notification/education to residents on flood insurance.
	Study social media best practices and strategies.
	Fortify and increase distribution of “welcome packet” material the DPW puts out.
EMERGENCY MANAGEMENT	*No medium priority actions identified.*
ENERGY DISTRIBUTION SYSTEM / ENERGY EFFICIENCY	Work with Eversource to ensure proper drainage around underground electrical vaults and cables.
	Work with Columbia Gas & Tennessee Gas to modernize gas distribution system.
	Improve grid connections to old landfill/former DPW site in the meadows for solar field option.
	Explore community based regulations for possible oversight of utilities. Explore partners in monitoring utilities.
	Study options for solar backup (including PV over parking) and small-scale hydropower. Identify state funding options. Update to bylaws/Green Communities.
	Encourage Eversource to conduct analysis of underground transformers for old PCBs.
TRANSPORTATION	Re-evaluate road salting program to be more efficient and research salt-tolerant species palette for roadside plantings.
	Encourage State to create local option gas tax, dedicated to funding local road improvements.
	Consider environmental impacts when reviewing Complete Streets projects (increased impervious area) and review Complete Streets Policy for opportunities to include Green Streets priorities and strategies.
	Identify vulnerable street locations with only one access point and develop response plan.
DRINKING WATER / WASTEWATER /	Finish replacement of 4" water mains with 6" mains and continue hydro-maintenance program.

CATEGORY	ACTION
STORMWATER MANAGEMENT	Plan for redundant sewer crossing to Bondi's Island.
	Complete north interceptor replacements for sewer line.
	Encourage the State to support/redefine programs to upgrade watercourse infrastructure and drainage (ie, consolidate small grant programs).
	Explore options for alternative drinking water backup supply, pursue agreements with nearby communities (including in Connecticut), consider chlorine treatment if needed.
OPEN SPACE AND LAND MANAGEMENT	Explore incentive option to encourage private home owners to evaluate trees on private property.
	Explore regulations to promote tree preservation and canopy.
	Identify homeowners with dingles and provide outreach/education/incentive to maintain to prevent further erosion. Encourage nature-based solutions to dingle stability.

LOW PRIORITY ACTIONS

CATEGORY	ACTION
COMMUNICATIONS / SOCIAL RESILIENCE	Increase communication with residents to encourage families to adopt a plan for their pets in the event of an emergency.
	Increase communication with residents about environmental and public health importance of properly disposing of pet waste, especially in public places.
EMERGENCY MANAGEMENT	Identify municipal point person to maintain information on status of all dams in town.
	Create/study policy/procedures for evacuating and sheltering pets.
ENERGY DISTRIBUTION SYSTEM / ENERGY EFFICIENCY	*No low priority actions identified.*
TRANSPORTATION	Work with MassDOT to assess regional impacts of flooding/road closure on Routes 5 and 91, in the event both are closed.
DRINKING WATER / WASTEWATER / STORMWATER MANAGEMENT	Study existing water supply system, identify weak areas.
	Continue to work with state and federal agencies to establish baseline environmental quality conditions in the Connecticut River and floodplain to evaluate effectiveness of environmental/water quality programs.
OPEN SPACE AND LAND MANAGEMENT	Explore municipal pet waste collection options, such as a composting system.
	Increase communication of wildlife management goals with residents to demonstrate how their use of recreational land affects the refuge.

ACTION IMPLEMENTATION DESIGN

Once participants voted on the top priority actions, each team was asked to select one action and begin to develop an implementation plan. For each action, the small groups filled out an Action Implementation Design worksheet, providing information on the lead agency/department for implementation, the partners that would need to be involved for successful project completion, an estimated cost for the project, known or potential funding sources, and implementation milestones. This exercise was a tool for Longmeadow decision makers to get a head start on the thought process that would be required to apply for a MVP Action Grant, a funding opportunity from EOEEA that was announced shortly after the completion of Longmeadow's MVP workshop. The completed Action Implementation Design worksheets are provided in Appendix C.

WORKSHOP PARTICIPANTS

Approximately 21 participants from Town departments, committees and boards, large land owners, community organizations, and businesses were in attendance at the MVP workshops.

PARTICIPANT NAME	DEPARTMENT/COMMITTEE AFFILIATION, POSITION
Stephen Crane	Town Manager
John Dearborn	Fire Chief / Emergency Management Director
Walter Gunn	Planning and Zoning Boards
Marie Angelides	Select Board
Liz Bone	Energy Committee Representative
Paul Healy	Building Commissioner
Beverly Hirschhorn	Board of Health
Andrew Krar	Town Engineer
Albert Laasko	Conservation Commission
James Leyden	Council on Aging Director
Jay Macsata	Deputy Fire Chief / Assistant Emergency Management Director
Mario Mazza	Department of Public Works Director
Tom Mazza	Longmeadow School District Representative
Geoffrey McAlmond	Department of Public Works Deputy Director
Paul Pasterczyk	Assistant Town Manager
John Stankiewicz	Longmeadow Police
David Marinelli	Tree Warden
Andrea Chasen	Conservation Commission
David Sagan	Fannie Mae Stebbins, US Fish & Wildlife

CITATION

Longmeadow (2019) Community Resilience Building Workshop Summary of Findings. Pioneer Valley Planning Commission. Longmeadow, Massachusetts.

MVP WORKING GROUP

- Stephen Crane, Longmeadow Town Manager
- John Dearborn, Longmeadow Fire Chief / Emergency Management Director
- Jay Macsata, Longmeadow Deputy Fire Chief / Assistant Emergency Management Director
- Mario Mazza, Longmeadow DPW Director
- Emily Slotnick, Pioneer Valley Planning Commission

