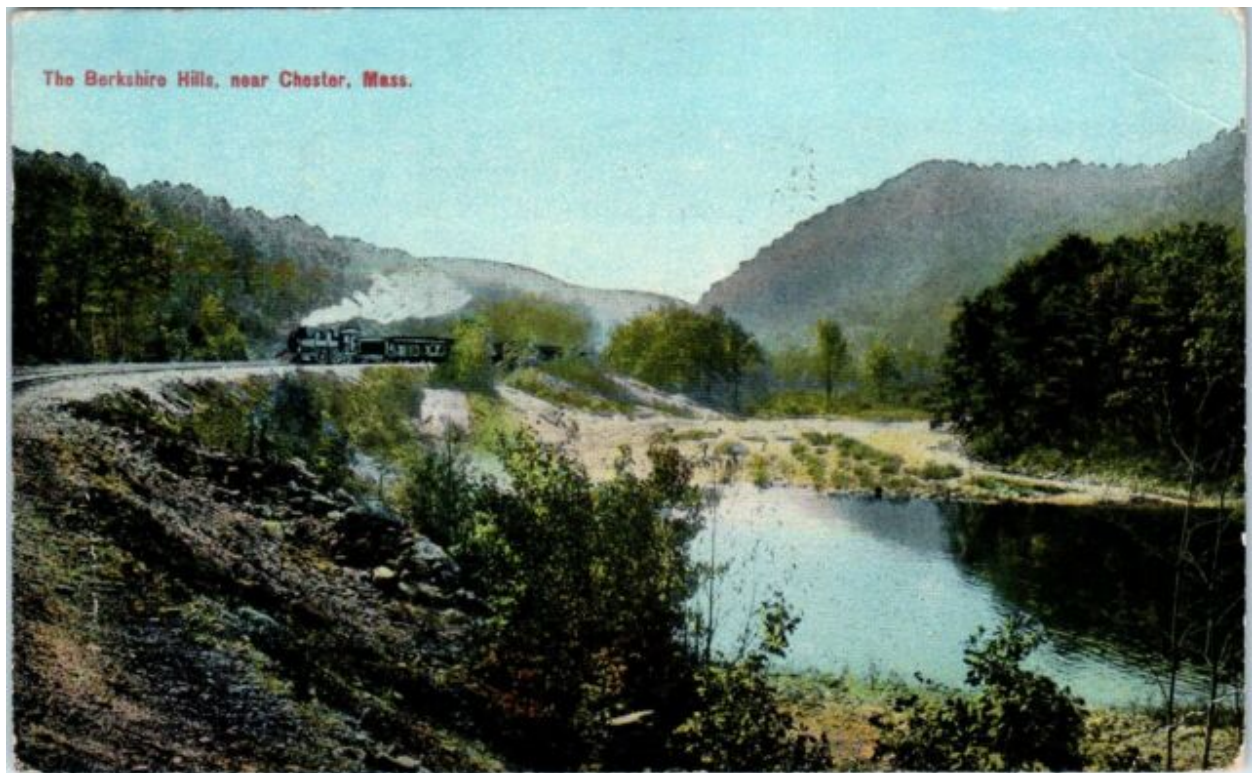


Municipal Vulnerability Preparedness Community Resilience Building Workshop



Town of Chester, MA

SUMMARY OF FINDINGS

June 14, 2021



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Walker Brook, which feeds the west branch of the Westfield River in downtown Chester, is one of many surface water resources in town.

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Overview

Located in the foothills of the Berkshire mountain range, the Town of Chester is no stranger to harsh weather. Recently, however, climate change has caused more severe weather events, resulting in seasonal weather pattern fluctuations across the Pioneer Valley. The Town of Chester’s emergency response team and residents are realizing that events that had been relatively predictable and seasonal, such as riverine flooding, the “mud season” freeze/thaw cycle of unpaved roads, and severe snow or ice storms, are now occurring with much more frequency and unpredictability than in the past. Weather events such as these are at best a nuisance, and at worst cause or contribute to public health, environmental, and/or economic crises. Examples of recent events that disrupted routine activity in the town include:

- A 2008 ice storm, during which one-and-a-half inches of ice accumulated on tree limbs and utility wires. Downed electrical wires resulted in extensive power outages that lasted over a period of four days.
- Tropical Storm Irene (2011), which resulted in heavy flooding that washed out sidewalks, damaged bridges and water lines, and caused considerable damage to a portion of MA Route 20.
- A large rainstorm in February 2016, during which two-and-a-third inches of rain fell overnight. Flooding occurred on many roads, and several unpaved roads were washed out. A state of emergency was declared.



Walker Brook flooded during Hurricane Irene and caused extensive damage to the Walker Island Campgrounds.

Additionally, while not weather-related, the systems disruption caused by the novel coronavirus disease (COVID-19) pandemic further revealed global and local vulnerabilities to emergency response to widespread disasters. As once-routine visits to common areas and public spaces, such as the town hall, have become rare over the past year due to social distancing recommendations, so too have traditional communication methods employed by this small town. With in-person meetings of boards and commissions and public gatherings discouraged or canceled, the town has been forced to rely more on virtual and telecommunication strategies. In many western Massachusetts communities without reliable access to high speed internet, reliance on virtual meetings alone has led to concern about reduction of public participation and challenges regarding dissemination of information.

These and other recent events in nearby communities have reinforced urgency for the planning and implementation of climate resilience and adaptation activities while simultaneously ensuring coordinated and

prioritized response. Pioneer Valley communities such as Chester are leading the way to reduce the exposure and vulnerability of their citizens, infrastructure, and ecosystems to future severe weather events, which ultimately 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 Chester used the Municipal Vulnerability Preparedness (MVP) Planning grant as an opportunity to integrate these objectives into existing programs. In 2020, the Town successfully pursued and received funding from the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) to advance a Community Resilience Building 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 2021 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 Chester's resilience to natural and climate-related hazards today and in the future.

Community Resilience Building Workshop and Public Outreach

The Town of Chester employed a unique “anywhere at any scale” community-driven process known as the Community Resilience Building (CRB) framework to host two two-hour virtual workshops (March 30 and April 6, 2021) and one three-hour virtual workshop (April 10, 2021). While the CRB would normally be held in-person during either two four-hour workshops or one eight-hour workshop, the stay-at-home guidance ordered by the Massachusetts Department of Public Health required the MVP planning team to develop innovative methods to bring stakeholders together while maintaining social distancing practices. 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 business stakeholders, and consultants from the Pioneer Valley Planning Commission. The CRB'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.

Approximately 15 participants from Town boards and committees, land-holding organizations, community organizations,



Community members had the opportunity to participate in four pre-CRB "MVP Mini Sessions" to provide their input on resiliency in Chester.

and other interest groups attended each of the three CRBs, which included a combination of topical presentations and large group activities. Pioneer Valley Planning Commission staff began the workshops with a presentation outlining the workshop process and goals, updating participants on past and ongoing local planning efforts relevant to the specific topic of that workshop, and presenting new state-provided climate projection data to enable both decision-support and risk visualization. Participants then engaged in a rich dialogue and shared ideas and experiences around topical features and possible strategies to shore up resilience to climate threats.

Each of the three CRB workshops was recorded and posted to [PVPC's YouTube channel](#) so that members of the public could review the proceedings at their own

availability. The recording of workshop #1 (Infrastructure, March 30) received 25 unique views, while workshops #2 (Environment, April 6) and #3 (Society, April 10) each received eight views.

Prior to the CRB workshops, Chester's MVP Community Liaison, Meredyth Babcock, spearheaded four "MVP mini session" events, open to the public, with participatory mapping and informational interviews. Two of these events took place at the Chester Railway and Museum (Saturday, January 30 and Sunday, January 31, 2021) and two were held at the Chester Visitors' Center (Saturday February 6 and Saturday March 6, 2021). The events were publicized via newsletter and inserts in the municipal tax notice mailed to every residence in town. Additionally, Ms. Babcock maintained an MVP mailing list for interested community members who provided their contact

information via the Chester Town website, and an article was published in the February 4, 2021 print edition of *The Country Journal* which described Chester's MVP process and ways that interested community members could participate.

Climate Projections for the Westfield River Basin

Climate change is impacting communities around the world, and residents of Chester and elsewhere in the Westfield River Basin see these changes and their impacts almost every day. New climate projections from the Northeast Climate Science Center at the University of Massachusetts show with more certainty than ever that these changes can be expected to continue. Projections are based on simulations from the latest generation of climate models from the International Panel on Climate Change and scenarios of future GHG emissions, and are

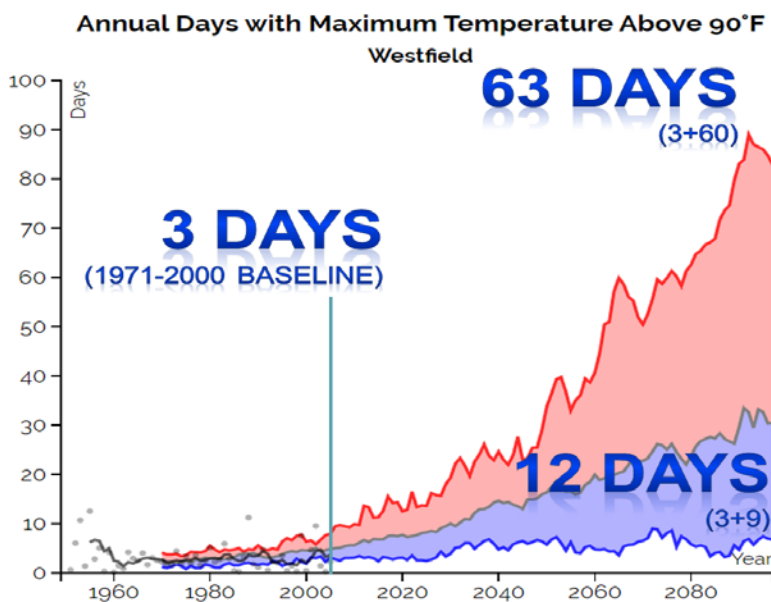
downscaled to the watershed and county level across the Commonwealth of Massachusetts.

Chester lies within the Westfield River Basin, where projections show that by the end of this century, communities could see more than 9 inches of additional rainfall annually over a 1971-2000 baseline of 50.7 inches per year. The winter season is expected to experience the greatest seasonal increase both in total precipitation and the frequency of heavy downpours, or days receiving precipitation over one inch. Projections also suggest that summers may be drier and with an increase in series of days without any rain at all.

With regards to temperatures, projections show that annual average and maximum temperatures will continue to rise. Even a very small rise in average temperatures can cause major changes in other factors, including impacts on species and ecosystem health and the relative proportion of precipitation that falls as rain or snow. Beyond this general warming trend, the

change that may impact Chester and neighboring communities the most is the increase in very hot days. Projections indicate a 2,000% (60 day) increase in 90-degree days per year by the end of the century from a baseline average of three days per year. Generally, extreme heat is considered to be over 90°F, because at temperatures above that threshold, heat-related illnesses and mortality show a marked increase. Heat waves can lead to illness and death, particularly among individuals with existing health risk factors.

Finally, projections indicate an increase in the frequency and magnitude of extreme weather. This



Climate modelling from the Northeast Climate Science Center shows that Chester may experience up to 63 days per year over 90°F by the end of the century.

could come in the form of tropical storms, or other high intensity wind and rain events. Here, too, the greatest changes will occur in the spring and winter.

Top Hazards & Vulnerable Areas

Leading up to the workshop, PVPC worked with input from Town officials to identify some of the top ongoing concerns and challenges for Chester. In order to ensure a streamlined and efficient use of time during the virtual meeting, the core Town planning team made the decision to pre-identify the top four hazards to be addressed within the CRB matrix. In the first CRB workshop, PVPC presented a variety of past and current weather- and infrastructure-related challenges the town faces and described these four hazards in order to assure agreement among the stakeholder participants that these were in fact the most pressing hazards facing the town presently and in the future. These challenges were identified based on findings from previous planning processes such as Chester's 2016 Hazard Mitigation Plan, stakeholder input, and new climate change projections.

Top Hazards

The top four hazards for the workshop as agreed upon by the CRB participants were:

- **Extreme Heat (including temp fluctuation)**
- **Intense Rainfall and Flooding (Localized & Riverine)**
- **Winter Weather**
- **Wind**

Areas of Concern

Transportation Infrastructure: the age and condition of culverts; riverine and

stormwater flooding of MA Route 20 and other roadways; passability of roads in times of emergency, generally; the repair and seasonal passability of dirt roads, specifically; and the repair and effects of the CSX railway

Electrical Infrastructure: maintenance and vulnerability of the municipally-owned electric distribution system, especially along MA Route 20; the functionality of the homes located outside of the municipal electrical



Chester stakeholders had many concerns regarding the impact of flooding on infrastructure such as bridges, roadways, and culverts.

distribution system

Natural Resources: loss of farmland to development; the impact of solar development specifically on natural resources; the impact of vegetative and insect invasive species on street trees, forested areas, riparian corridors, and agricultural lands; water quality and erosion in river and stream systems

Drinking Water Infrastructure: Age and condition of the water treatment plant; age and condition of pipe conduit connecting

Horn Pond to Austin Brook Reservoir; maintaining reservoir levels and groundwater well functionality during drought; water quality within Horn Pond and Austin Brook Reservoir

Social Vulnerabilities: small tax base and very few businesses; aging population; lack of readiness in land use and development regulations to protect natural resources from potential increase in development demand from new families and residents



Select Board member Richard Holzman and Fire Chief Richie Small discuss Chester's assets and vulnerabilities in regards to the changing climate.

Current Concerns & Challenges by Hazard

The Town of Chester faces multiple challenges related to the impacts of climate change and natural hazard-related weather events. In particular, workshop participants expressed concern over the effect of extreme weather on aging infrastructure; and that all residents' needs be met after an extreme event.

Chester'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 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 protect the high quality of Chester's natural resources. Finally, participants expressed apprehension about protecting drinking water quality for the roughly 50% of town residents who rely on public water supply. The conversation included the need to better understand adjacent land use impacts on the water quality of the town's two drinking water supply reservoirs, Horn Pond and Austin Brook Reservoir, and the need to assess the condition of the associated infrastructure.



The old Chester railroad station is a visual reminder of the town's historical status as a railhub for the region.

Specific Categories of Concerns & Challenges

Transportation Infrastructure: The specific issues identified within Chester's roadway network were two-fold: infrastructure maintenance and culvert functionality. Road passability is important for residents who may need to evacuate or travel in case of emergency, and it was noted that MA Route 20, an evacuation route and the major roadway passing through Chester's population center, experiences flooding in several locations. Stakeholders additionally recognized that undersized culverts, breached by runoff from more frequent and more intense rain, are impacting local residential roads as well. In some instances, transportation barriers caused by failing culverts are exacerbated by poor conditions on dirt roads, leaving residents of areas such as Abbot Hill and Taft Hill stranded during "mud season" rain events. In fact, dirt roads themselves comprised a large portion of the conversation given their vulnerability to fluctuating temperatures, rainfall and snow melt events, and wash outs.

Some workshop participants also expressed concern that the three bridges that connect downtown Chester to the northern part of town are vulnerable to riverbank erosion, sedimentation, and ice-damming around their footings. There was concern that this could impact the condition and safety of the bridges. Additionally, the need for redesign was identified as high waters come close to breaching the bridges' surface.

The CSX railway, which winds alongside the Westfield River and MA Route 20 throughout town, also poses a few unique concerns. Used to ship cargo through the region, the CSX railway is an active line. The

railroad company's maintenance of the right-of-way around the tracks has been lax, and the Town has had to respond to several small brush fires caused by sparks from rail use hitting dry brush. Additionally, CSX's management has been notoriously difficult to reach, and the town staff feels they have little ability to collaborate with the railroad on issues such as land use and management.

Drinking Water Infrastructure: Approximately half of Chester's households are serviced by the public drinking water system fed by Austin Brook Reservoir, with Horn Pond as a backup supply. The town's water treatment plant and drinking water transmission mains are known to be aging. Workshop participants questioned what would happen to their access to clean drinking water should a catastrophic event take the Town's system offline, or should the water become contaminated. One participant noted that as Horn Pond is located in the neighboring Town of Becket, the Town of Chester has little ability to protect the pond's water quality via land use and land management regulations around its shores.