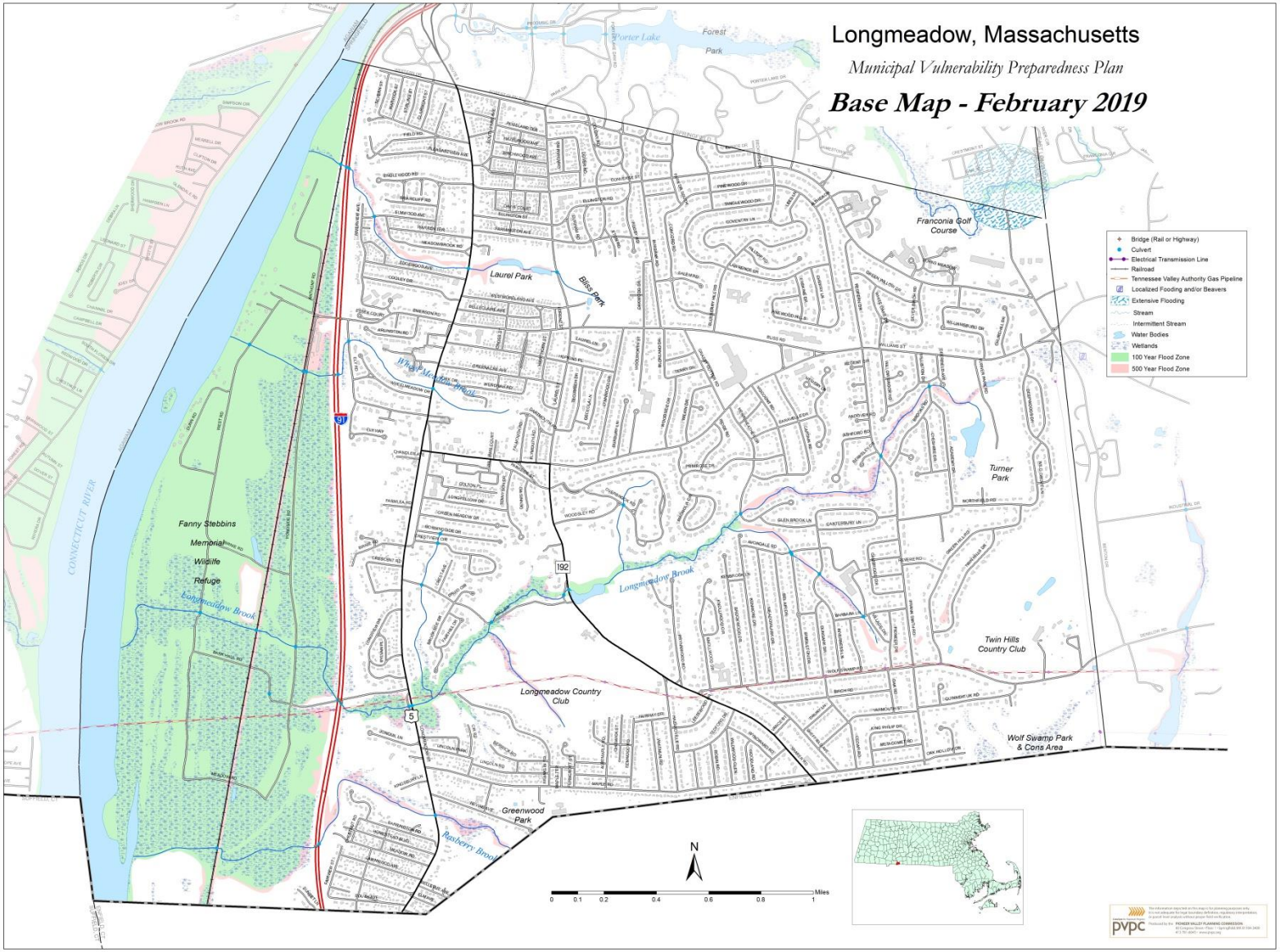
WORKSHOP FACILITATORS

- Emily Slotnick, Pioneer Valley Planning Commission
- Patty Gambarini, Pioneer Valley Planning Commission
- Corrin Meise-Munns, Pioneer Valley Planning Commission
- Jill DeCoursey, Pioneer Valley Planning Commission

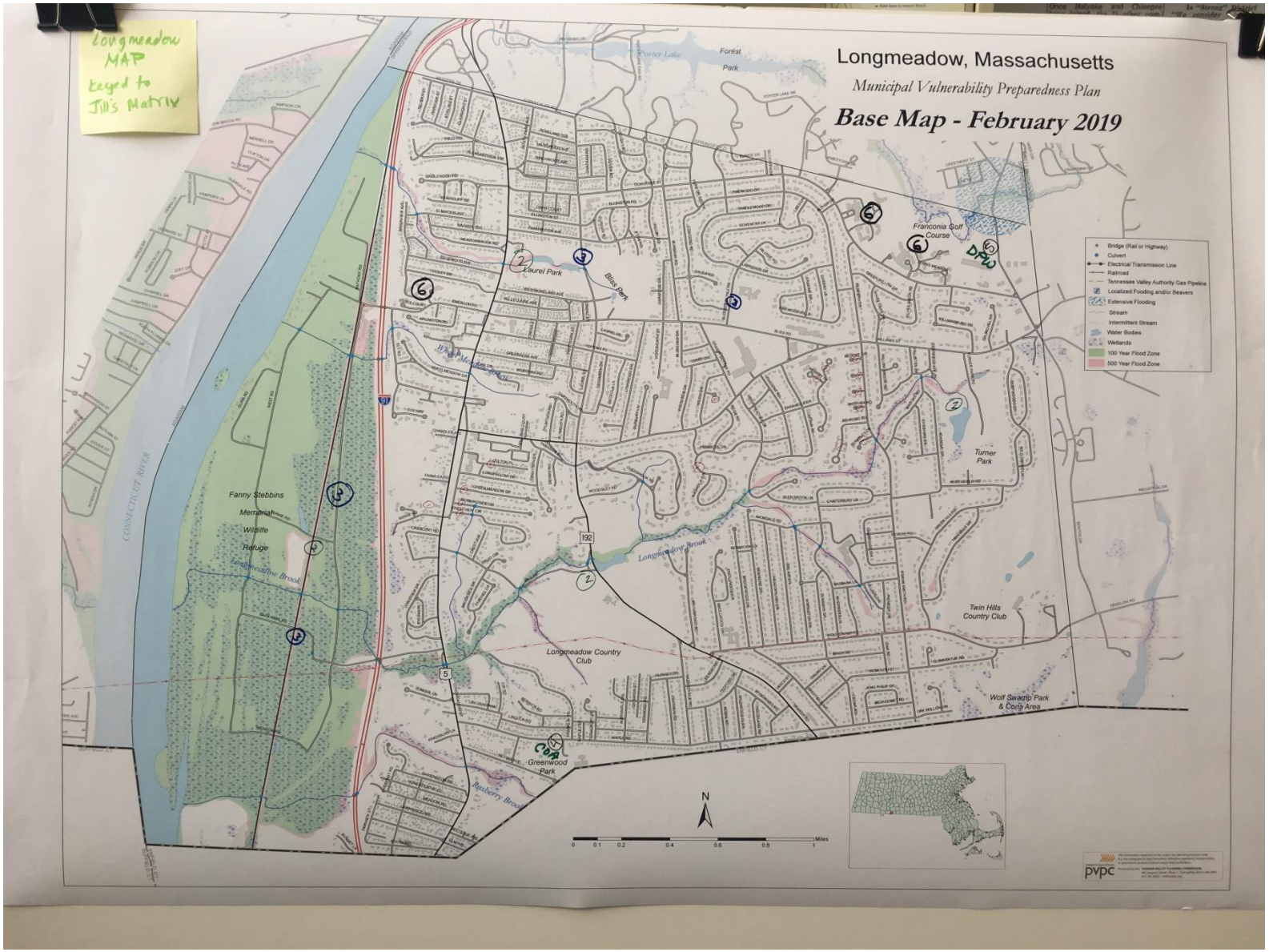
ACKNOWLEDGEMENTS

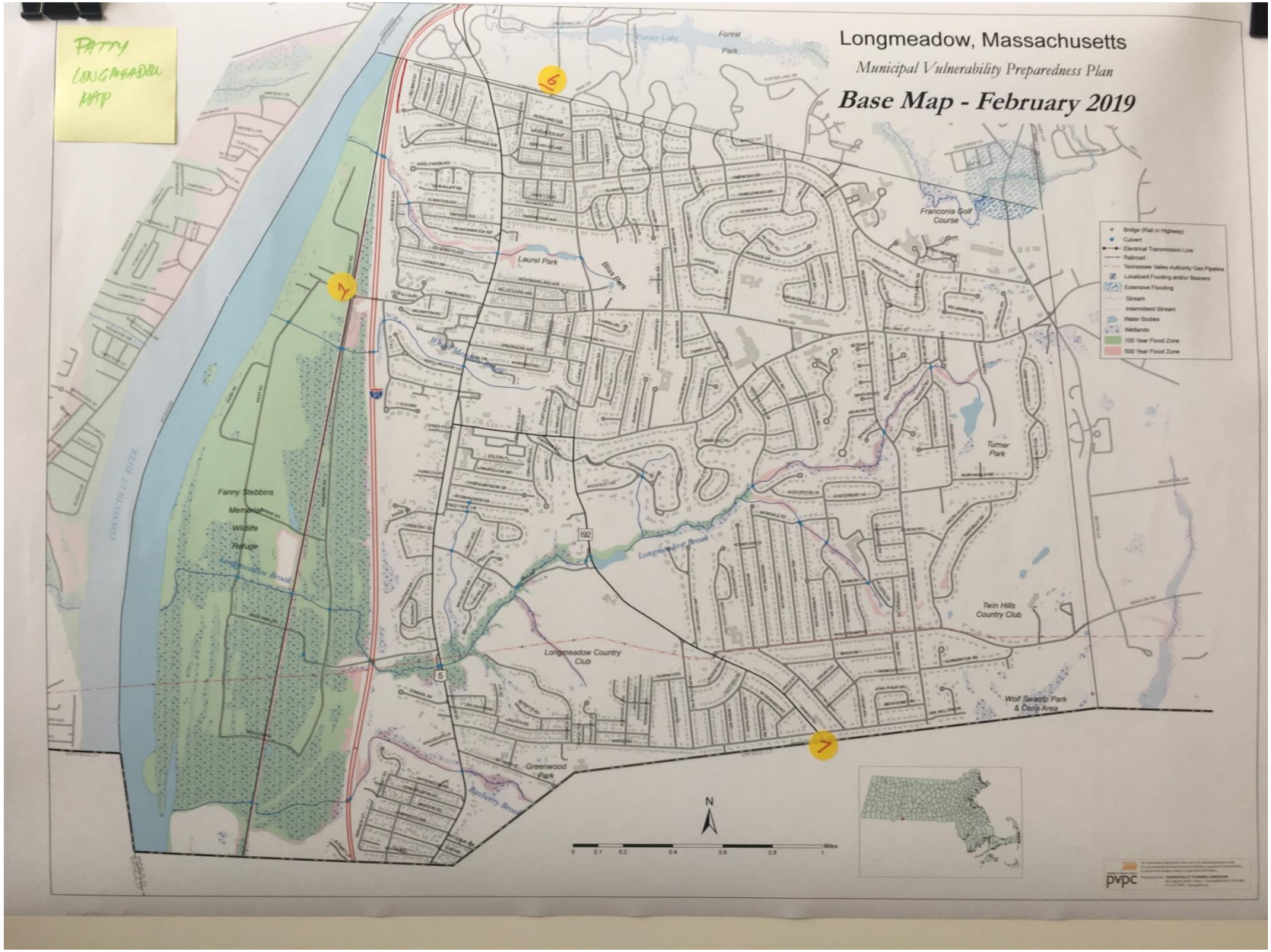
Special thanks to the Town of Longmeadow Fire Department and staff for their willingness to enhance this process and provide the facilities to convene. This project was made possible through funding from the Massachusetts Executive Office of Energy and Environmental Affairs.