The remaining half of Chester's residents does not have access to public drinking water supply and instead rely on private drinking water wells. To buffer against the threat of drought, workshop participants noted the need to prepare and implement a Water Conservation Plan, including planning for targeted public outreach to well owners.

Regulatory Infrastructure & Potential for Climate Migration: Anticipating Chester to be an attractive location for potential climate migrants, workshop residents talked seriously about how to ensure that their land use and development regulations were ready to guide new development in a way

that is harmonious with low impact development and natural resource protection. At the same time, stakeholders prioritized strategies to make sure that the town was welcoming to newcomers of all types, whether individuals, young families, working or retired, and of any race or ethnicity. Participants envisioned that a revitalized Chester could simultaneously be one of inclusion and innovation, while still retaining its traditional New England small town charm and open spaces.

Natural Resources: A common theme throughout the workshop was the loss of farmland, forested lands, and other open space to residential development and development of lands for energy production, such as solar and wind power. Stakeholders identified the need to review and update zoning and development code to ensure the protection of ecosystem services and habitat while at the same time allowing for the generation of important services such as housing and renewable energy.

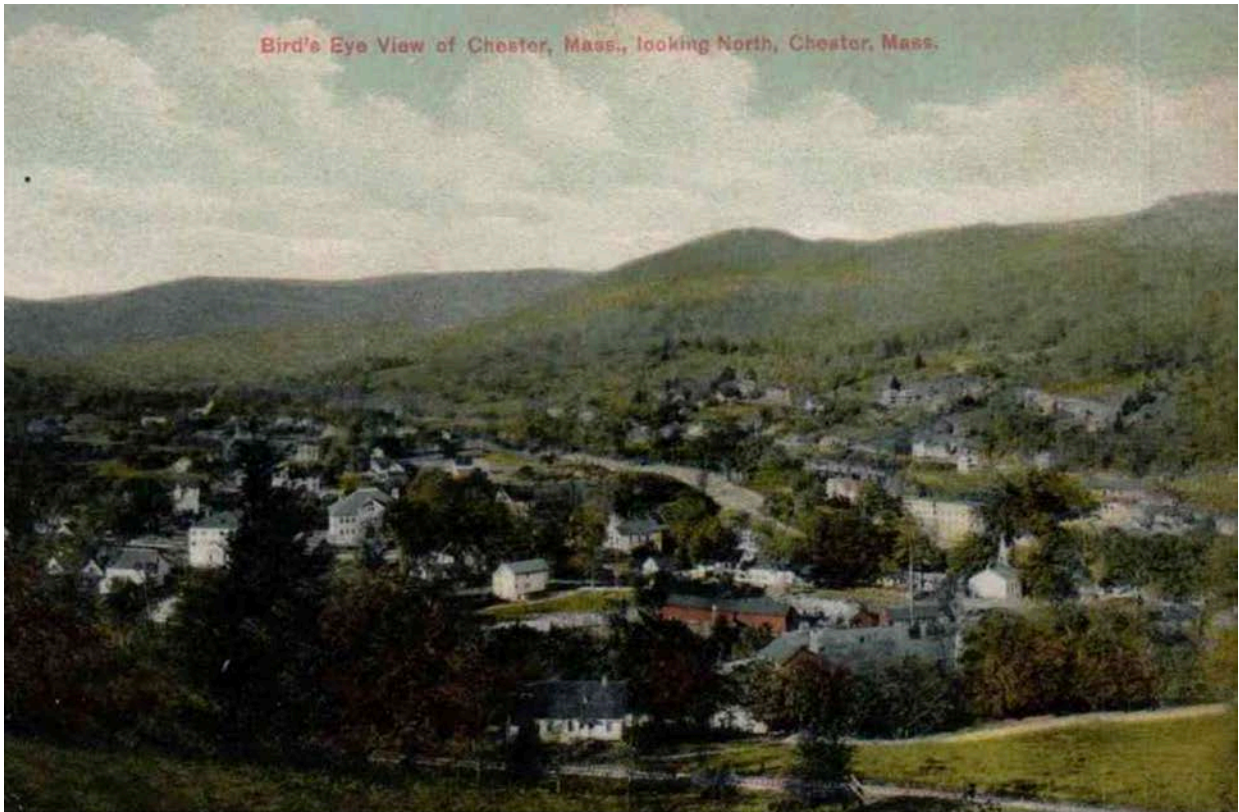
Given Chester's prevalence of surface water resources, including the west branch of the Westfield River and numerous brooks and streams, workshop participants paid special attention to both water quality and locations experiencing chronic flooding. Participants identified the need to model flood storage capacity across the Westfield River watershed, and identify locations within town boundaries and in upstream communities where storage capacity could be improved.

The stakeholders also conversed about the prevalence of forested land in Chester, and the opportunity to work with landowners to ensure that forestry best practices were implemented to control the spread of invasive species. Additionally, participants discussed exploring the ability to manage

resources in accordance with climate change induced habitat shift, and to educate landowners and residents about the value that open space, including forested lands, provides in mitigating climate change. Outreach around this subject seemed especially important to the group, given that Chester has many permanently protected lands that do not contribute to tax revenues. The group also championed support of Senator Hinds' efforts to revise the formula for payment-in-lieu-of-taxes (PILOT) made for state-owned land. A revised formula would not be based solely on real estate values, but rather the range of important values provided by large tracts of forested land in western Massachusetts, including sequestration of carbon, improved air and water quality, and recreational enjoyment, all of which provide for greater resilience across Massachusetts.

Significantly, workshop participants were eager to develop creative strategies to capitalize on the pristine, and sometimes unique, natural resources abundant in the town. Rather than identifying extractive strategies, participants developed ideas for promoting commercial activity centered on protection of natural resources, such as nature-based experiential programming for grade school and university-aged students, active and passive outdoor recreation, and wilderness expeditions.

Social Vulnerabilities: As with many Western Massachusetts communities, Chester has an aging population. The group identified a growing concern that residents may be less able to meet their own needs as independently as they used to, and so explored ideas for increasing access to public transit to the region and for establishing buddy systems checking in on one another. Workshop participants also discussed the need to ensure that new



Chester has long been considered scenic, and prides itself on its abundance of natural resources and opportunities for outdoor recreation.

public developments and redevelopments followed best practices for accessible design and for pedestrian comfort, with ideas including the installation of public benches, preferably located in shady and sheltered areas, and other public gathering spaces.

Because seniors may be more at risk for health issues related to extreme heat and cold, participants also wanted to ensure that local heating and cooling shelters were stocked with necessary amenities and that information was available regarding their locations and open hours.

Stakeholders acknowledged that the weather now is different than residents of Chester have traditionally experienced, and so many homes and other buildings are unequipped with systems such as air conditioning. As the town is projected to

experience more weather and temperature extremes in the future, energy retrofits will be increasingly important in safeguarding the comfort and livability of existing building stock.

Current Strengths & Assets

As a result of both Chester's broad experience with extreme weather and residents' pride of place, workshop participants were quick to point out their communities' strengths in responding to the challenges identified above. Reinforcing and expanding upon these strengths and community assets to increase resiliency against the impacts of climate change is a

common theme to the proposed actions within this report.

Some of the key strengths discussed included:

- Scenic areas and natural attractions for outdoor recreation, such as the Highlands Footpath network, the Keystone Arches trail, Gobble Mountain, and the Chester-Blandford State Forest
- Forested land cover, open space, and other natural resources which contribute to a healthy environment
- Proximity to the Westfield River and other surface waters
- The historic Chester Railroad Museum, which is a tourist attraction, and the existing railroad infrastructure, which currently serves freight traffic but could feasibly return to passenger use should the Commonwealth invest in east-west rail
- Location along MA Route 20, a state-designated scenic byway, known as the Jacob's Ladder Scenic Trail Byway
- Farmland in Agricultural Preservation Restriction
- Horn Pond and Austin Brook Reservoir
- Chester Theater Company and proximity to Jacob's Pillow Dance School and Festival in Becket, MA, both of which attract tourists to the area

Top Recommendations to Improve Resilience

Workshop participants identified 48 actions that the Town of Chester, in collaboration

with neighboring municipalities, regional partners, and state agencies, should take to improve resilience to climate change impacts.

After the virtual workshops, participants were asked to respond to a survey and indicate their top three priority strategies from each of the infrastructure, environment, and social categories. The strategies presented in the survey were assembled from combining like actions from within the matrix developed at the CRB workshops. PVPC staff then identified the top three survey strategies from each category which had the most votes. The social category had a three-way tie for second place, and so there were a resulting total of 10 top priority strategies that emerged from this survey process.

These ten priority actions are listed in the table below in no specific order. The highest four priority actions, as subsequently voted on by the Chester community at large (see section on the Public Listening Session), are shown in green bold, and those which include a nature-based solution are indicated with "(NB)."

- (NB) Address concerns regarding the flooding of the three downtown bridges by developing redesigns that consider the stability of the bridge in addition to the preservation and/or enhancement of the local riverine habitat. The redesigns should address best management practices for infrastructure maintenance and maintenance of the stream beds around the bridges. Submit a written request to the MA Department of Ecological Restoration (DER) for technical assistance in making river crossings more efficient for vehicular traffic and water passage,

etc., and to determine the causes of sediment build-up and blockage. Additionally, consult with the MA Department of Transportation (MDOT) to ensure that Town can take advantage of all relevant programming and grant opportunities for roadway infrastructure improvements.

- Improve and ensure evacuation readiness by:
 - determining whether plans exist for evacuating via MA Route 20 when the bridges are impassible;
 - conducting a feasibility study for improving Cooper Road enough that it can be passable by All Terrain Vehicles (ATVs)/Emergency Response vehicles for transportation during emergencies; and
 - reviewing and assessing evacuation plans for all residents, and include a public engagement component.

- **(NB) Address undersized and/or blocked culverts and road-stream crossings and ensure passability during emergencies.**
 - **Institutionalize surveillance of culverts and associated waterways to locate and remove debris and downed trees, etc., to allow water to move more freely though the system and prevent roadway washout and damage associated with blocked culverts. Work with DER to**

learn more about the culvert replacement grant and the components of a competitive application. Ensure that when replacing culverts, to Town uses design standards to allow for wildlife passage and improved flow passage, which would lead to less flooding.

- **Around those road-stream crossings and culverts known to be prone to disrepair, flooding, and/or washouts (e.g., Abbot Brook Culvert, Abbot Hill Road, Taft Hill Road, Middlefield Road), the Town should assess existing trails and determine the feasibility of using and/or creating new trails for passage by ATV, horseback, by foot, etc. for alternative evacuation. Determine the Town's emergency response capacity with ATVs, and consider acquiring some if there are none currently.**

- (NB) Conduct a multi-town watershed-wide assessment of flood storage capacity to reduce flood damage along the west branch of the Westfield River.
- (NB) Work with DER and other agencies to inventory potential invasive plant species in Town. Initiate a local volunteer program, including students, to implement potential control measures.

- **(NB) Conduct a regulatory review of all bylaws and regulations regulating development in Town to ensure protection of natural resource and ecosystem services, and develop recommendations to curb any undesirable impacts of development such as from residential, commercial, and infrastructural (cell towers, windmills, solar arrays, etc.) development, on open space and natural resources.**
- **Renovate and preserve the old Chester Elementary School as a community building with shared use agreements for education, meetings, gatherings, and town offices, etc.**
- (NB) Build the local economy and protect natural resources simultaneously by investing in environmental education for both grade school students and at the community at large.
 - Work with the high school administration to explore potential for collaboration with nearby school districts and developing a more robust cultural and environmental curriculum that capitalizes on Chester's / the Gateway Region's natural assets to retain and attract students. Develop the school district as an attractive alternative educational experience, such as including exchange student programming and outward-bound/ expeditionary learning curriculum for experiential learning. Engage with local and regional schools to ensure local environmental education around west branch of Westfield River and other wildlife areas. Celebrate unique geology and take advantage of unique conditions in town.
 - Develop inter-generational, community-based experiential learning and expeditionary style programming and place-based, natural environment learning in town for both residents and tourists. Consider creating a public, inter-generational hostel and developing programming such as Worldwide Opportunities on Organic Farms (WWOOF) which would attract international and national students to come participate in Chester's agricultural economy.
- **Ensure the town website is updated and that all departments and committees keep it updated with relevant news and information. Ensure residents know about and sign up for Code Red alerts. Outreach can include hosting a booth at Chester on Track (annual event) to ensure information about Code Red, elected officials, and events/initiatives is dispersed; using the "Watts News in the Hilltowns" newsletter that is included in energy bills to share information; and working the fifth grade classes to demonstrate how**

**students can access information
about their town.**

A full list of the final recommendations from the CRB Workshop, organized by high, medium, and low priority, follows on the next few pages. The actions shown in bold were selected by the workshop participants as either a top priority, or as part of an expanded top priority project design.

Please note that within each category, the actions are not in any specific order.

Infrastructure	Society	Environment		Feature	High Priority Actions ¹
X			1	Dirt road network	Partner with neighboring MVP certified hilltowns and develop a regional dirt road condition assessment and prioritized maintenance plan, with emphasis on nature-based stormwater solutions.
X			2	Drinking water wells	Prepare and implement a Water Conservation Plan, including a plan for targeted public outreach.
X			3		Work with the Chester Highway Department and MDOT to identify potential areas for reduced or substitute road-salt use.
X			4	Municipal water system	Implement the proposed Water Supply Protection District to regulate land use activities and set performance standards for activities on privately owned land within the watersheds, and other actions from the Chester Source Water Protection Plan.
X			5		Investigate water system for leaks.
X			6	Electric grid/minor substations; municipal utility (Chester Municipal Electric Light)	Develop a program similar to MassSave in order to incentivize energy efficiency upgrades in homes (participate in the Renewable Energy Trust).
X			7	Dams	Identify dam owners and contact regarding inspection and maintenance requirements. Develop an analysis of impacts during high rainfall events.
X			8	Bridges (sedimentation)	During redesign, consider the effects of quality of the habitat and environment in addition to the stability of the bridge itself, including the problematic "center island" under Main Street bridge. The bridge should better allow for natural transport of sediment and environmental debris down the river, and not restrict water passage or water storage in the river. Conduct an environmental review of best management and maintenance around all three bridges.
X			9		Submit written request to DER for technical assistance in making crossings more efficient for traffic and water, etc., discover why it is blocking up. DER can conduct that study and help develop a plan.
X			10		Consult with MDOT to ensure Town can take advantage of all relevant

¹ Actions in **BOLD** were identified by MVP workshop participants as top priorities

Infrastructure	Society	Environment		Feature	High Priority Actions ¹
					programming and grant opportunities.
X			11	Temporary/local emergency shelters	Ensure local/informal shelters are well provisioned: i.e., chargers for cell phones, etc.; food and water; blankets, etc. Ensure generators are well maintained, adequate generator fuel is stored.
X			12	MA Route 20	Publicize and distribute plans for evacuating when bridges are impassible.
X			13		Look into improving Cooper Rd enough that it can be used by ATVs/ER vehicles for transportation during emergencies.
X			14		Review and assess evacuation plan for all residents, and include a public engagement component.
x			15	Culverts, roadways and systems prone to disrepair / flooding / washouts (Abbot Brook Culvert, Abbot Hill Road, Taft Hill Road, Middlefield Road)	Implement strategies in the Chester Open Space and Recreation Plan in regards to the protection of forests and floodplains in order to reduce flashiness in stream and drainage systems piped through culverts, alleviate flooding risks downstream, and protect infrastructure and roads vulnerable to flooding.
X			16		Assess existing trails and determine feasibility of using and/or creating new trails for use by ATV, horseback, by foot, etc. for alternative evacuation.
X			17		Look into emergency response capacity with ATVs. Consider acquiring some if none currently.
X			18		Institutionalize surveillance of waterways to locate and remove debris and downed trees, etc., to allow water to move more freely though the system.
X			19		Work with DER to learn more about culvert replacement grant. The culvert would be upgraded to allow for wildlife passage and improved hydrologic passage. This would lead to less flooding.
		X	20	Waterbodies & Rivers	Conduct a multi-town watershed-wide assessment of flood storage capacity to reduce flood damage along the west branch of the Westfield River.
		X	21		Engage with schools (local/regional) to ensure local environmental education around west branch of Westfield River and other wildlife areas. Celebrate unique geology and take advantage of unique conditions in town.
		X	22	Invasive species	Work with Department of Ecological Restoration and other agencies to inventory potential invasive plant species in Town. Initiate a local volunteer program, including students to implement potential control measures.

Infrastructure	Society	Environment		Feature	High Priority Actions ¹
		X	23	Impacts of development such as from residential, commercial, and infrastructural: cell towers, windmills, solar arrays, etc.	Conduct a regulatory review to protect natural resource and ecosystem services. Ensure solar bylaw and zoning prioritizes using already cleared land for solar instead of cutting down forest; Consider alternatives such as floating solar installations on water bodies; Add specific impacts to address in the Special Permit process including topographic change, removal of cover vegetation, risk of erosion or siltation and increased stormwater runoff; Ensure known habitat areas are mapped and discouraged from development; Ensure scenic "sustainability" for viewsheds; Amend the Special Permit and Site Plan Approval Provisions in Zoning Bylaw; Add flood prevention and mitigation to the purpose section of the Subdivision Rules and Regulations; Ensure that the Development Impact Statement identifies impacts of the proposed development could have on the potential for flooding, and include mitigation measures, if deemed necessary by the Planning Board.
		X	24	Wind, Hydro, & Solar Power (Renewables)	Conduct a feasibility study of Chester Municipal Electric Light Company generating renewable power with solar, wind, and/or hydro-electric (from drop in grade from Horn Pond as piped to Water Treatment Facility at Austin Brook Reservoir) with battery technology to increase local energy resilience, reduce GHG, and include environmental impact study to ensure that increased development of renewable energy installations have a net positive impact on local ecology.
	X		25	Communications – alerts and technology	Ensure website is updated and that all departments and committees keep the website updated with relevant news and information and strive to optimize its potential. Ensure residents know about and sign up for Code Red alerts -- have booth at Chester on Track (annual event) to ensure information about Code Red, names of elected officials, and listings of events/initiatives is dispersed. Also use this event to recruit volunteers to help distribute information, update website etc. Consider using the "Watts News in the Hilltowns" newsletter that is included in energy bills to share information. Work with elementary school to teach fifth graders how to access information about their town.
	X		26	Climate-vulnerable residents with barriers to building resilience	Establish a buddy system for houses that are vulnerable to flooding to have a buddy on the hill, not vulnerable to flooding, who might check in to see if help is needed.

Infrastructure	Society	Environment	Feature	High Priority Actions ¹
			(income, youth, seniors)	
	X		27 Emergency services and volunteers	Host a community day with evacuation route demonstrations, gathering and food, and educational handouts on what to do during different types of emergencies.
	X		28 Historical buildings – Vulnerable to the river channel and flooding	Create public outreach material about understanding the past and planning for the future - How did people live before electricity and water in the taps - should some of this be taught or reclaimed?
	X		29 Land value/tax rates	Continue working with Senator Hinds to revise PILOT formula to ensure large tracts of forested land in western part of the state are fully valued for contribution to statewide resilience.
	X		30 Significant decline in enrollment at High School	Work with high school administration to explore potential for collaboration with nearby school districts and developing more robust cultural and environmental curriculum, including exchange student programming, outward-bound/validating expeditionary learning curriculum for experiential learning, and capitalize on Chester's / Gateway's natural assets to retain and attract students. Develop school district as an attractive alternative educational experience.
	X		31 Potential for climate migration	Partner with other communities in the region to conduct an analysis and model potential climate migration, especially in light of advent of high speed internet availability and pandemic migration, with goal of understanding potential population increase and what needs new residents may have. Include visioning, specific to each community, of what current residents may want to preserve and where they may want to concentrate new development and density.
	X		32	Use the results of this analysis and visioning to conduct local regulatory review of zoning and development code to ensure Chester is ready to welcome new residents and provide for their needs, amplify economic benefits, while preserving natural resources, ensuring climate resilient development.
	X		33 Opportunity for greater cultural inclusion via outreach, programming, recreational activities, business development,	Hold intergenerational, community-based experiential learning and expeditionary style programming and place-based, natural environment learning. Also consider a public, inter-generational hostel and developing programming such as Worldwide Opportunities on Organic Farms (WWOOF) which attracts international and national students to come participate in Chester ag and

Infrastructure	Society	Environment		Feature	High Priority Actions ¹
				etc. for both visitors and potential/prospective residents of Chester (translation, events, etc.)	economy.
	X		34	Franklin Regional Transit Authority and lack of other public transit	Advocate for increased public transit to assist aging population and connectivity generally to Chester: Reach out to BRTA to arrange for cross-county access (already approved by legislature) via public transit AND by continuing to advocate for E-W rail restoration, with emphasis on Chester stop.
	X		35	Outdoor Recreation / Quality of Life	Continue to assess, design, and implement pedestrian and cycling amenities in especially town center, and especially as connect to trailheads, train station, and businesses (see Alta Planning and Design's Urban, Rural and Suburban Complete Streets Design Manual for the City of Northampton and Communities in Hampshire County)
	X		36	Old Chester Elementary School	Renovate and preserve old school to be community building with shared use agreements for education, meetings, gatherings, and town offices, etc.

Infrastructure	Society	Environment		Feature	Medium Priority Actions
X			37	CSX Railroad & tracks	Set up partnership with CSX and other towns to prevent brush fires along tracks. Consider strategies such as placing rocks or removing leaves and brush along tracks.
		X	38	Wildlife Management Areas	Ensure a strong understanding of value of these lands for wildlife habitat to bolster strength of applications for programs such as culvert replacement, land acquisition, land protection/zoning for development, etc.
		X	39	Open Space - forests, parks, recreation areas	Adopt the Community Preservation Act (CPA) or develop a separate fund in Chester to provide additional funding for farmland and open space protection.

Infrastructure	Society	Environment		Feature	Medium Priority Actions
		X	40		Organize educational programs for forest landowners on the benefits to them of conserving, as opposed to developing their land.
		X	41		Work with private land owners to ensure they know about existing resources for forest management best practices, including managing for a diversity of tree species and ages, reduction of invasive species, etc.
		X	42	Agricultural lands	Work with landowners/farms to enlist with APR program, and map agricultural soils to know where they are for prioritizing protection.
		X	43	Wetlands and vernal pools	Create a pamphlet on the significance of vernal pools and the certification process. Identify potential vernal pools in Chester and add to assessor's maps to advise existing or prospective property owners of their presence. Certify vernal pools on willing properties by using certified volunteers and students.
		X	44		Consider developing an educational program for residents to highlight benefits of Chester's natural resources for mitigation and adaptation to climate change; how to be a good steward.
	X		45	Plans and regulations, designing for multi-modal and accessible connectivity	Explicitly allow for permeable pavement to protect natural resources, reduce urban heat island effect.
	X		46		Implement urban design for accessibility - benches and shaded areas for elderly to sit, rest, be out of the sun.
	X		47		Optimize utility of existing rights-of-way for multi-modal, multi-purpose use context-specific design strategies suitable for rural locations such as Chester. (See Alta Planning and Design's Urban, Rural and Suburban Complete Streets Design Manual for the City of Northampton and Communities in Hampshire County)

Infrastructure	Society	Environment		Feature	Low Priority Actions
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X			48	Horn Pond Reservoir (Becket)	Work with Becket to conduct an assessment of current land use and management on the ~17 properties (some are timeshare) surrounding Horn Pond, and how the land use may impact the water quality.
---	--	--	----	---------------------------------	---

Note: In most cases, actions are presented in the table above as written by CRB Workshop participants. Where proposed actions in their original form lacked clarity or detail, the project team expanded upon the action in order to promote project-readiness.

Public Listening Session

On March 10, 2020, due to the COVID-19 pandemic, Governor Charlie Baker issued a state of emergency and two weeks later directed the Department of Public Health to issue a stay at home advisory to all Massachusetts residents, encouraging self-isolation and social distancing protocols. Residents were advised to stay home and avoid unnecessary exposure during this time period, which at the time of this report extends from March 24, 2020 through an anticipated end date of May 29, 2021, with the state of emergency anticipated to end on June 15, 2021. Chester's Public Session occurred just after the social distancing requirements were lifted for vaccinated individuals, but still at a time when personal uncertainty regarding uninhibited reentry into group settings was still high.

Making the best use of the resources and tools available, the team opted to prepare for a virtual session, to be hosted in conjunction with a regularly scheduled Select Board meeting on June 7, 2021. Core team members collaborated on a virtual presentation that introduced the MVP process, reviewed climate change projections, and summarized all actions recommended during the CRB workshop. This virtual PLS presentation was attended by 15 residents and community members, including members of the core team and Select Board.

In addition to the PLS itself, the Town provided links on its [MVP webpage](#) for interested residents to view the draft Summary of Findings report and watch the previously filmed CRB workshops.

Residents and stakeholders that viewed the session and/or were interested in providing feedback on the draft Summary of Findings report were encouraged to do so by taking a three-question survey (open for responses from June 7 through June 14) to vote on the top priority actions, provide their own project ideas, and reaching out directly to project team members whose contact information was distributed at the session. The online survey received four responses, and the respondents were generally in agreement as to their highest priority strategies (see [Top Recommendations to Improve Resilience](#) and the survey results in [Appendix C: PLS Survey Results](#)). The MVP core team will continue to collect community input on priorities, and will utilize voting results and any comments submitted to guide future MVP finding priorities.

Workshop Participants

Approximately 15 participants from Town departments, committees and boards, large land owners, community organizations, and businesses were in attendance at each of the three MVP workshops. The participant check-in list is provided in Appendix C.

Citation

Chester Community Resilience Building Workshop Summary of Findings (2020). Pioneer Valley Planning Commission. Chester, Massachusetts.

MVP Working Group

Kathe Warden, Town Manager

Richard Holzman, Select Board

Bob Daley, Resident

Meredyth Babcock, Wild & Scenic Westfield River; community liaison

Workshop Facilitators

Patty Gambarini, Pioneer Valley Planning Commission

Corrin Meise-Munns, Pioneer Valley Planning Commission

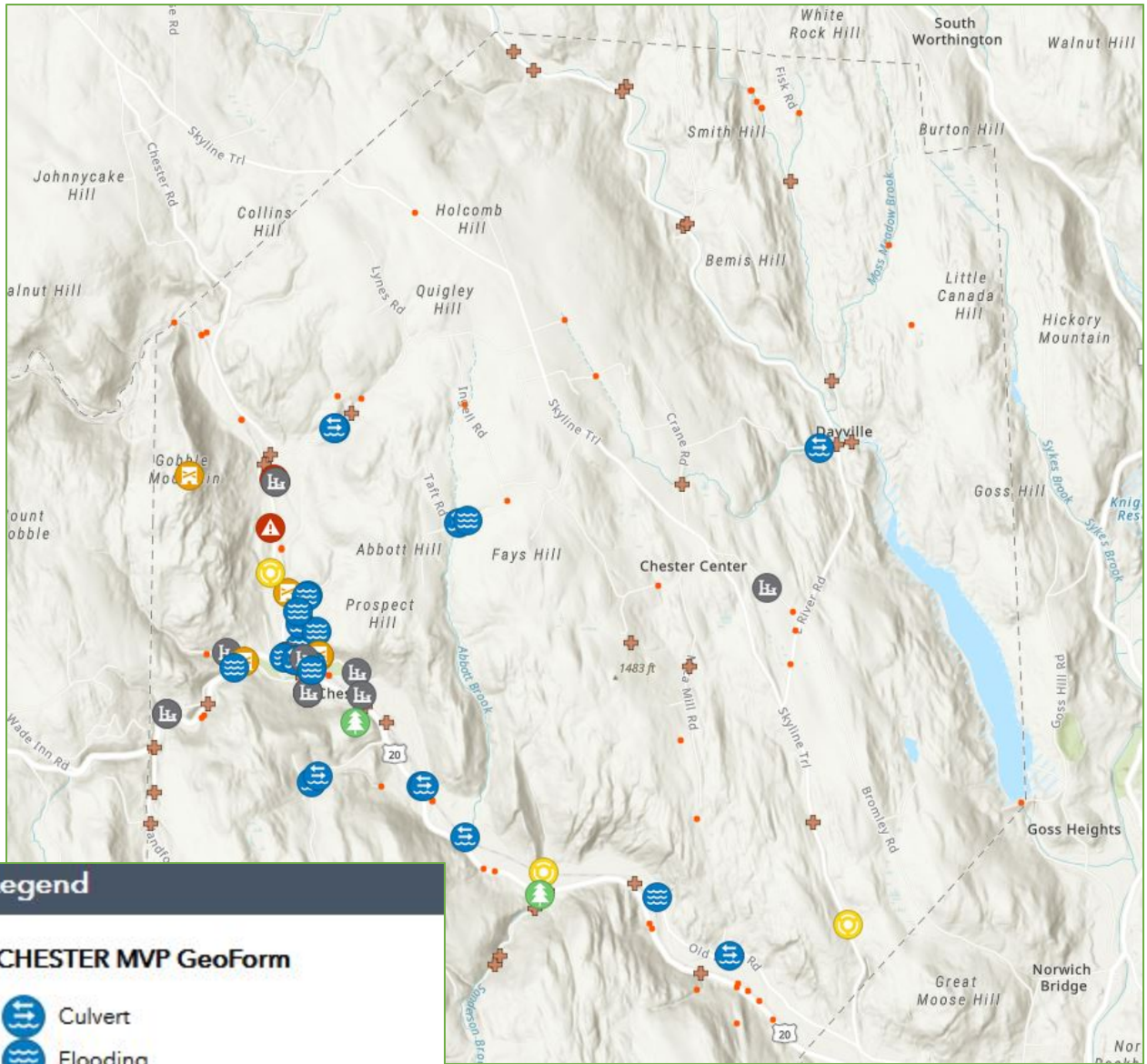
Emily Slotnick, Pioneer Valley Planning Commission

Acknowledgements

Special thanks to the Town of Chester staff and volunteers for their committed engagement in this process, and to the Chester Common Table for providing a meal for the attendees of the first CRB workshop. This project was made possible through funding from the Massachusetts Executive Office of Energy and Environmental Affairs.