APPENDIX A: WORKSHOP BASE MAP



APPENDIX B: PARTICIPATORY MAPPING RESULTS




PATTY
LONGMEADOW
MAP
Longmeadow, Massachusetts
Municipal Vulnerability Preparedness Plan
Base Map - February 2019
Porter Lake
Forest
Park
Franconia Golf
Course
Laurel Park
Bliss Park
Turner
Park
Twin Hills
Country Club
Longmeadow Country
Club
Wolf Swamp Park
& Conty Area
Greenwood
Park
Fanny Stebbins
Memorial
Wildlife
Refuge
CONNECTICUT RIVER
Longmeadow Brook
Bashemy Brook
Bridge (Rail or Highway)
Culvert
Electrical Transmission Line
Railroad
Tennessee Valley Authority Gas Pipeline
Localized Flooding and/or Beavers
Extensive Flooding
Stream
Intermittent Stream
Water Bodies
Wetlands
100 Year Flood Zone
500 Year Flood Zone
N
Miles
pvpc

APPENDIX C: PARTICIPANT HANDOUTS

Longmeadow Municipal Vulnerability Preparedness Workshop

DATE: Monday Feb. 25 and Tuesday, Feb. 26, 2019

TIME: 8:30a.m. – 12:30p.m.

PLACE: Longmeadow Fire Department

DAY ONE AGENDA

8:30 a.m.	**Registration** – breakfast, review resources, maps
9:00 – 10:30 a.m.	**Introductions/Goal of MVP program for Commonwealth and Longmeadow** **Presentation**: MVP, Climate Resources, and Priority Hazards
10:30 – 10:40 a.m.	**Break**
10:40 – 12:00 p.m.	**Morning Small Team Workshop** • Identify Community Vulnerabilities and Strengths • (Time permitting)—start to Identify Community Actions
12:00 – 12:30 p.m.	**Small Group Report Out**

DAY TWO AGENDA

8:30 a.m.	**Registration** and breakfast
8:45 – 10:45 a.m.	**Small Team Workshop** • Identify and Prioritize Community Actions • Identify Priority and Urgency • Report Outs on Actions and Priorities
10:45 – 11:00 a.m.	**Break** **Large Group Vote on Top Priorities**
11:00 – 11:40 a.m.	**Small Team work--Flesh out Top Priorities**
11:40 a.m.-12:20 p.m.	**Implementation Design Report Outs**
12:20 – 12:30 p.m.	**Wrap-up and Next Steps**

Municipal Vulnerability Preparedness

Action Implementation Design Community Engagement / Groups

COMMUNITY ACTION

Enhance civic engagement through development of community teams.

Lead Implementing Agency/ Department (Emergency Manager, Select Board, DPW, Fire Chief, Finance Committee, Planning Board, etc.)

Town Manager

Partners (Neighboring municipalities, State actors, local non-profits and land trusts, community groups, etc.)

Faith based groups
schools
council on aging
public safety
board of health
Parks department
IT department
DPW

Cost (Dollar estimate, or Low: < $50,000, Medium: $50,000 – $100,000, High: > $100,000)

low

Funding Sources (Capital Improvement Plan, Staff Time, Chapter 90, Hazard Mitigation Grant Program (HMGP), other grants, etc.)

DLTA, MVP

Implementation Milestones

Examples:
1. Create and convene a committee to oversee progress;
2. Dissiminate 300 information packets to raise awareness about the initiative;
3. Apply for a grant to fund more robust public outreach, education, and awareness campaign.

2) assess current communicators / information
1) meet w/ existing stakeholder group
4) hire facilitator to facilitate conversation
5) Facilitated conversation about civic engagement / community team development
3) Apply for DLTA grant funding and/or MVP grant

Note: Cost estimates take into account the following resources:
- Town staff time for grant application and administration (at a rate of $25 per hour)
- Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town)
- Town staff time for construction, maintenance, and operation activities (at a rate of $25 per hour)

Municipal Vulnerability Preparedness

Action Implementation Design	Dam Risk Analysis
COMMUNITY ACTION	
Hire consultant to evaluate the existing three dams (Turner Park, LCC, Laurel Park), ~~and~~ report conditions, provide recomendations for future repairs/maintenance.	
Lead Implementing Agency/ Department (Emergency Manager, Select Board, DPW, Fire Chief, Finance Committee, Planning Board, etc.)	
DPW	
Partners (Neighboring municipalities, State actors, local non-profits and land trusts, community groups, etc.)	
• Parks Dept ~~Conservation Commission~~ • Emergency Services • community ~~conservation~~ preservation group ~~Tree Warden~~ • conservation commission • Lonemeadow Country Club (dam owners) • Dept of Dam safety	
Cost (Dollar estimate, or Low: < $50,000, Medium: $50,000 – $100,000, High: > $100,000)	
Low (~$40,000)	
Funding Sources (Capital Improvement Plan, Staff Time, Chapter 90, Hazard Mitigation Grant Program (HMGP), other grants, etc.)	
Community Preservation Committee, General Fund, Hazard Mitigation	
Implementation Milestones Examples: 1. Create and convene a committee to oversee progress; 2. Dissiminate 300 information packets to raise awareness about the initiative; 3. Apply for a grant to fund more robust public outreach, education, and awareness campaign.	
1) DPW to submit grant application 2) DPW to reach out to partners 3) Act grant, implement study 4) Report out within 6 mo. to community	
Note: Cost estimates take into account the following resources: • Town staff time for grant application and administration (at a rate of $25 per hour) • Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town) • Town staff time for construction, maintenance, and operation activities (at a rate of $25 per hour)	

Municipal Vulnerability Preparedness

Action Implementation Design TREE CANOPY

COMMUNITY ACTION

- COMPLETE TREE INVENTORY LAST UPDATED IN 2015
- USE TREE INVENTORY ASSESS TREES FOR PRIORITIVATION OF TREATMENT OR REMOVAL
- PUBLIC OUTREACH FOR EDUCATION ~~FOR~~ AND VOLUNTEER REQRUITING.

Lead Implementing Agency/ Department (Emergency Manager, Select Board, DPW, Fire Chief, Finance Committee, Planning Board, etc.)

DPW/TREE WARDEN

Partners (Neighboring municipalities, State actors, local non-profits and land trusts, community groups, etc.)

DCR
PVPC
TOWN MEETING
CONSERVATION COMMISSION
ARBOR DAY FOUNDATION
TREE COMMITTEE

Cost (Dollar estimate, or Low: < $50,000, Medium: $50,000 – $100,000, High: > $100,000)

$10-$20,000 FOR INVENTORY
MITIGATION - HIGH

Funding Sources (Capital Improvement Plan, Staff Time, Chapter 90, Hazard Mitigation Grant Program (HMGP), other grants, etc.)