Appendix A: Participatory Mapping Results

Participatory GeoForm Map




Legend

CHESTER MVP GeoForm

-  Culvert
-  Flooding
-  Historic Site
-  Natural Resources
-  Infrastructure - Other
-  Infrastructure - Transportation
-  Vulnerable Populations
-  Other

Bridge (Rail or Highway)

- 

NAACC_Nontidal_Connect_Assess

- 

Participatory GeoForm Data Collection

Name	Email	Feature_Type	Strength_Vulnerable	Comments	x	y
Jake	jdolinger@pvpc.org	Infrastructure - Other	Both Strength and Vulnerability	None	-8123211	5202419
Jake	jdolinger@pvpc.org	Natural Resources	Both Strength and Vulnerability	None	-8123311	5202011
Meredyth A Babcock	meredythbabcock@outlook.com	Culvert	Vulnerability	Perched culvert	-8123985	5201080
Meredyth A Babcock	meredythbabcock@outlook.com	Historic Site	Strength	Dave Pierce and Chet Bret helped create a river walk on the old rail line up to the Becket Quarry	-8125014	5202941
Meredyth Babcock	meredythbabcock@gmail.com	Culvert	Vulnerability		-8122226	5202622
Meredyth A Babcock	meredythbabcock@gmail.com	Culvert	Vulnerability	Needs assessment	-8122307	5201039
Meredyth A Babcock	meredythbabcock@gmail.com	Culvert	Vulnerability	In HMP 2016 Main Street Bridge identified as needing assessment due to sediment accumulation	-8122267	5201034
Meredyth A Babcock	meredythbabcock@gmail.com	Culvert	Vulnerability	Moderate Barrier	-8124229	5202969
Meredyth A Babcock	meredythbabcock@gmail.com	Culvert	Vulnerability	Identified as an undersized culvert by NAACC gravel from road has potential to degrade brook	-8123894	5201188
Meredyth A Babcock	meredythbabcock@gmail.com	Culvert	Vulnerability	RR crossing undersized, causing erosion up stream of culvert and because it is perched no fish passage to large cold water stream.	-8121718	5205066
Meredyth A Babcock	meredythbabcock@gmail.com	Vulnerable Populations	Both Strength and Vulnerability		-8121625	5200241
Meredyth A Babcock	meredythbabcock@gmail.com	Natural Resources	Strength	New Kiosk and information for trail system	-8124547	5205727
Sanderson Brook Falls Chester/Blanford State Forest	meredythbabcock@gmail.com	Natural Resources	Strength		-8120481	5199360
Katherine Warden	kwarden@townofchester.net	Historic Site	Both Strength and Vulnerability	Airway beacon owned by The Nature Conservancy and INTERESTED IN PRESERVING	-8125846	5205783
elizabeth massa	misslogcabin@aol.com	Historic Site	Both Strength and Vulnerability	strength because this is the last large scale standing granite saw in the State of MA, vulnerable because it is in a flood plain and on private property	-8123864	5203029
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability		-8124357	5203027
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability		-8126198	5202143
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength		-8124037	5202458
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength		-8124532	5205698
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability	Chester Town Hall	-8124357	5203027
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability	Chester Fire Station	-8126198	5202143
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability	Chester Police Station	-8124357	5203027
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength	Chester Fire Department, Secondary Station	-8117010	5204070
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability	Chester Elementary School	-8124532	5205698
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength	Highway Garage- Chester Highway Department	-8124037	5202458
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength	Water Department- DPW	-8124037	5202458
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength	Emergency Fuel Stations - Town Garage	-8124037	5202458
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability	Utilities - Chester Municipal Electric Light Department	-8124357	5203027
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength	Chester Transfer Station	-8123288	5202766
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Both Strength and Vulnerability	Non-Emergency Fuel Station - Wheeler Oil	-8124103	5202990
Luisa Gunn	gunnl@lafayette.edu	Infrastructure - Other	Strength	Water Treatment Plant	-8125286	5203076
Luisa Gunn	gunnl@lafayette.edu	Vulnerable Populations	Vulnerability	Mobile Home Park - Rice's Trailer Park	-8124617	5204980
Luisa Gunn	gunnl@lafayette.edu	Culvert	Vulnerability	HMP 2016 culvert replacement/repair	-8123863	5218147
Luisa Gunn	gunnl@lafayette.edu	Culvert	Vulnerability	HMP 2016 culvert replacement/repair	-8124035	5203952
Luisa Gunn	gunnl@lafayette.edu	Culvert	Vulnerability	HMP 2016 culvert replacement/repair	-8123646	5206512
Luisa Gunn	gunnl@lafayette.edu	Culvert	Vulnerability	HMP 2016 culvert replacement/repair	-8116209	5206216
Luisa Gunn	gunnl@lafayette.edu	Culvert	Vulnerability	HMP 2016 culvert replacement/repair	-8124148	5203512
Luisa Gunn	gunnl@lafayette.edu	Culvert	Vulnerability	HMP 2016 culvert replacement/repair	-8117582	5198427
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Route 8 and Route 20 - 2016 HMP identified flood vulnerability	-8131925	5200547
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Main Street 2016 HMP identified flood vulnerability	-8124245	5202958
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Middlefield Road 2016 HMP identified flood vulnerability	-8124395	5202997
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Riverfront Street 2016 HMP identified flood vulnerability	-8124173	5203151
Luisa Gunn	gunnl@lafayette.edu	Flooding	Both Strength and Vulnerability	Old State Road 2016 HMP identified flood vulnerability / Bridge replaced	-8118686	5199335
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Maple Avenue 2016 HMP identified flood vulnerability	-8123976	5202814
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Maple Street 2016 HMP identified flood vulnerability	-8124031	5202881
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Andrews Avenue 2016 HMP identified flood vulnerability	-8123987	5202880
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Route 20 2016 HMP identified flood vulnerability	-8125166	5202842
Luisa Gunn	gunnl@lafayette.edu	Other	Vulnerability	Skyline Trail 2016 HMP Tree Trimming vulnerability	-8115774	5198906
Luisa Gunn	gunnl@lafayette.edu	Other	Vulnerability	Middlefield Road 2016 HMP Tree Trimming vulnerability	-8124606	5204299
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Abbott Hill Road 2016 HMP identified flood vulnerability	-8121594	5205093
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Johnson Hill Road 2016 HMP identified flood vulnerability	-8123620	5206519
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Cooper Drive 2016 HMP identified flood vulnerability	-8124068	5203930
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Prospect Street 2016 HMP identified flood vulnerability	-8124193	5203706
Luisa Gunn	gunnl@lafayette.edu	Flooding	Vulnerability	Soisalo Road 2016 HMP identified flood vulnerability	-8123905	5203395
Meredyth Babcock	meredythbabcock@gmail.com	Other	Strength		-8120424	5199715
Meredyth Babcock	meredythbabcock@gmail.com		Both Strength and Vulnerability	RR keeps the river at certain locations from accessing its floodplain	-8124437	5204670
Meredyth Babcock	meredythbabcock@gmail.com	Historic Site	Strength	A unique round house no access privately owned	-8124354	5203995
					-8126148	5202080
elizabeth massa	misslogcabin@aol.com	Historic Site	Both Strength and Vulnerability		-8123865	5203024

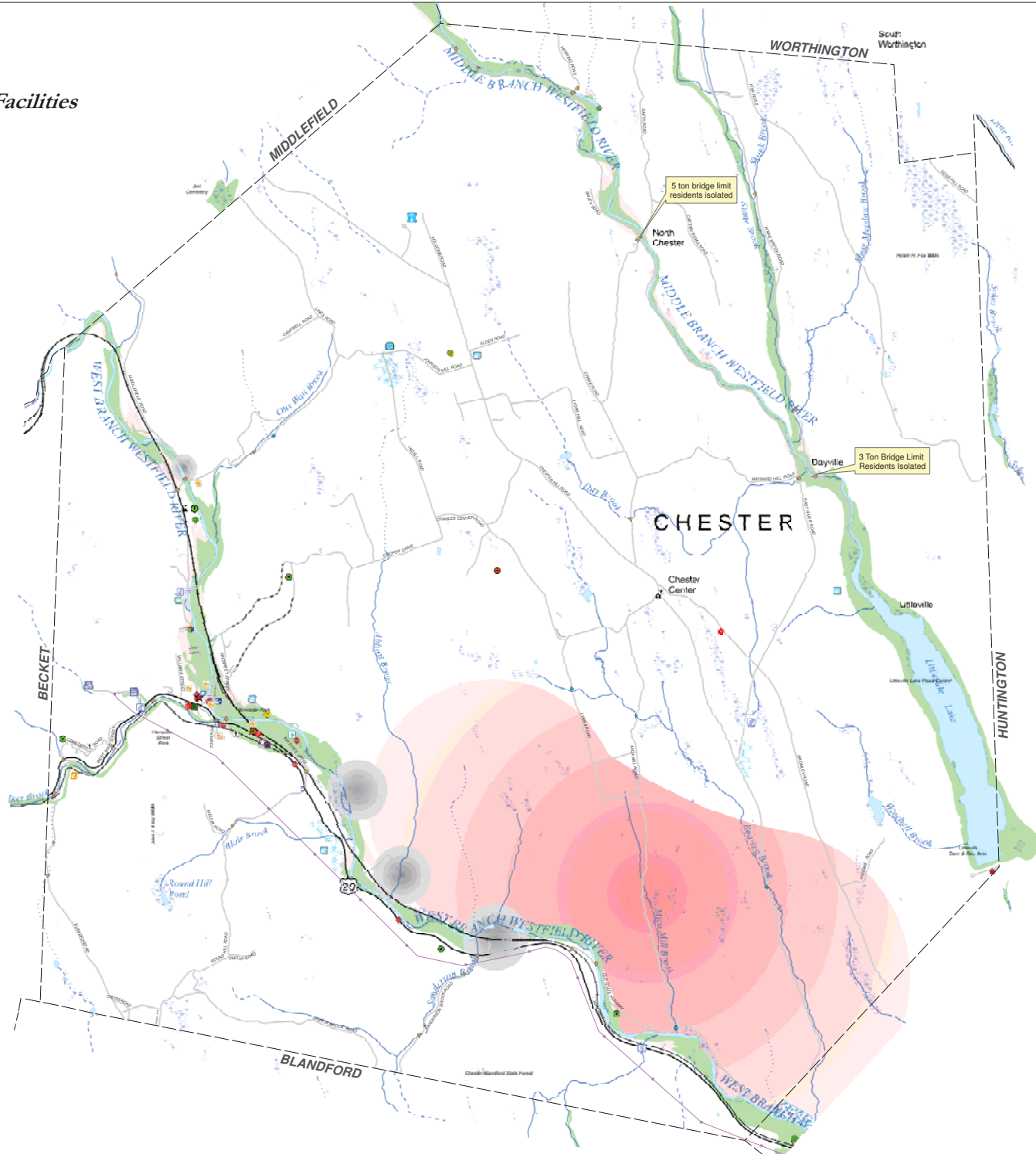
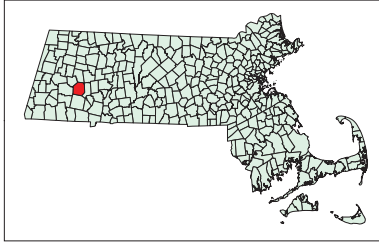
Hazard Mitigation Map
(displayed at “Mini MVP Sessions”)

Chester, Massachusetts

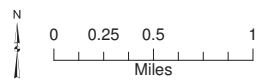
Predisaster Mitigation Plan

Past and Present Hazards with Critical Facilities

July, 2016



- Primary Emergency Operations Center
- Alternate Emergency Operations Center
- Shelter
- Police Station
- Fire Station
- Helicopter Landing Zone
- Public Well
- Public Surface Water Supply
- Water Storage
- Radio Communications
- Cell Tower
- Telephone Cross Box or Switching Station
- Gasoline and Petroleum
- Propane Storage Facilities
- Emergency Generator
- ★ Town or City Hall
- Post Office
- Transfer Station
- Library
- Churches
- Cemetery
- Power Plants
- Water Treatment Plant
- FAA Beacon
- Bridge
- Culvert
- Railroad
- Transmission Line
- ◆ EPA Tier II Hazardous Materials
- ▲ School
- Daycare or Nursery
- Senior Housing
- Mobile Home Park
- ▲ Campgrounds
- Unknown Dam Hazard
- High Hazard Dam
- Significant Hazard Dam
- Low Hazard Dam
- Localized Flooding and/or Beavers
- Erosion
- Snow Drifts
- MicroBurst
- Wild Fire Area
- Wetlands
- 100 Year Flood Zone
- 500 Year Flood Zone


























































Appendix B: CRB Workshops

Attendance

Chester MVP Planning Workshop 3-30-21

Attendees




































-  Patty Gambarini (Me)  
-  Corrin Meise-Munns (Host)   
-  Emily Slotnick   
-  14135649016  Kathe Worden
-  richardholzman  
-  Andy Myers  
-  Ann's iPad  
-  Bob Daley  
-  Carrienne MVP  
-  Chris Martenson  
-  Dave Pierce  
-  Erin Patrick  
-  Highway  
-  Leanda Fontaine (MDFW)  
-  Liz Massa  
-  Lora Wade  
-  Meredyth Babcock  
-  Peggy Gravelline  

Chester MVP Planning Workshop 4-6-21

Attendees

▼ **Participants (17)**

Find a participant



























PG	Patty Gambarini (Me)	 
CM	Corrin Meise-Munns (Host)	 
A	Andy	 
DP	Dave Pierce	 
MB	Meredyth Babcock	 
R	richardholzman	 
BD	Bob Daley	 
	elaine gilmore	 
	14135649016	
CM	Chris Martenson	 
EI	Erin's iPhone	 
	Leanda Fontaine (MassWildlife)	 
LM	Liz massa	 
L	LWade	 
	Markelle Smith	 
PG	Peggy Gravelline	 
K	kwarden	

Chester MVP Planning Workshop 4-10-21

Attendees

Participants 12

Find a participant

- PG** Patty Gambarini (Me)  
- CM** Corrin Meise-Munns (Host)    
- AM** Andy Myers  
- BD** Bob Daley  
-  John Ringeling  
- KW** Kathe Warden, Chester  
-  Leanda Fontaine (MassWildlife)  
- LW** Lora Wade  
- MB** Meredyth Babcock  
- PG** Peggy Gravelline  
- R** richardholzman  

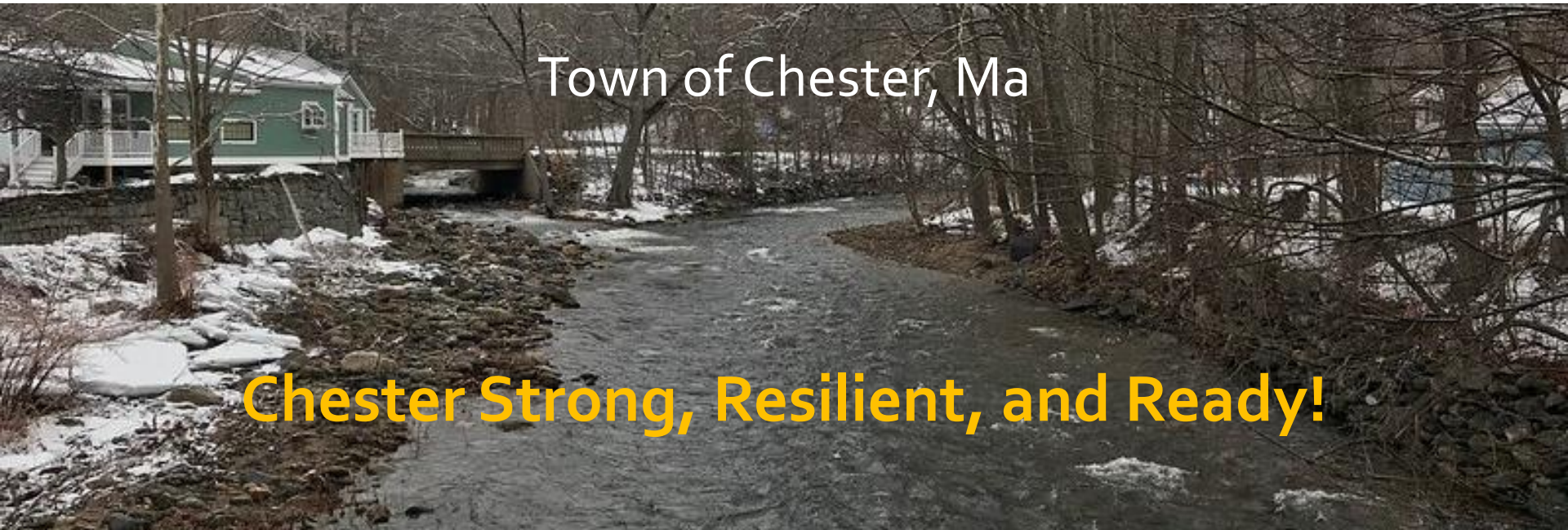
Plus Elaine Gilmore

CRB Workshop Presentations

MUNICIPAL VULNERABILITY PREPAREDNESS

Town of Chester, Ma

Chester Strong, Resilient, and Ready!



WELCOME AND INTRODUCTIONS



Emily Slotnick,
Senior Planner



Patty Gambarini,
Principal
Environmental



Corrin Meise-
Munns, Senior
Planner



Meredyth Babcock,
Community Liaison



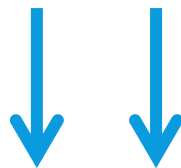
NOTES ON VIRTUAL PARTICIPATION

This meeting is being hosted on ZOOM

Use Chat box for technical questions

Keep an eye on the Chat box for links and other helpful information from meeting moderators

This meeting is being recorded



From Bin Wang to All panelists and other attendees:

Thanks Linda for noticing the background. Boston Harbor in the Fall.