MVP, DCR, TOWN MEETING, PVPC, EEA LAND USE PLANNING CPC

Implementation Milestones

Examples:
1. Create and convene a committee to oversee progress;
2. Dissiminate 300 information packets to raise awareness about the initiative;
3. Apply for a grant to fund more robust public outreach, education, and awareness campaign.

1. ACHIEVE FUNDING
2. RETAIN EXPERTS TO PERFORM ~~SE~~ INVENTORY/PRIORITY PLAN.
3. ~~AS~~ IMPROVE FUNDING FOR MAINTENANCE
4. REMOVE AND REPLACE HIGH RISK TREES WITH MORE APPROPRIATE SPECIES (IE. UNDER UTILITY LINES)

Note: Cost estimates take into account the following resources:
- Town staff time for grant application and administration (at a rate of $25 per hour)
- Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town)
- Town staff time for construction, maintenance, and operation activities (at a rate of $25 per hour)

Municipal Vulnerability Preparedness

Action Implementation Design	Improve Communications to Vulnerable Populations
COMMUNITY ACTION	• Contract w/ Code Red & transfer data • Set up contact groups for specific types of messages. • Geo map vulnerable areas and other area-based functions (i.e. trash collection) • Work w/ COA to improve outreach to vulnerable/isolated seniors • Work w/ schools & private institutions to improve outreach and build data • Develop multi platform messaging capacity • Identify ESL needs
Lead Implementing Agency/ Department (Emergency Manager, Select Board, DPW, Fire Chief, Finance Committee, Planning Board, etc.)	Emergency Manager, IT, DPW, Town Manager, Police, Westcomm COA
Partners (Neighboring municipalities, State actors, local non-profits and land trusts, community groups, etc.)	Interfaith, community, Private institutions, Local businesses community groups.
Cost (Dollar estimate, or Low: < $50,000, Medium: $50,000 – $100,000, High: > $100,000)	Medium
Funding Sources (Capital Improvement Plan, Staff Time, Chapter 90, Hazard Mitigation Grant Program (HMGP), other grants, etc.)	General Fund, FOLOCA, Public Safety grants
Implementation Milestones Examples: 1. Create and convene a committee to oversee progress; 2. Dissiminate 300 information packets to raise awareness about the initiative; 3. Apply for a grant to fund more robust public outreach, education, and awareness campaign.	• Go live date of Code red • Achieve 20% registration of community contacts • Promote through interfaith community and local business 2x per year • Analyze outreach data from facebook • Create translations for most pressing ESL needs • Emergency communications drills w/ schools & institutions 2x year
Note: Cost estimates take into account the following resources: • Town staff time for grant application and administration (at a rate of $25 per hour) • Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town) • Town staff time for construction, maintenance, and operation activities (at a rate of $25 per hour)	

Yellow

Municipal Vulnerability Preparedness

Action Implementation Design - Drainage / culvert / roads / stormwater assessment

COMMUNITY ACTION

1) Reach out to vendors to assess and create inventory
2) Obtain Dam Report from LCC - look & explore enforcement
3) Prioritize projects
4) Legal counsel for temp. easements
5) Obtain any engineering studies of dams for private owners

Lead Implementing Agency/ Department (Emergency Manager, Select Board, DPW, Fire Chief, Finance Committee, Planning Board, etc.)

DPW

Partners (Neighboring municipalities, State actors, local non-profits and land trusts, community groups, etc.)

Emergency management
Office of Dam Safety
Dept of Ecological Restoration
FEMA PVPC
Conservation Commission

Cost (Dollar estimate, or Low: < $50,000, Medium: $50,000 – $100,000, High: > $100,000)

$40-50K - 50 - 100K.

Funding Sources (Capital Improvement Plan, Staff Time, Chapter 90, Hazard Mitigation Grant Program (HMGP), other grants, etc.)

604b / 319 grants Dam + Seawall CIP Trust fund, HMG Program, Expand Enterprise All Dept of Ecological Restoration Fund fees - MVP money

Implementation Milestones

Examples:
1. Create and convene a committee to oversee progress;
2. Dissiminate 300 information packets to raise awareness about the initiative;
3. Apply for a grant to fund more robust public outreach, education, and awareness campaign.

CIP + Select Board -
TM Taskforce - on MVP Grants + Implementation
Information packets for access on private property

Note: Cost estimates take into account the following resources:
- Town staff time for grant application and administration (at a rate of $25 per hour)
- Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town)
- Town staff time for construction, maintenance, and operation activities (at a rate of $25 per hour)

Yellow

Municipal Vulnerability Preparedness Public Building Analysis

Action Implementation Design ~~Reach out to vendor to complete study Assessment of Bldg~~

COMMUNITY ACTION

Reach out to vendors to develop and complete Assessment of Buildings.
Compile past studys

Lead Implementing Agency/ Department (Emergency Manager, Select Board, DPW, Fire Chief, Finance Committee, Planning Board, etc.)

DPW

Partners (Neighboring municipalities, State actors, local non-profits and land trusts, community groups, etc.)

School departments, Historic commission, district, capital planning
Energy comm.

Cost (Dollar estimate, or Low: < $50,000, Medium: $50,000 – $100,000, High: > $100,000)

High $ 100 k +

Funding Sources (Capital Improvement Plan, Staff Time, Chapter 90, Hazard Mitigation Grant Program (HMGP), other grants, etc.)

capital, grant, section 319 grant, HMGP, CPSA, MVP

Implementation Milestones
Examples:
1. Create and convene a committee to oversee progress;
2. Dissiminate 300 information packets to raise awareness about the initiative;
3. Apply for a grant to fund more robust public outreach, education, and awareness campaign.

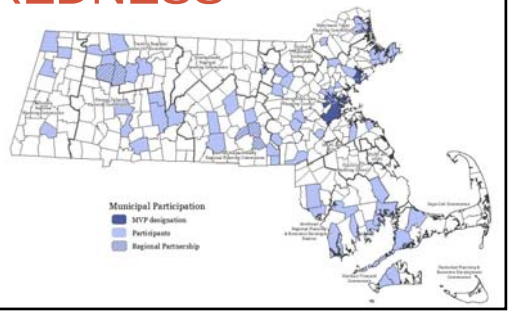
Form committee
Public Awareness campaign
Write specs

Note: Cost estimates take into account the following resources:
- Town staff time for grant application and administration (at a rate of $25 per hour)
- Consultant design and construction cost (based on estimates for projects obtained from town and general knowledge of previous work in town)
- Town staff time for construction, maintenance, and operation activities (at a rate of $25 per hour)

APPENDIX D: MVP WORKSHOP PRESENTATION

MUNICIPAL VULNERABILITY PREPAREDNESS

City of Longmeadow, Ma



Introductions

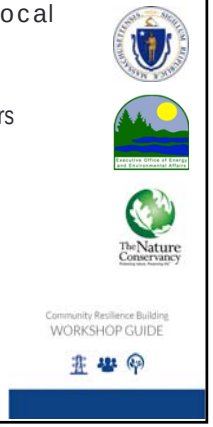
1. Name
2. Your role in / relationship to Longmeadow (staff, board and committee members, business owner, resident, etc.)

MVP Planning Grant Purpose and Goals

- **Community-led process** that employs local knowledge
- **Mainstream** climate change data
- **Look to communities** as local innovators
- **Coordinate** statewide efforts

Complete workshop – vulnerability assessment and action plan

Preference for projects that propose **"Nature based solutions"**



Longmeadow MVP Purpose and Goals

- Share ideas about climate change, impacts, and actions to reduce vulnerabilities
- Augment the HMP
- Become a "MVP "Certified" Community
- MVP Action Grant

Outline of Workshop

Agenda

	Time	Activity
Day 1	9:00 a.m.	Introductions, Climate Resources, and Priority Hazards
	10:30 a.m.	Break
	10:40 a.m.	Small Team: ID/Map Community Vulnerabilities and Strengths Small Team: Identify and Prioritize Community Actions
	12:00 p.m.	Small Group Report Out
Day 2	8:45 a.m.	Small Team: Identify and Prioritize Community Actions Small Team: Identify Priority and Urgency
	10:20 a.m.	Report Outs
	10:45 a.m.	Break Vote on Top Priorities
	11:00 a.m.	Implementation Design Exercise
	11:40 a.m.	Implementation Design Report Outs
	12:00 p.m.	Wrap-up and Next Steps

Activity #1: What changes have you seen in the natural environment over the course of your lifetime?

Example: My street floods once or twice per year now, and it never did in the past

Example: Fewer blue jays at my bird feeder in the winter

Example: Asian longhorn beetle and EAB destroyed the street trees in town

Example: Early thaws followed by late cold snaps have damaged fruit yields

Fill out sticky note, and add to board

Concerns and Challenges

"Trees, water, and bugs"

- Localized & riverine flooding
- Extreme temperatures
- Tree maintenance (ongoing and after storm events)

Localized & Riverine Flooding

Extreme Temperatures

Tree Care & Maintenance

Longmeadow's Assets and Features

Natural resources
- Open space protection, esp. around CT River floodplain
- Tree canopy

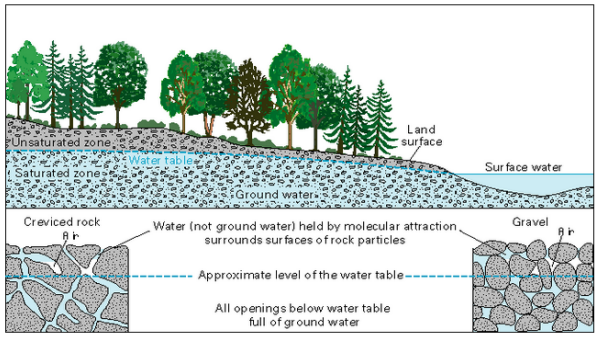
Regulatory
- Taking of tax delinquent properties in floodplain & converting to open space
- Flood Plain Overlay District
- Stormwater utility went into effect July 1, 2018

Vibrant and connected community
- Engaged citizens
- Thoughtful and responsive municipal staff and leadership

Drinking water

Three characteristics that shape nature of supply

- Geology
- Soils
- Land use/forest cover

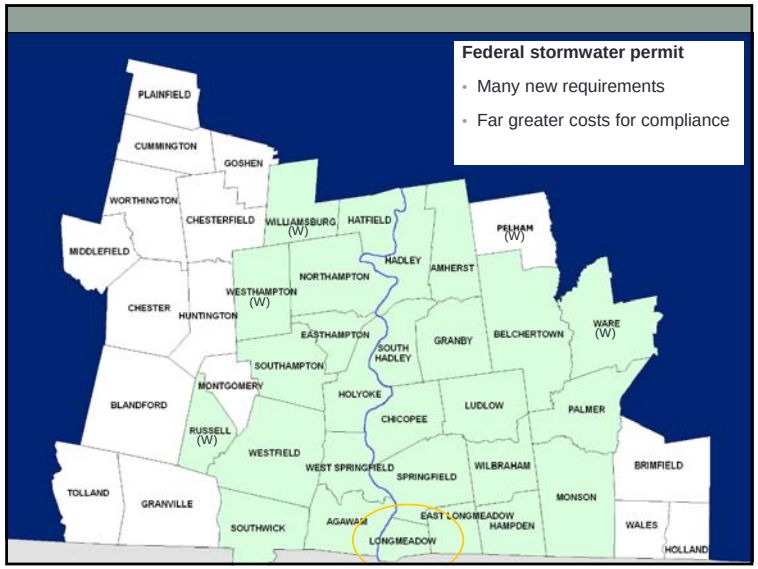


https://water.usgs.gov/edu/earthgwaquifer.html

Stormwater

- Ties to drinking water – soak up the rain
- Aged stormwater system

Source: P. Gambarini



Permit elements that may help w/ resilience

- New development standards (LID / nature based solutions)
- Mapping of municipal storm system and inspections of outfalls and interconnections
- More frequent cleaning of catch basins

Massachusetts Green High Performance Computing Center, Holyoke

Global Climate Trends

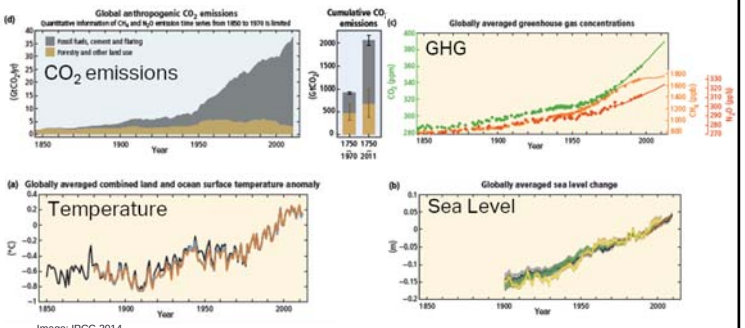
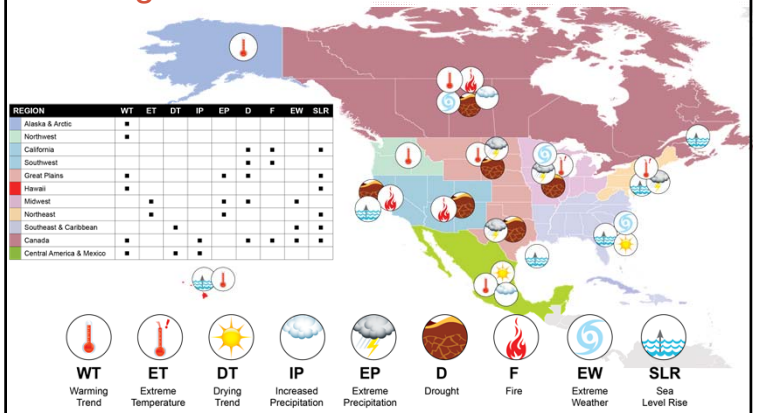


Image: IPCC 2014

- 14 of 15 hottest recorded years since 2000
- July, August 2016, then July 2017 – hottest months on record

High Level Overview of Climate Change Trends in North America



Information adapted from NCA (2013) and IPCC AR5 (2014)

U.S. $ Billion Disasters

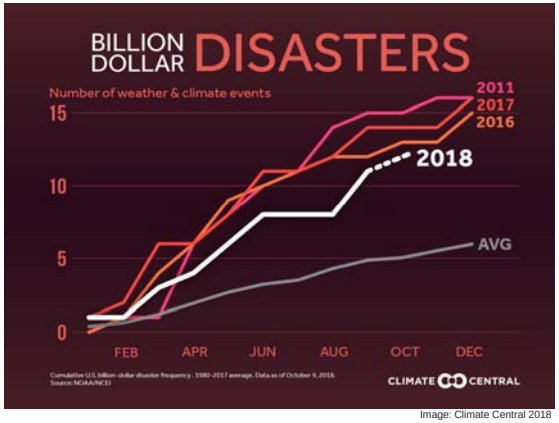


Image: Climate Central 2018

U.S. Stats

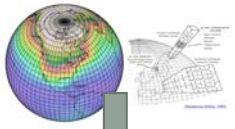
2017 - 16 billion $ disasters, tying 2011

2018 – 11 billion $ disasters as of early November, excluding CA wildfires and Hurricane Michael

MA Climate Projections

- Statewide projections comprised of county-and basin-level information

Global Climate Models (GCMs)



Latest, state of the art climate model simulations (CMIPS) used in the IPCC report (2013)