From Shannon Hulst to All panelists and other attendees:

Shannon Hulst, Barnstable County's Cape Cod Cooperative Extension & Woods Hole Sea Grant, Floodplain Specialist

From David Azinheira to All panelists and other attendees:

Hello all -- David Azinheira with Tighe & Bond in Westfield, calling from my home office. Favorite body of water is probably the Burrage ponds in Halifax

From MassFM to All panelists and other attendees:

Please feel encouraged to post questions through the Zoom Q&A function, or to post a message here in the chat, throughout the presentations.

To: All panelists

Your text can only be seen by panelists

Audio Settings

Chat

Raise Hand

Q&A

Leave



WORKSHOP AGENDA

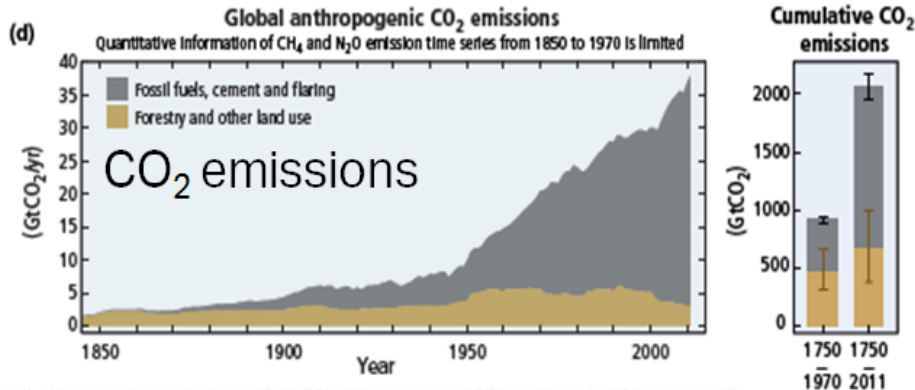
Welcome, Introductions, and MVP Overview
Overview of Hazards and Climate Change Data

PRESENTATION

Review Risk Matrix
Climate Adaptation Strategies
Action Items
Prioritization
Wrap Up and Next Steps

DISCUSSION

GLOBAL CLIMATE TRENDS



- 20 hottest recorded years since 1998
- July, August 2016, then July 2017 – hottest months on record

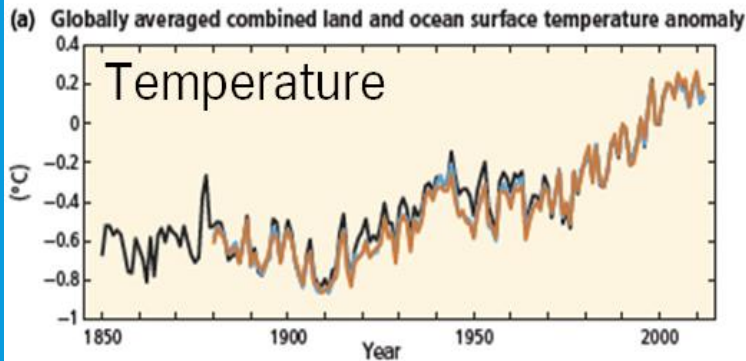
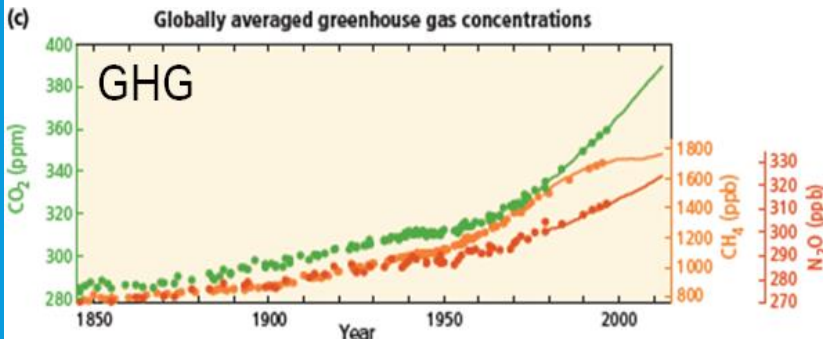
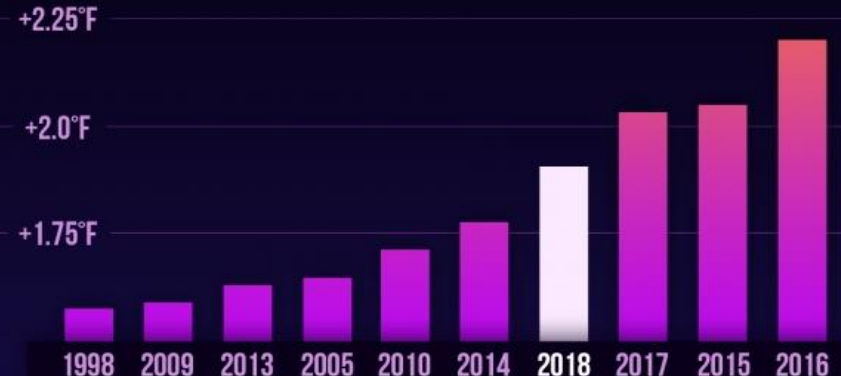


Image: IPCC 2014



HOTTEST YEARS ON RECORD GLOBALLY LAST 5 = HOTTEST 5



Source: NASA GISS & NOAA NCEI global temperature anomalies (°F) averaged and adjusted to early industrial baseline (1881-1910). Data as of 2/6/2019

MA CLIMATE PROJECTIONS

BY END OF THE CENTURY:

Changes in precipitation

- 18% increase in consecutive dry days
- 57% increase in days with > 1 in. rainfall
- 7.3 inches additional annual rainfall

Rising temperatures

- 10.8°F increase in average annual temperature
- 42% decrease in days/year with min. temperatures < 32* F
- 1,280% increase in 90-degree days/year

Extreme weather

- Increase in frequency and magnitude

MUNICIPAL VULNERABILITY PREPAREDNESS (MVP) CORE PRINCIPLES

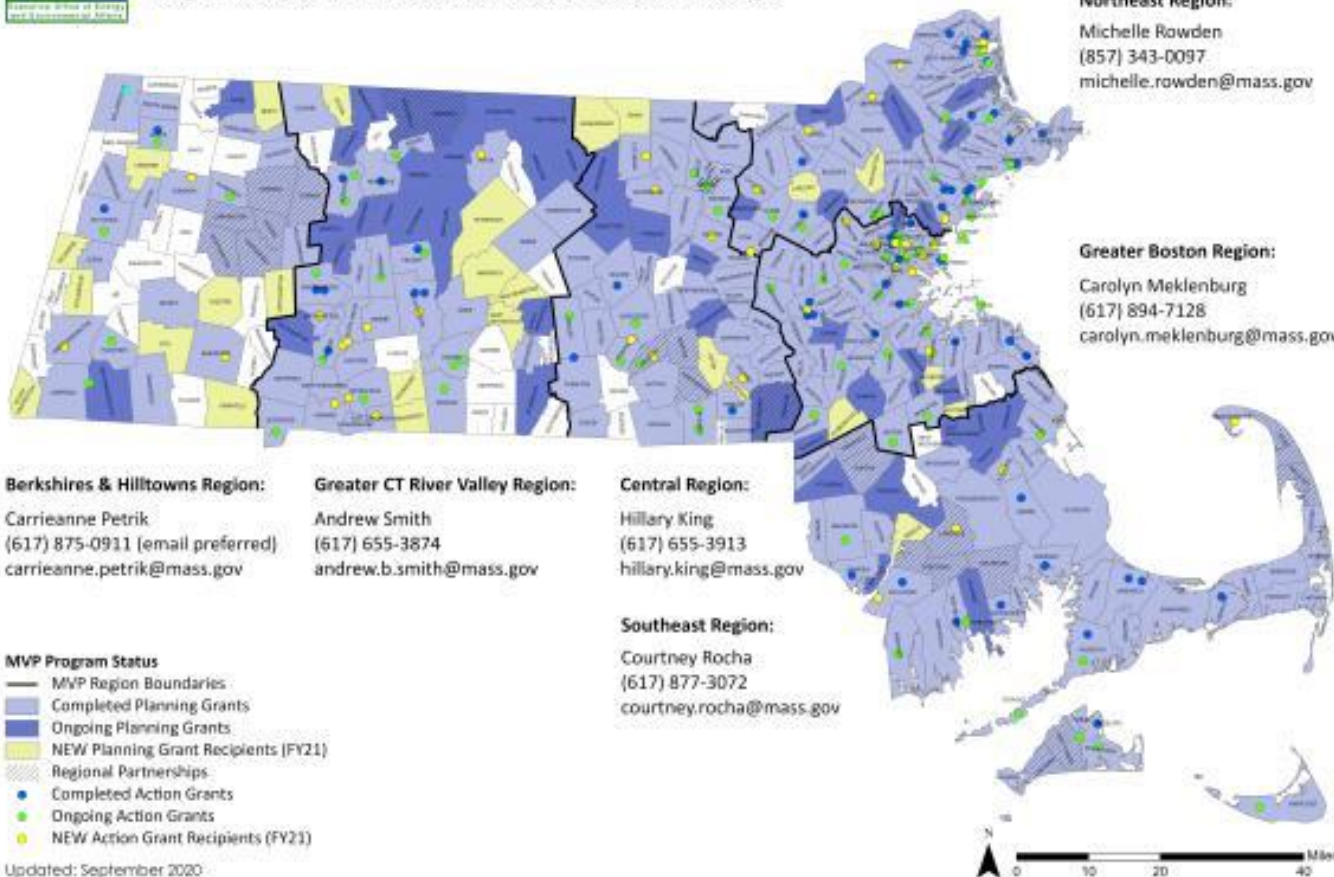


MVP PROGRAM IMPACTS



Municipal Vulnerability Preparedness (MVP) Program

Program Manager: Kara Runsten, (617) 312-1594, kara.runsten@mass.gov



**Planning Grant
(CRB Process)**
89% participation
312 communities

**Action Grant
Projects**
FY18: 37
FY19: 36
FY20: 53
FY21: 41

Total Awards
\$44M to date

CHESTER MVP PROCESS

- Define and characterize hazards using latest science and data
- Identify existing and future community vulnerabilities and strengths
- Develop and prioritize community adaptation actions
- Share results with the public
- Receive MVP designation

MVP
Planning
Grant



MVP
Action
Grant



Implement priority
adaptation actions
identified through
planning process

**ACTIONS MUST HAVE DIRECT
LINK TO CLIMATE CHANGE**

PROJECT TYPES

Eligible Project Types

Planning, Assessments,
Capacity Building, and
Regulatory Updates

Design and Permitting

Construction and On-
the-Ground
Implementation

Projects that are NOT MVP- competitive

Diesel generators | Tree Removal

FEMA HMP's

Studies not directly linked to
implementation

Feasibility or design of solar and battery
systems (installation OK)

Emergency preparedness not directly
linked to climate projections

Projects to repair previous conditions
without consideration of climate
projections

Assawompset Ponds Complex Watershed Management and Climate Action Plan: Lakeville & Neighboring Communities FY21 Action Grant



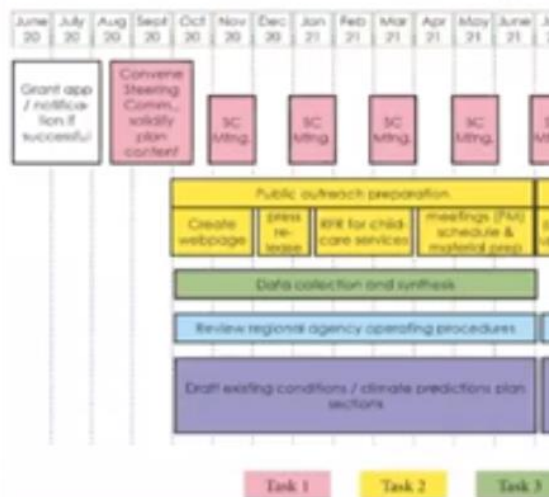
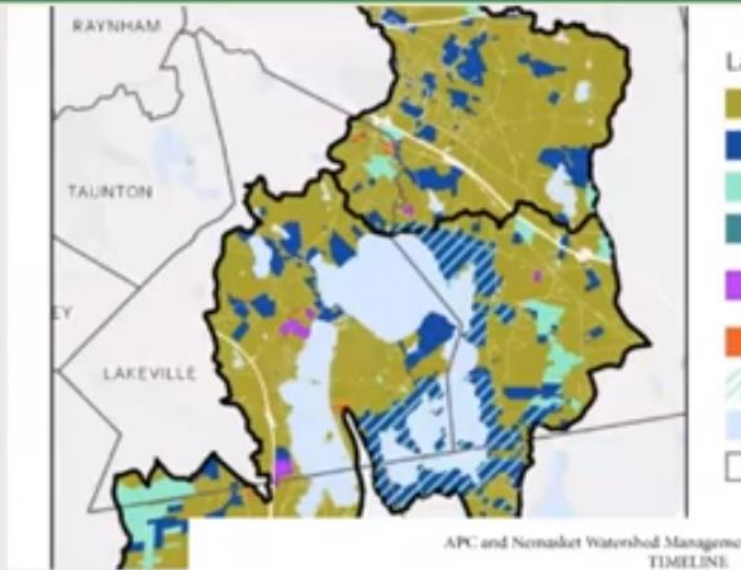
Learn More:
[MVP Webinar](#)
[Project Website](#)

REGION Southeast
AWARD \$93,296
MATCH \$31,196

PROJECT TYPE Planning, Assessments, Capacity Building, and Regulatory Updates

CORE PRINCIPLES DEMONSTRATED Achieving Broad and Multiple Community Benefits; Robust Community Engagement

PRIORITIES Development of a plan to cope with floodwater issues; address water supply and water quality; improvement of social resilience



Climate Action, Resilience, and Equity Great Barrington: Great Barrington FY21 Action Grant



Learn More:

[MVP Webinar](#)

REGION Berkshires/Hilltowns

AWARD \$70,400

MATCH \$27,160

PROJECT TYPE Planning, Assessments, Capacity Building, and Regulatory Updates

CORE PRINCIPLES DEMONSTRATED Robust Community Engagement; Improving Equitable Outcomes For and Fostering Partnerships with EJ/CV Communities

PRIORITIES Reach out to and communicate with underrepresented/marginalized groups to get them involved with adaptation plans



Youth Designed BLM Mural in D
Created By Dorree Ndooki and F

Coonamessett River Restoration Project: Falmouth FY19 Action Grant

Learn More:

[MVP Webinar](#)

[Coonamessett River Trust](#)

[Coonamessett Greenway Heritage Trail](#)

REGION Southeast

AWARD \$760,000 (FY19)

MATCH \$1,130,305

PROJECT TYPE Construction and On-the-Ground Implementation

**CORE PRINCIPLES
DEMONSTRATED** Employing Nature-Based Solutions; Achieving
Broad and Multiple Community Benefits

PRIORITIES Restoration of natural self-sustaining wetlands;
Reestablishing floodplain connectivity;
Improvement of fisheries



EEA CLIMATE GRANT VIEWER

Massachusetts Executive Office of Energy and Environmental Affairs beta Climate Grant Viewer

HOW TO USE THIS VIEWER    

Welcome!