Model Selection
Rigorous assessment of model performance and projections

Karmalkar et al., *under review*

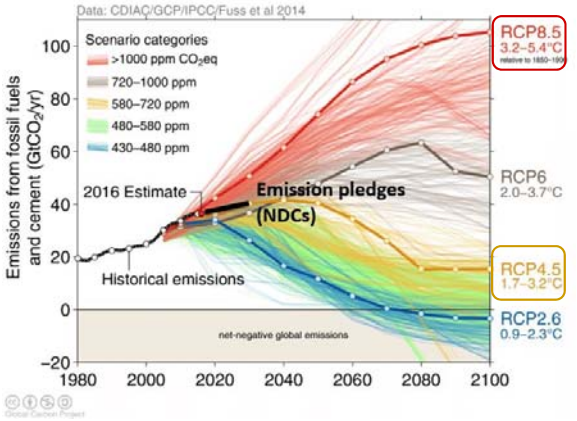
Daily data for MA at 6-km resolution

DOWNSCALED MODEL DATA

Statistical Downscaling

Pierce at al., 2014

Emission Scenarios



HIGH EMISSIONS SCENARIO

MEDIUM EMISSIONS SCENARIO

CT River Basin Climate Projections

By 2100

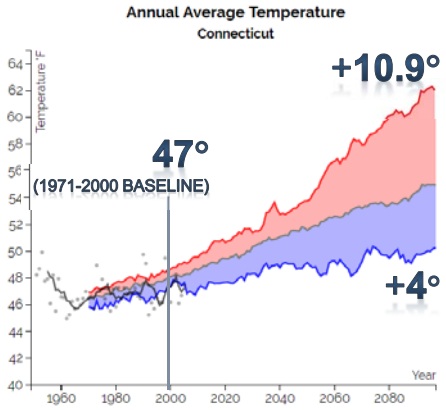
- Increase (↑) in:
  - Average temperatures
  - Min and max temperatures
  - # of days with temps over 90, 95, and 100
  - Cooling degree days (65 and above)
  - Winter precipitation
  - Frequency of heavy precipitation (winter)
- Decrease (↓) in:
  - # of days below 32 and 0
  - # of heating degree days (65 and below)
  - Fall precipitation (potential)

Average Temperatures

- ↑ in annual and seasonal average, max., and min. temps
- Summer highs may ↑ 9% by 2050, 17% 2100
- Fall highs may ↑ 12% by 2050, 20% 2100

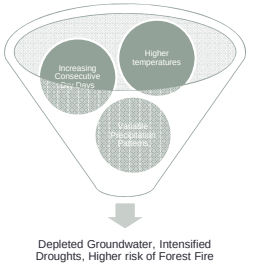
Impacts

- Rain v. snow
- Drought and fire



Average Temperatures PLUS…

- Invasive Species
  - Changing hierarchies in ecosystems
  - Ecosystem stress opens invasive pathways
- ↑ in mosquito populations - West Nile virus and triple E.
- ↑ in existing tick-borne diseases and change in geographical distribution of others

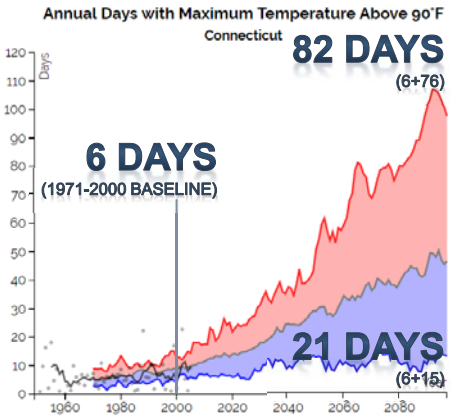


Extreme Temperatures

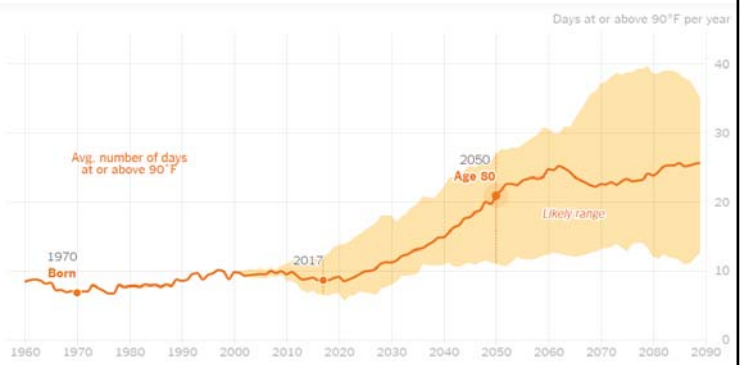
- Major jump w/ high emissions scenarios
- By 2100, up to +60 days above 90 in summer, +12 days above 90 in fall.

Impacts

- Heat impacts vulnerable pops.
- ↑ in cooling degree days



Days over 90° by year

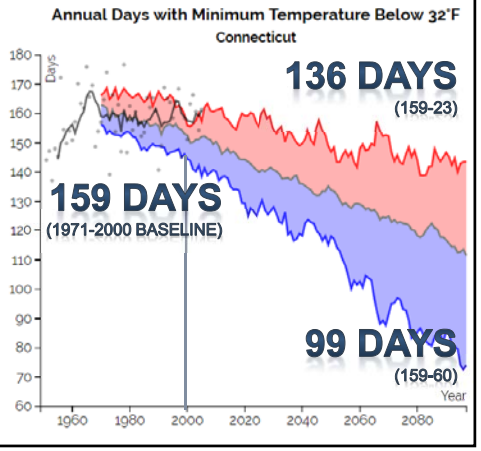


Cold Temperatures

- Fewer days below 32° and 0°
- ↓ in 32° days by 2050 projected in fall and spring
- ↑ length of frost-free season

Impacts

- Pests and insects
- Vegetative growing season
- Maintenance costs

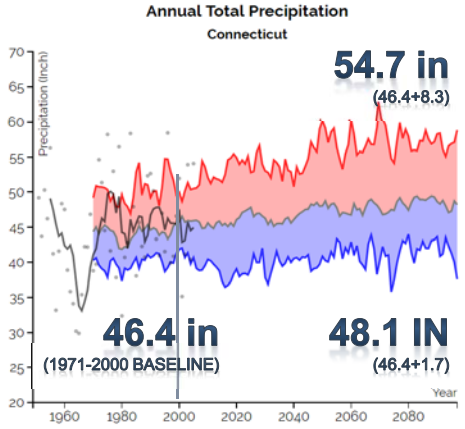


Precipitation

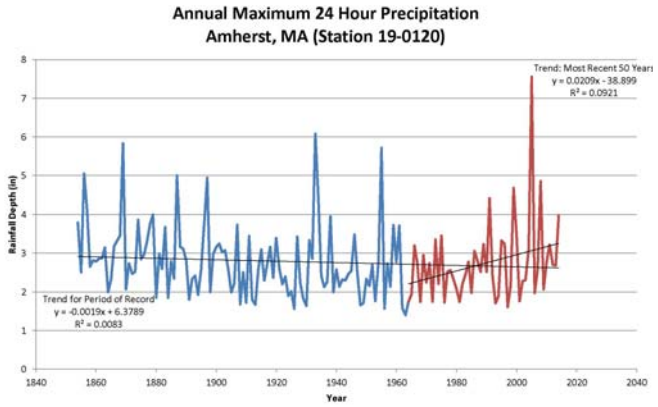
- Annual total precipitation ↑ 1.3 – 6.2” by 2050
- Greatest ↑ in spring and winter

Impacts

- Winter rain
- Reduced snow cover and ice melt



Historical Trend: Maximum Precipitation



Source: Linnean Solutions

Precipitation >1”

Extreme Precipitation > 1" (Projected)

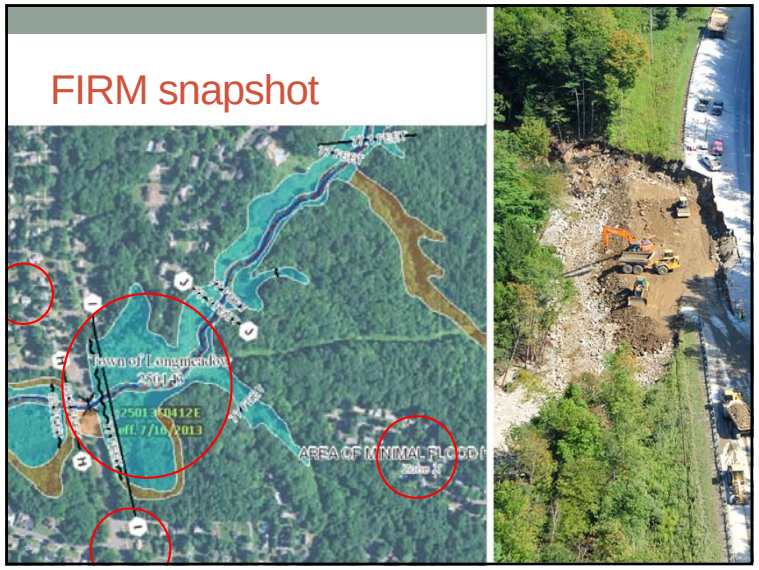
- Annual ↑ 1.48 days by 2050
- Greatest ↑ in spring and winter

Impacts

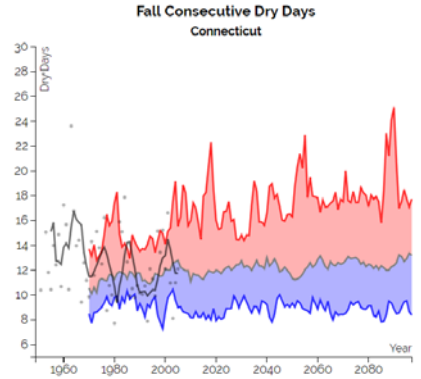
- Water quality
- Flood risk
- Erosion
- Stormwater infrastructure

Connecticut Basin					
		Projected change in # Days with precipitation > 1"			
Season	Baseline (days)	2030s	2050s	2070s	2090s
Annual	6.5	+0.85	+1.48	+1.94	+1.87
Fall	1.89	+0.27	+0.36	+0.32	+0.29
Spring	1.56	+0.28	+0.4	+0.66	+0.71
Summer	1.98	+0.25	+0.29	+0.33	+0.3
Winter	1.04	+0.26	+0.45	+0.69	+0.84

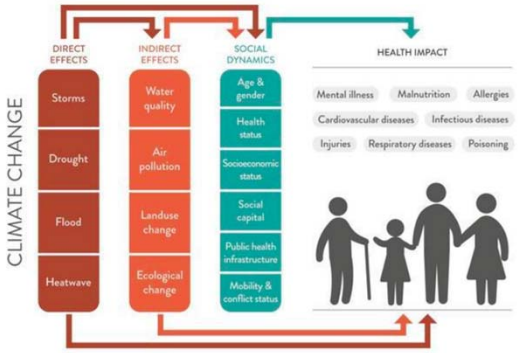
FIRM snapshot



Consecutive Dry Days



Who and what is especially vulnerable?



Challenges

- More extreme storm events/ precipitation
  - More and longer heat waves
- More summer drought

Who and what is especially vulnerable?

Vulnerable populations

- Under 5 and over 65 years old
  - Lathrop Community off of Florence Rd
- Low income
  - Residents in affordable housing (Cottage St or Parson's St), Housing Authority units, or SMOC owned/ managed
- Disabled and chronic illness
  - Riverside Industries (Cottage St.), Hampshire Manr Nrsg Home (Rt.10)
- Limited English speakers
- Socially or physically isolated
- Agricultural community

Other vulnerable assets - transportation infrastructure/culverts, drinking water, forests, biodiversity

Taking Action

Climate Action and Clean Energy Plan (2014)
A plan to guide actions in response to climate-change and its impacts. Offers strategies for local and regional actors to reduce GHG emissions and protect communities from climate-related damage.

Sustainability and Climate Action Management Plan (SCAMP) (2010)
A roadmap to reducing resource use and associated impacts, and a guide to institutional cultural change.

Deerfield River Watershed Climate Change Vulnerability Assessment Pilot Project (2018)
Develops protocols for assessing the present and future extreme flood vulnerability of culverts to be incorporated as part of decision making process

Activity #2: What does **Climate Vulnerability Preparedness** Look Like to You?

Examples:

"Having water and heat available during all weather events."

"Variable and flexible social network. Flexible plan to address short-term problems in the context of long-term goals."

"Sharing resources with others in my community. Communication."

"Prepare for the unprecedented."

Fill out sticky note, and add to board

Municipal Planning & Existing Ongoing/Identified Actions

Plan / Code	Identified Action (Past or Ongoing)
Hazard Mitigation Plan	• Develop list of priority drainage system replacements & implement • Ensure that all identified shelters have back-up power • Expand capacity of yard waste facility to decrease frequency of residential burning
Stormwater Management	• LID actively promoted
Subdivision Regulations	• LID actively promoted • Utilities must be buried underground
OSRP	• Encourages natural resource protection
Building Code	• Adopted State Building Code

Other Past and Ongoing Actions

- Certified Green Community
- Community Preservation Act community
- Active member of CT River Stormwater Committee
- Active Energy Task Force
- Active Tree Committee
- Reverse 911 Communication System
- Ongoing monitoring project re: Emerald Ash Borer & Asian Longhorn Beetle
- Emergency Mgmt in process of developing townwide evacuation protocols

MVP and Nature-Based Solutions

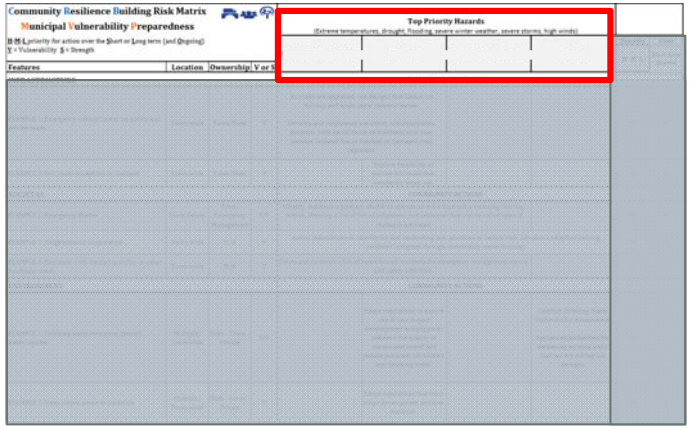
The sustainable management and use of nature for tackling challenges such as climate change, water and food security, biodiversity protection, human health, and disaster risk management.

Provides **co-benefits** for people and nature

Nature-Based Solutions: Examples

- Maintaining healthy, resilient forests will help them continue their critical function of carbon sequestration.
  - Using controlled burns to reinstitute natural fire regime
  - Monitor for early detection and removal of invasive plant species
  - Maintaining species- and age-diverse forest
- Flood and fish friendly culverts protect infrastructure and aquatic habitat
- Rain gardens to reduce localized flooding and recharge aquifer

Risk Matrix Exercise 1a: Characterize Hazards



Top Hazards

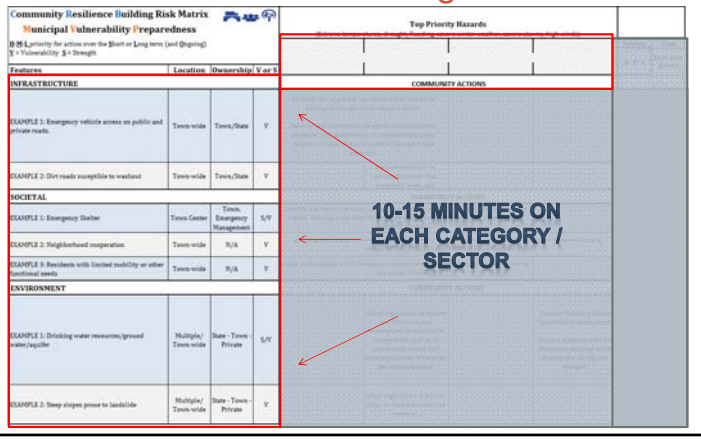
Which climate-influenced natural hazards are the top priorities for Longmeadow to consider in assessing vulnerability, preparedness, and planning for resiliency?