Municipal Vulnerability Preparedness (MVP) Grant Programs

Office of Coastal Zone Management Grant Programs

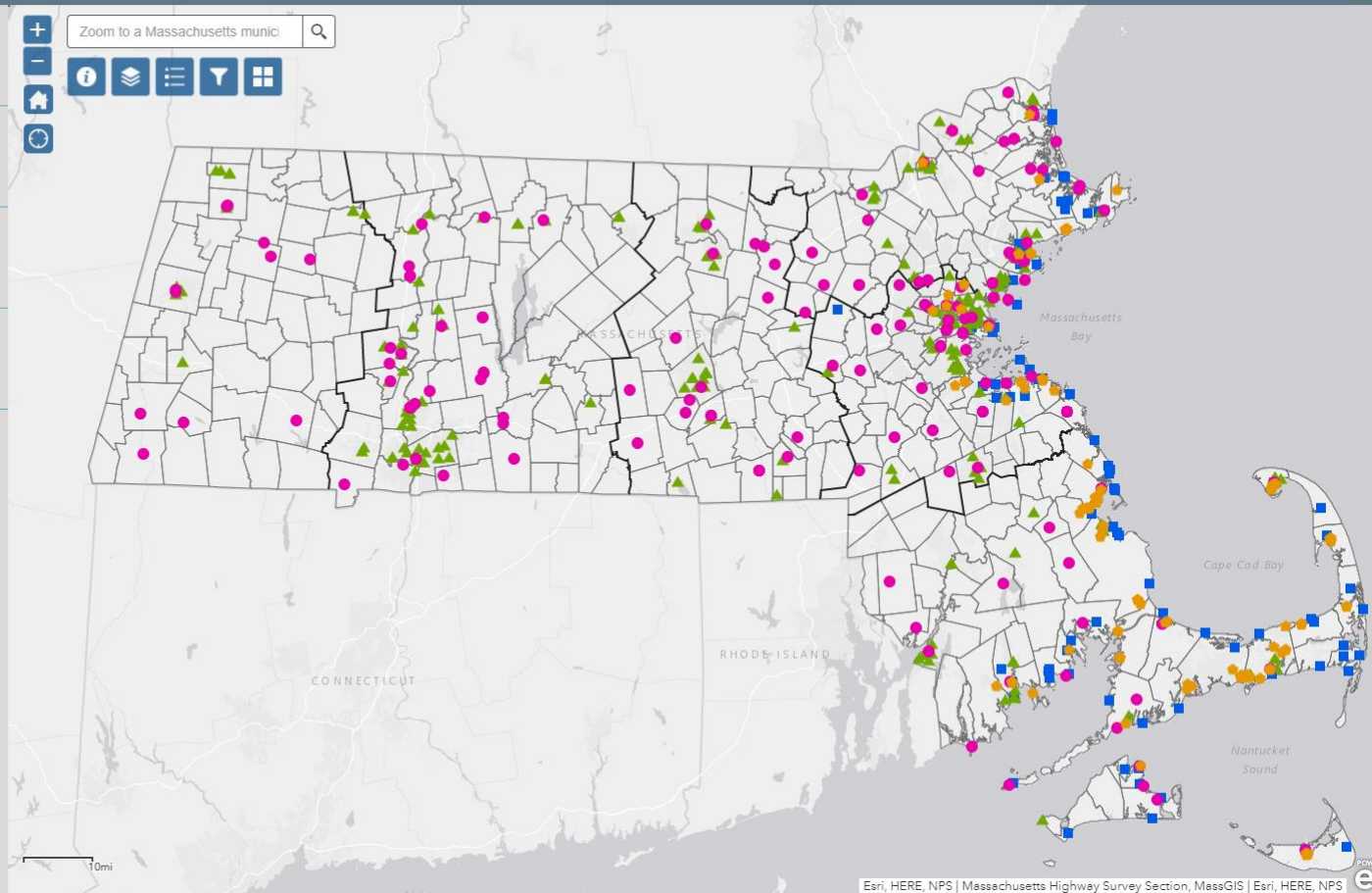
Division of Conservation Services Grant Program

All Grants

The Executive Office of Energy and Environmental Affairs (EEA) beta climate grant viewer offers users an interactive mapping tool to explore climate resilience-related grants awarded by EEA and its agencies. This beta mapping tool currently contains the following grant programs:

- [Municipal Vulnerability Preparedness Action Grant](#)
- [Coastal Resilience Grant Program](#)
- [Coastal Pollutant Remediation Grant Program](#)
- [Parkland Acquisitions and Renovations for Communities \(PARC\) Grant Program](#)

Additional grant programs will be added over time.



PLANNING GRANT PROJECT TIMELINE



WESTFIELD RIVER BASIN CLIMATE PROJECTIONS

By 2100

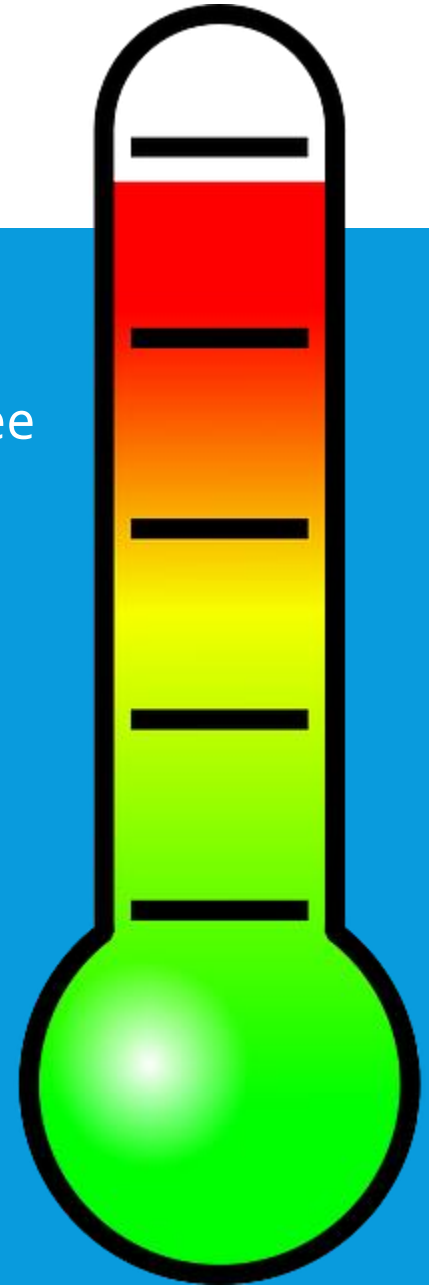
- Increase (↑) in:
 - Average temperatures
 - Min and max temperatures
 - # of days with temps over 90, 95, and 100
 - Cooling degree days (65 and above)
 - Winter precipitation
 - Frequency of heavy precipitation (winter)
- Decrease (↓) in:
 - # of days below 32 and 0
 - # of heating degree days (65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

AVERAGE TEMPERATURES

- ↑ in annual and seasonal average, max., and min.
- Summer and fall temperatures are expected to see the greatest increases
 - Summer highs may ↑ 9% by 2050, 17% 2100
 - Fall highs may ↑ 13% by 2050, 21% 2100

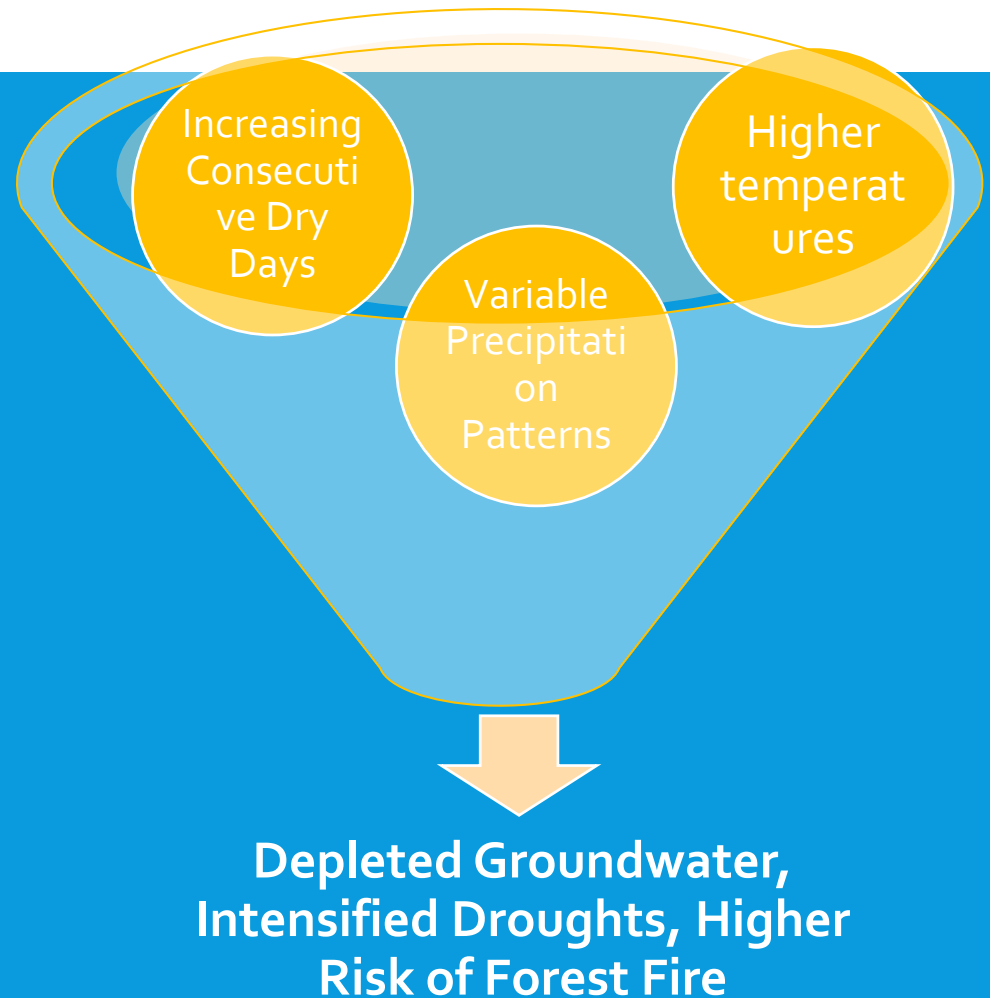
Impacts

- Rain v. snow, more snow melt
- Strain on agriculture
- Road maintenance



AVERAGE TEMPERATURES CONT...

- 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

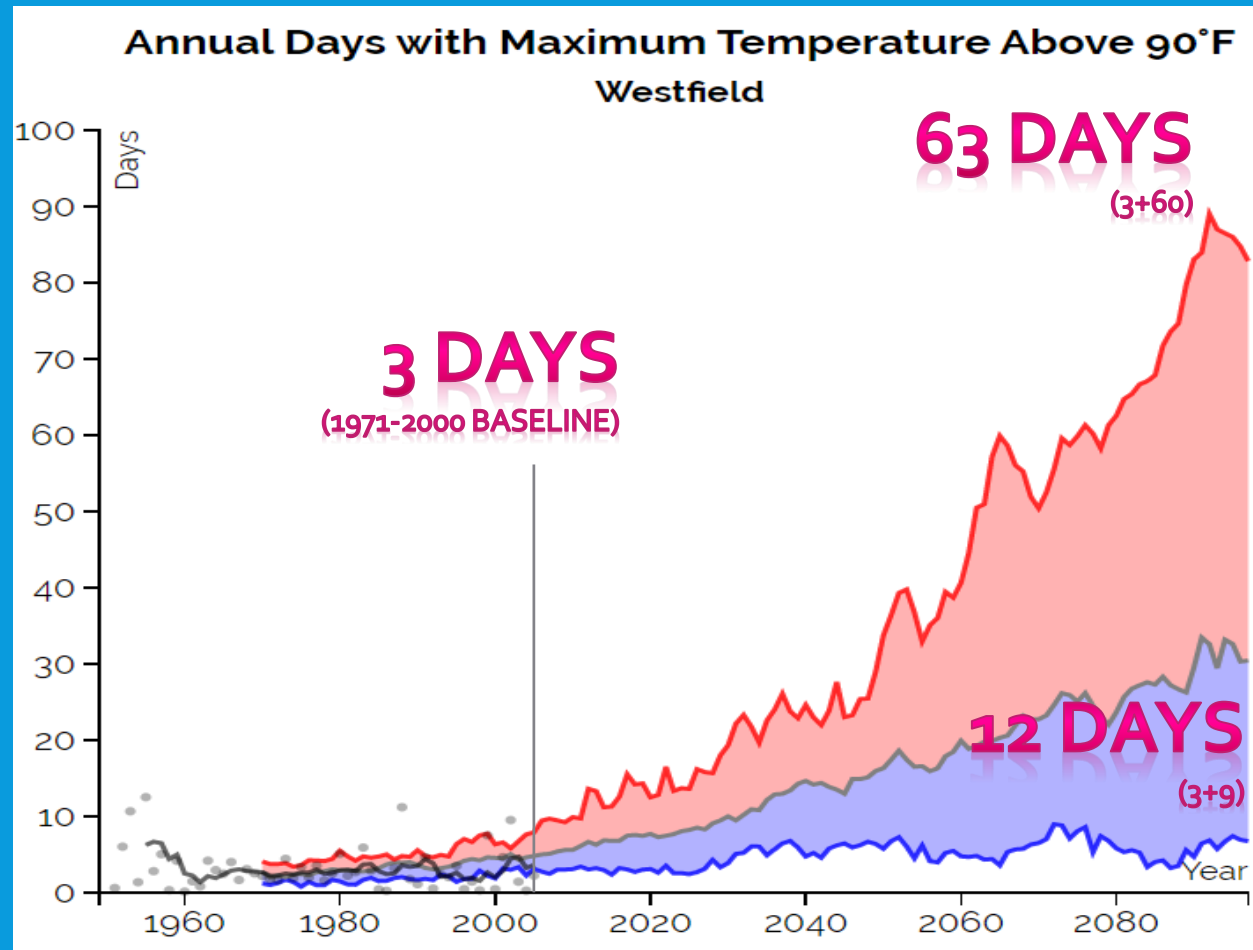


EXTREME TEMPERATURES

- By 2100, up to +49 days above 90 in summer, +8 days above 90 in fall.
- Major jump w/ high emissions scenarios

Impacts

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

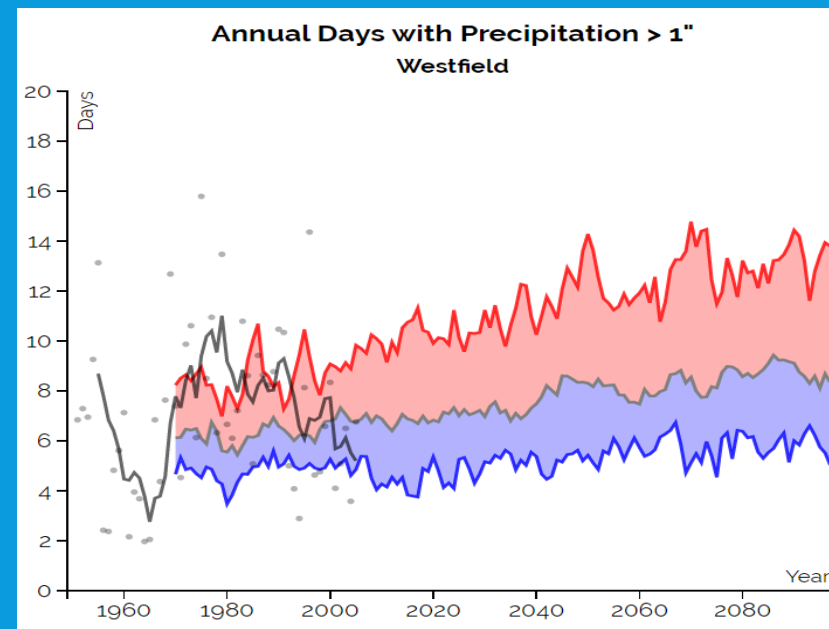
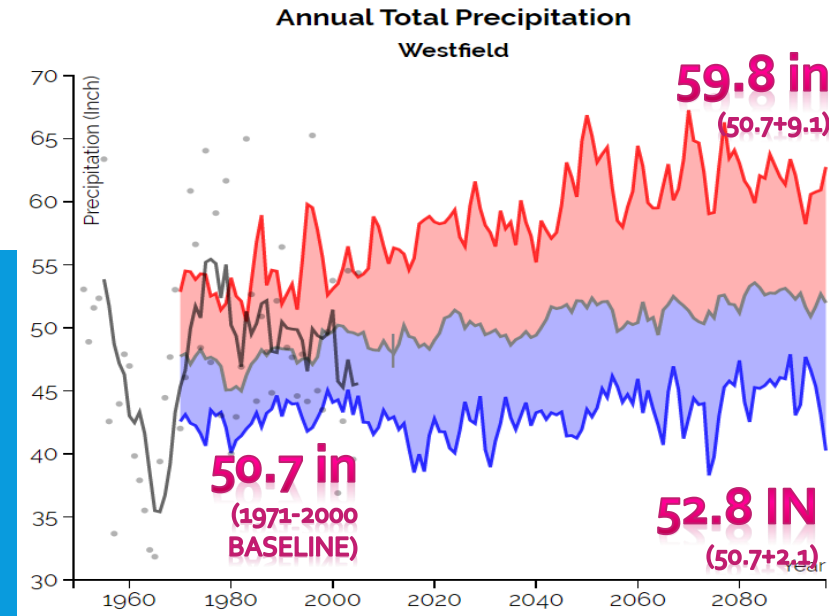


PRECIPITATION

- Annual precipitation \uparrow 1.2 – 6.9" by 2050, 2.1 - 9.1" by 2090
- \uparrow days with >1 " rain up to 5 days/yr by 2090
- Greatest avg. and max \uparrow in spring and winter
- \uparrow frequency of high intensity rain in winter

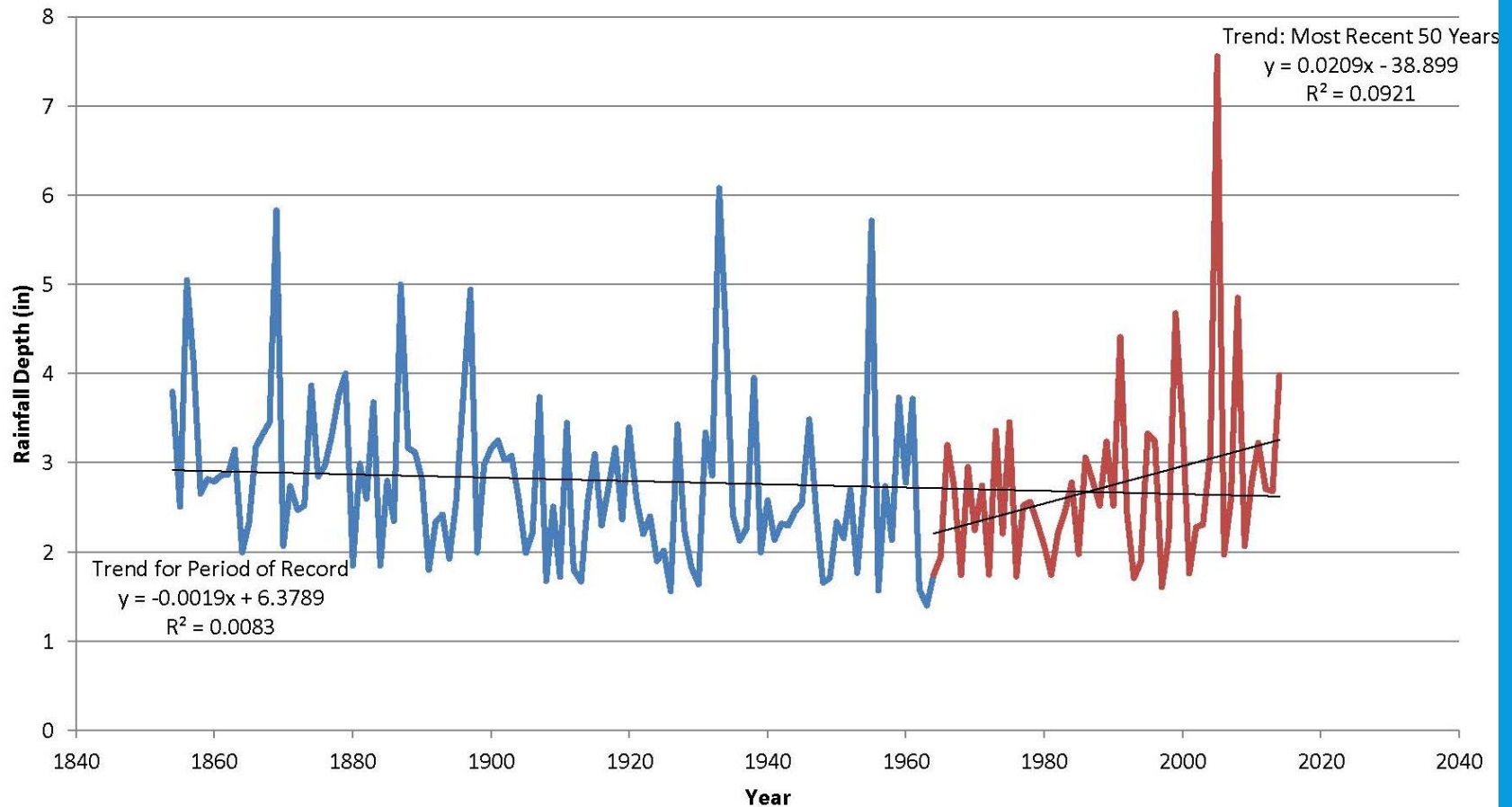
Impacts

- Winter rain, reduced snow cover for winter recreation and tourism
- Less spring snow melt to replenish aquifers and lower spring river flows for aquatic ecosystems
- Higher levels of winter runoff – flood, erosion, water quality impacts, culvert failure

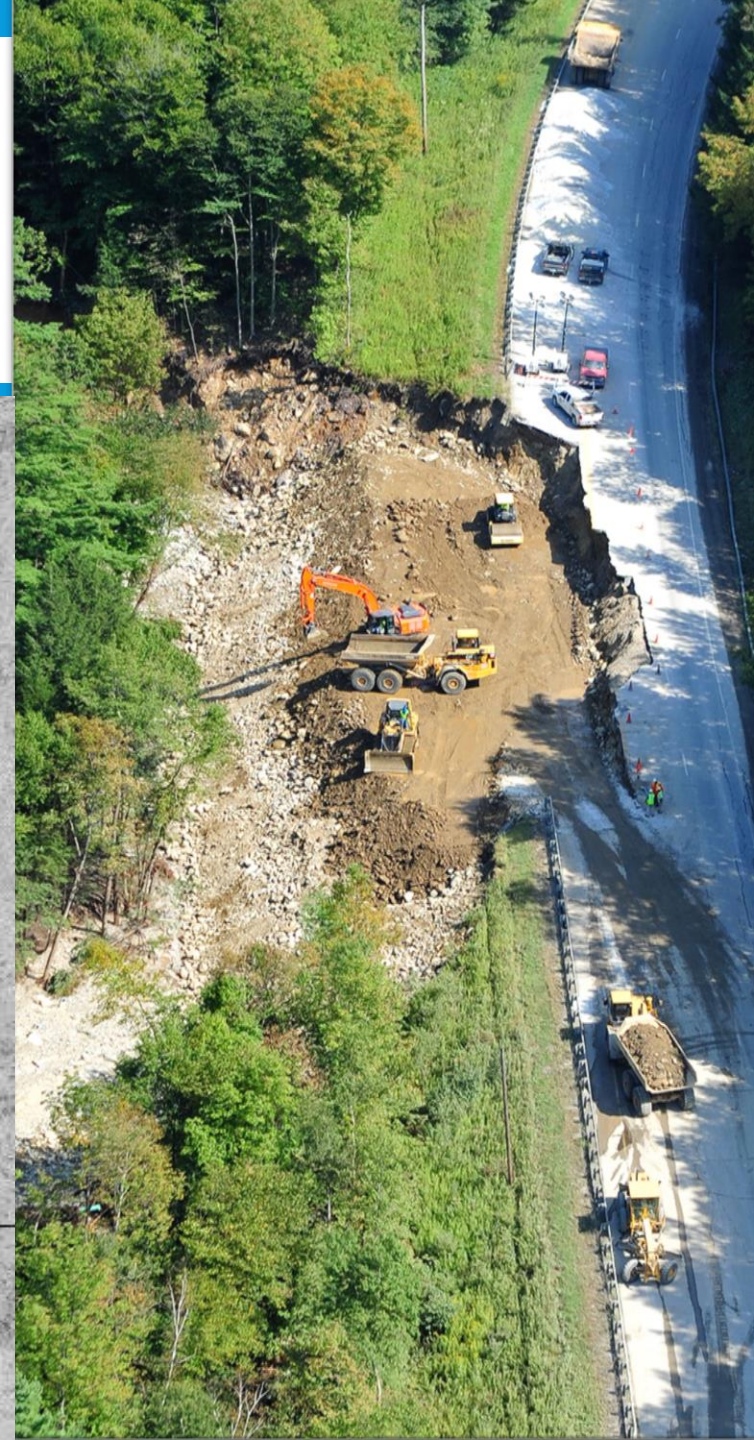
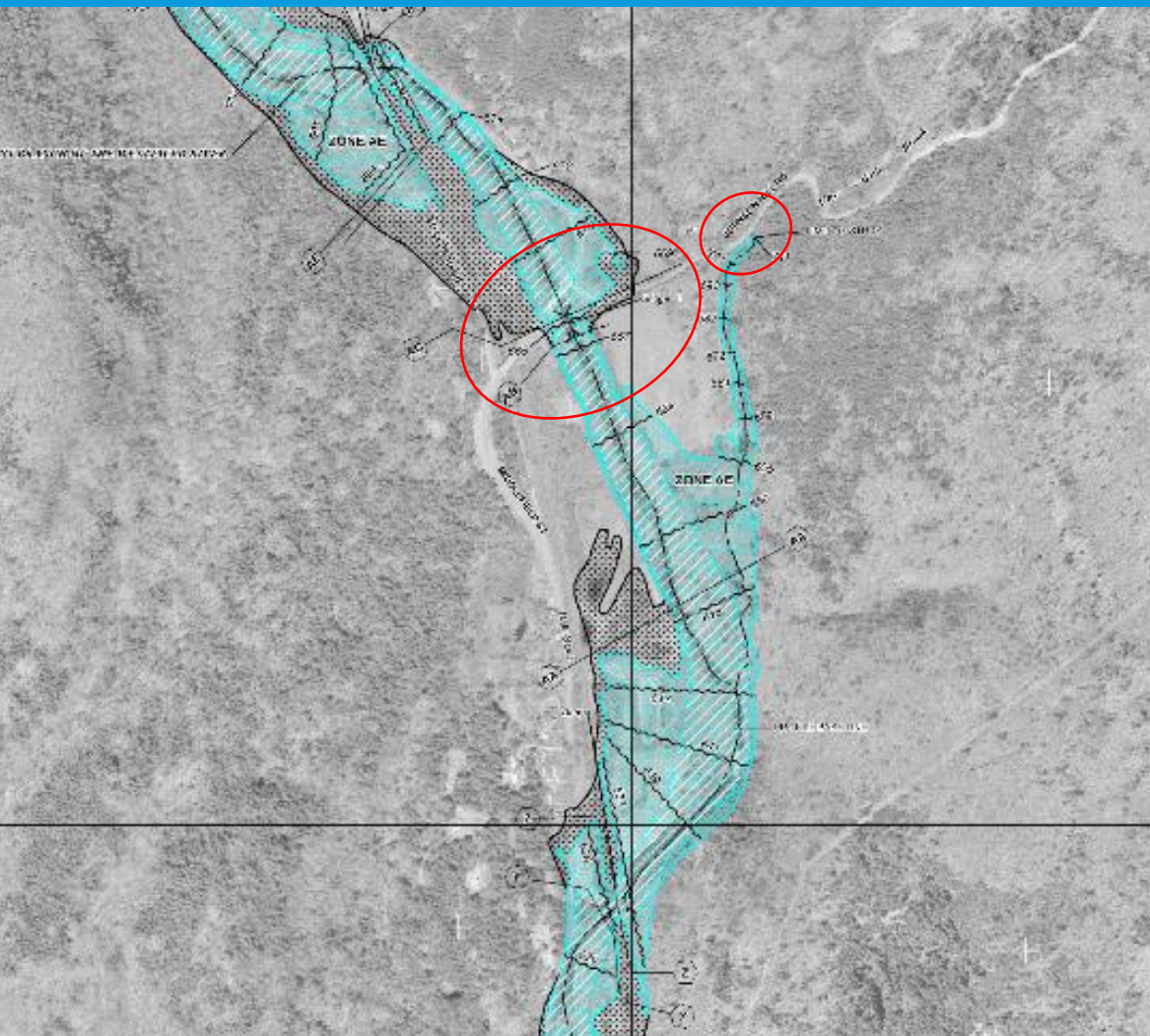


HISTORICAL TREND: MAXIMUM PRECIPITATION

Annual Maximum 24 Hour Precipitation
Amherst, MA (Station 19-0120)



FEMA SFHA SNAPSHOT



QUESTIONS ABOUT CLIMATE HAZARDS?





HONORING A RICH HISTORY & PREPARING FOR THE FUTURE

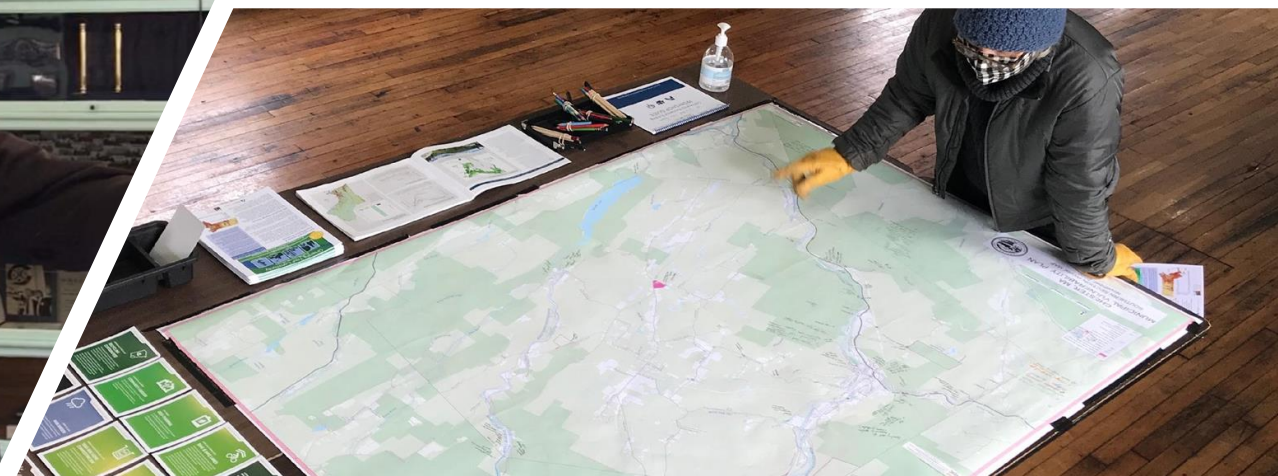
- *Community members readily share their passion for Chester's history & creative vision for its future.*
- *With the Railroad and Wild & Scenic Westfield River running through the center of town. Vulnerabilities and strengths go hand and hand.*
- *Irreplaceable forests & farms need protection and preservation*


MINI MVP SESSIONS

- ⑩ The language & awareness of how a changing climate makes us more vulnerable takes time to learn and adjust to.
- ⑩ Reflecting and ruminating before the planning sessions allows for more creative, nature based solutions to take root and blossom in the community.
- ⑩ Celebrating Chester's strengths is a vital and delightful part of these smaller outreach sessions.