2016 HMP Hazard	HMP Rating	MVP Hazards
Flood	Medium	**Flood** (may include dam failure, may result in landslide)
Dam failure	Very Low	
Severe Thunderstorm Wind / Tornado / Microburst	Low	**Severe Storm** (hurricane, severe thunderstorm wind, tornado, microburst)
Hurricane / Tropical Storm	Low	
Severe Snow Storm / Ice Storm	High	**Severe Snow Storm / Ice Storm**
Wildfire / brushfire	Very Low	Wildfire / brushfire
Drought	Very Low	**Drought**
Earthquake	Very Low	Earthquake
Hazardous Materials	Low	Hazardous Materials Exposure / Contamination / Combustion
		Extreme Temperatures (and temperature fluctuations)
		Invasive Species

Any Questions?

Regroup at 10:40

Risk Matrix Exercise 1b: ID Vulnerabilities and Strengths

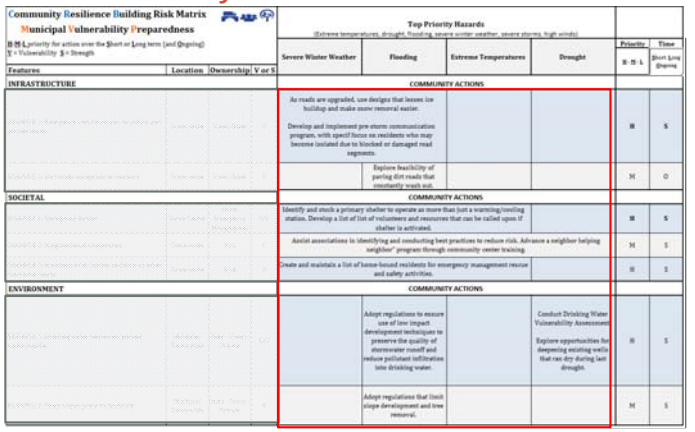


Data and maps available during workshop

- Resources for today
  - Maps
    - Base map – for mapping exercise
    - Critical Facilities and (Past) Hazard Area Map
  - Downscaled climate projections (on computer)
  - 2016 HMP

Regroup at 12:00

Risk Matrix Exercise Part 2: ID Community Actions



What is a "Winning" MVP Action?

Natick	Tree Planting Plan to Mitigate Heat Islands and Reduce Runoff	$9,025
Arlington	Mill Brook Corridor Flood Management Demonstration Project: Pilot Study and Implementation	$399,260
Gloucester	Watershed and Water Supply Vulnerability, Risk Assessment and Management Strategy	$107,044
Newburyport	Wastewater Treatment Plant Climate Resilience	$122,695
Belchertown	Town-wide Road Stream Crossing Assessment and Climate Change Adaptation Plan	$151,437
Northampton	Northampton Designs with Nature to Reduce Storm Damage	$400,000

What is a "Winning" MVP Action?

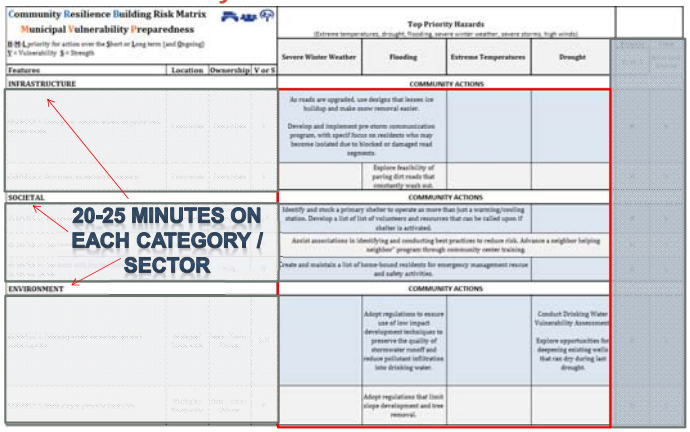
Projects to build resilience, are proactive and clearly demonstrate efforts to redesign, re-evaluate, or reconsider and incorporate new climate change data.

Projects are encouraged to utilize nature-based strategies to address climate change impacts.

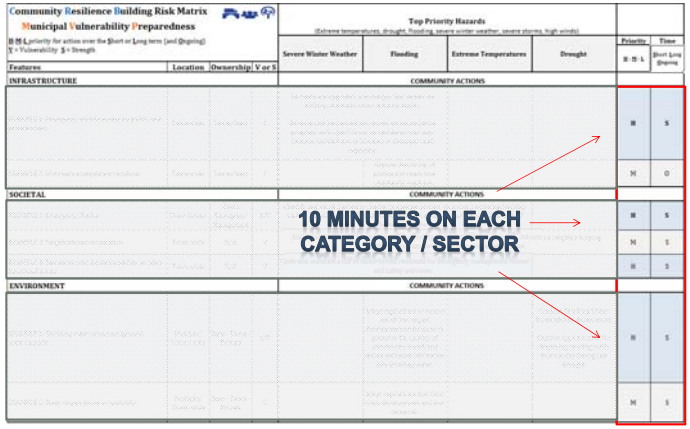
Many of these projects might also be funded through existing grant programs

- e.g. EEA's Dams and Seawalls, CZM/s coastal resilience, DER's culvert replacements

Risk Matrix Exercise Part 2: ID Community Actions



Risk Matrix Exercise Part 3: Prioritize Actions



After Risk Matrices are Complete…

- Determine top 3 priority actions

Break

Regroup at 10:20 for Report outs

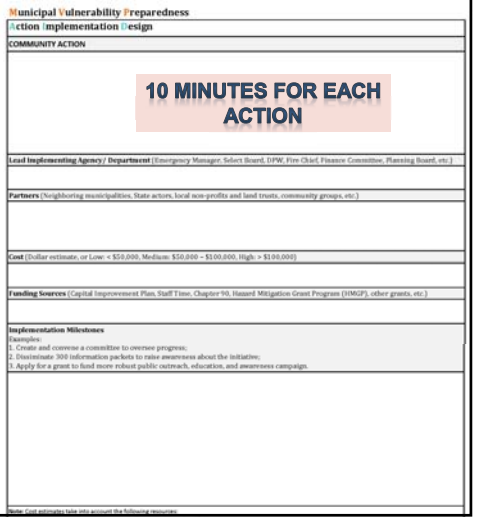
After Risk Matrices are Complete…

- Break
- Large group vote on top priorities
  - Everyone gets 3 dots

Using your Top Priority Actions…

Implementation Exercise

- Regroup at 11:45 for Report Outs



Thank You!

APPENDIX E: PUBLIC LISTENING SESSION

AGENDA

Longmeadow Municipal Vulnerability Preparedness Public Listening Session

DATE: Wednesday, May 22, 2019
TIME: 7:00p.m.
PLACE: Longmeadow Community House

AGENDA

7:00 p.m.	**MVP Workshop Process Overview and Summary of Findings**
7:40 p.m.	**Public Q&A**
8:10 p.m.	**Conclusion and Closing Input**
8:30 p.m.	**Adjourn**

NOTES

When asked what environmental changes they had noted over the course of their lifetimes, participants in the Public Listening Session noted recent changes towards the unpredictability of winter precipitation, including fluctuations between snow and rain in any given year and the alternations between years with very mild winters and years with more severe winters. One participant said that in recent years, she has noticed less of a summer temperature differential between suburban Longmeadow and the rural, wooded communities north of town, which used to be reliably cooler.

After the presentation was over and the public was invited to share comments and concerns, the audience confirmed broad support for the top priority actions identified as part of the CRB workshop and agreed with the town that assessing the community's stormwater infrastructure and developing a street tree assessment and prioritization plan were the best projects to move forward with for the next round of MVP Action Grants.

Longmeadow MVP Public Listening Session
Sign-In Sheet
Wednesday, May 22, 2019

Name	Position	E-mail
Katie Weaver	GIS Analyst (Tighe Bond)	KJweaver@tighebond.com
Liz Bone	Energy Comm	lizbone2000@gmail.com
pat jorczak	Resident	patjorczak@comcast.net
John Stankiewicz	Police Chief	
Marin Brugnoli	Resident	
Nick Bone	Resident	
Heather Barressi	resident	
Michael Barressi	resident	
Stephen Crane		SCrane@longmeadowma.org
Alex Haldopoulos	RESIDENT	
Cath Haldopoulos	RESIDENT	