Photo by Liz MAssa







GATHERING AND OUTREACH TO IDENTIFY STRENGTHS AND VULNERABILITIES



*Building a “Recreation Economy”
identified as one of
Chester’s strengths*





All aboard the Chester express

RISK MATRIX

Community Name: _____ Date: _____ Table #: _____ Table Facilitator: _____

Community Resilience Building Risk Matrix Municipal Vulnerability Preparedness				Top Priority Hazards <h2 style="color: blue;">Climate Hazards</h2>			
H-M-L: priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength							
Features	Location	Ownership	V or S				

INFRASTRUCTURE **COMMUNITY ACTIONS**

<h2 style="color: blue;">Features or Assets (Strengths and Vulnerabilities)</h2>	<h2 style="color: blue;">Strategies</h2>
--	--

SOCIAL **COMMUNITY ACTIONS**

ENVIRONMENT **COMMUNITY ACTIONS**

TOP HAZARDS

2016 HMP Hazard	HMP Rating	MVP Hazards
Flooding (100-year flood) Flooding (flash flood)	1	Intense Rainfall and Flooding
Dam Failures	2	
Severe Thunderstorms/Winds	2	Wind
Hurricanes	3	
Severe Thunderstorms/Winds	2	
Tornadoes	5	
Severe Snowstorms/Ice Storms	2	Extreme Cold and Winter Weather
Drought	2	Extreme Heat (and temp fluctuation), Drought, and Wildfire
Extreme Temperatures	4	
Wildfire / Brushfire	2	

INFRASTRUCTURE FEATURE EXAMPLES

- Culverts - undersized, failing, barriers to flood passage
- Dams - 3 in town, others upstream
- Electric grid/minor substations
- Drinking water wells
- Solid waste management – transfer station
- Municipal wastewater infra

- Culverts - undersized, failing, barriers to flood passage
- Dams - 3 in town, others upstream
- Electric grid/minor substations
- Drinking water wells
- Solid waste management – transfer station
- Municipal wastewater infrastructure



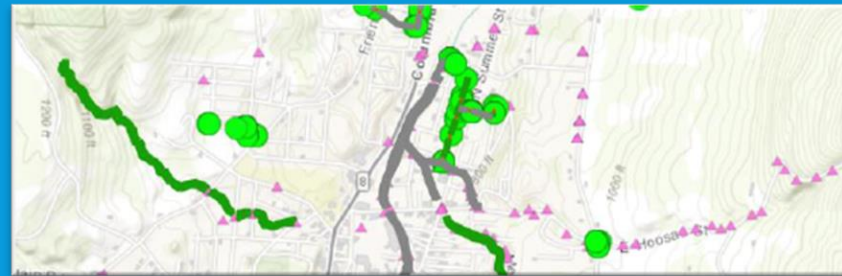
ADAPTATION STRATEGIES: NATURE BASED SOLUTIONS

- 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



ADAPTATION STRATEGIES: INFRASTRUCTURE

- Design/build replacements for high priority road stream crossings (culverts) to mitigate future flooding, and increase stream continuity and aquatic passage.
- Install rain gardens to reduce localized flooding and recharge aquifer
- Enhancing Water Supply Reliability: Resilient Storage and Water Conservation Planning
- Feasibility study for dam removal
- Assess vulnerability of WWTP to various probability floods
- Stormwater management planning and infrastructure mapping



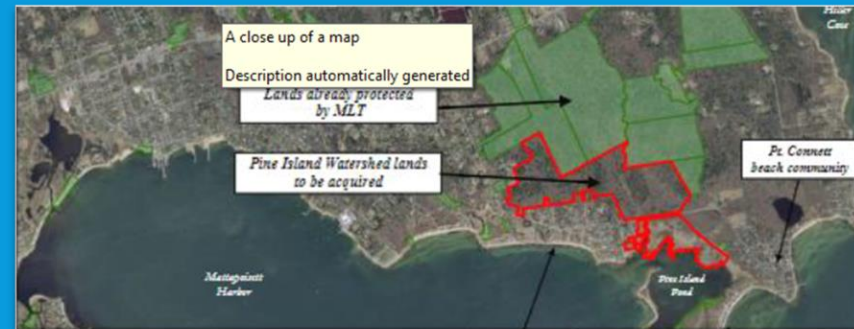
ENVIRONMENTAL FEATURE EXAMPLES



- Open Space and Recreation Areas
- Trees and Forests
- Wildlife
- Wetlands
- Local Agriculture
- Invasive Species/Pests
- Ground water and Surface Water

ADAPTATION STRATEGIES: ENVIRONMENT

- Land acquisition to permanently protect climate-vulnerable resources
- River and shoreline restoration
- Watershed and water supply vulnerability and risk assessment, and management strategy
- Use field studies and modelling to evaluate how best to accommodate flood waters, and effectiveness of targeted land protection in reducing flood damage
- Permitting and design for ecological restoration and habitat management to increase resilience



SOCIAL VULNERABILITY

Air Pollution & Increasing Allergens

Asthma, cardiovascular disease, respiratory allergies

Extreme Heat

Heat-related illness and death, cardiovascular failure

Severe Weather

Injuries, fatalities, loss of homes, mental health impacts

Environmental Degradation

Forced migration, civil conflict, mental health impacts, loss of jobs and income

Degraded Living Conditions & Social Inequities

Exacerbation of existing social and health inequities and vulnerabilities

Changes In Vector Ecology

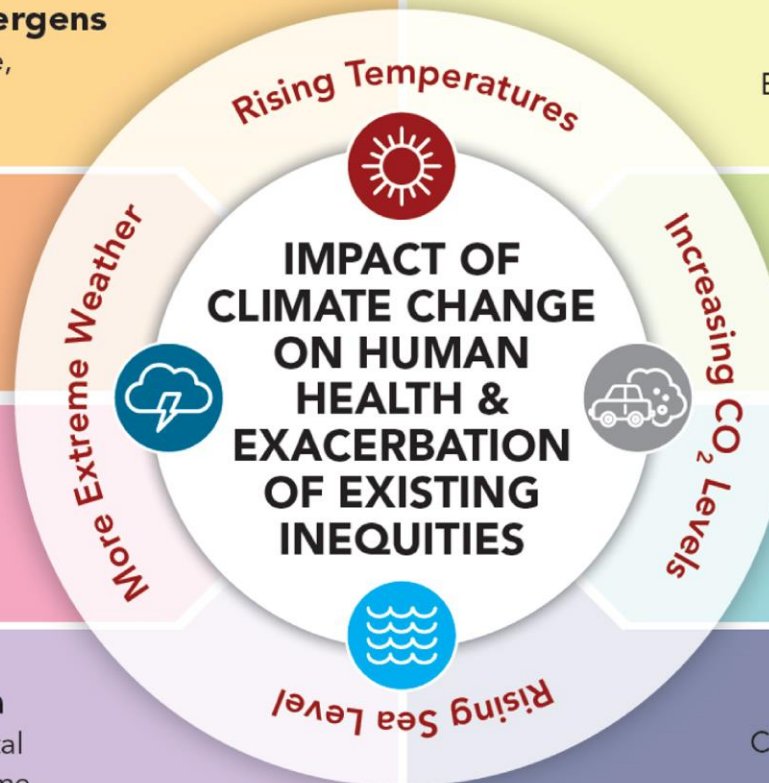
Malaria, dengue, encephalitis, hantavirus, Rift Valley fever, Lyme disease, chikungunya, West Nile virus

Water & Food Supply Impacts

Malnutrition, diarrheal disease

Water Quality Impacts

Cholera, cryptosporidiosis, Campylobacter, leptospirosis, harmful algal blooms



SOCIAL IMPACTS OF EXTREME TEMPERATURES

- Seniors are particularly prone to experiencing heat stroke and exhaustion

- Seniors are also more likely to experience hypothermia



SOCIAL IMPACTS OF EXTREME TEMPERATURES

- Chester households are less likely to have AC
- Financial constraints affect how often households can run heat or AC
- Financial and physical constraints affect the ability to respond quickly to a household emergency



SOCIAL IMPACTS OF FLUCTUATING TEMPERATURE

- Can limit mobility & ability to conduct routine business
- Can impact evacuation routes
- Strains Town budget
- Can increase groundwater contamination

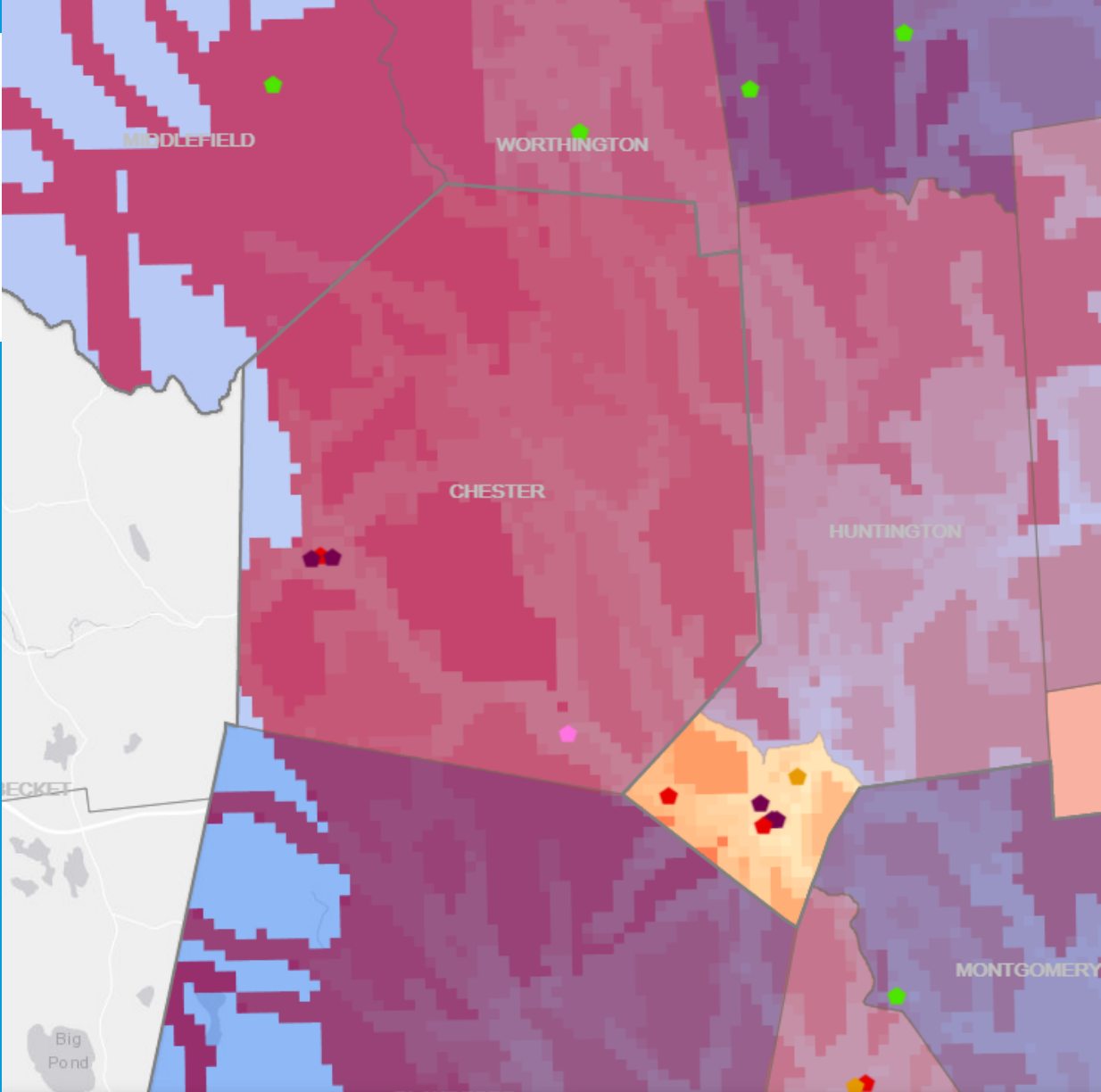


SOCIAL IMPACTS OF DROUGHT

- Chester relies on groundwater wells for 50% of drinking water, and surface water reservoirs for rest
- Can affect food availability and price
- Can impact ability to grow your own produce



ACCESS TO FOOD

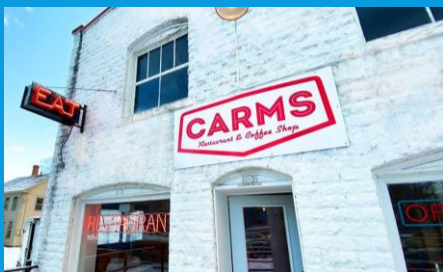


Hampden & Hampshire County Food Access Map

Map navigation controls including zoom in (+), zoom out (-), layers, full screen, compass, scale bar, and information (i) icons.

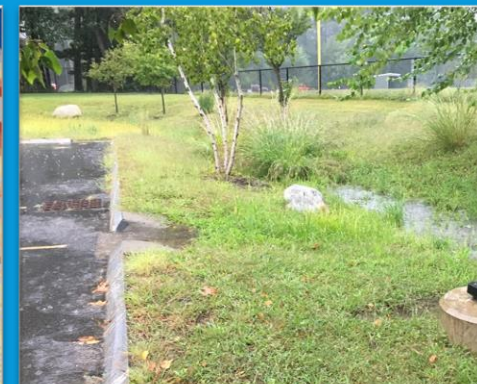
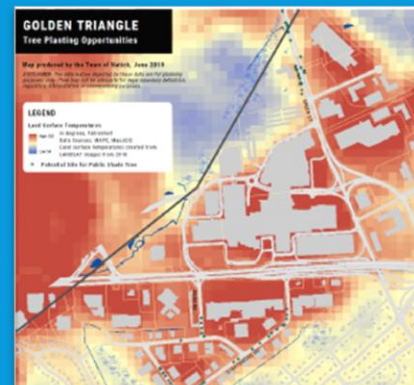
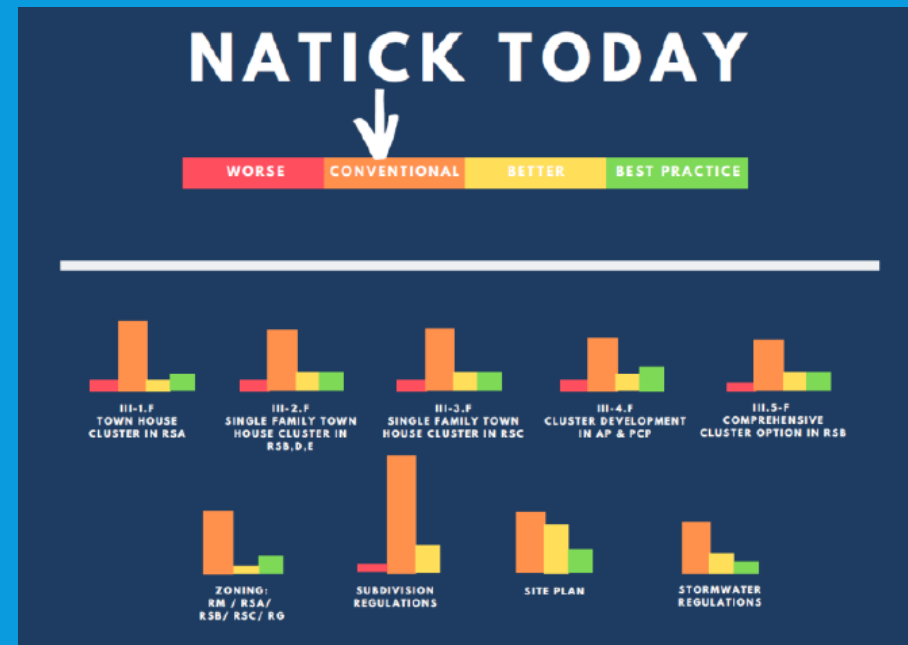
SOCIETAL FEATURE EXAMPLES

- Emergency services and volunteers
- Communications – alerts and technology
- Historic buildings
- People with possible barriers to building resilience (income, non-English speakers, immigrants, people of color, youth, seniors)
- Regional services (medical, waste management, food assistance, etc.)
- Businesses and the local economy
- Vector borne diseases
- Flood Maps, Plans, Regulations
- Pride in sense of place



ADAPTATION STRATEGIES: COMMUNITY RESILIENCE

- Develop Flood Resilient Building Design Guidelines and a Flood Resiliency Zoning Overlay to adapt to flood risk protections for the year 2070
- Create resources to help renters, small homeowners, small businesses, and large organizations prepare for flooding, heat and extreme weather
- Perform an analysis of heat islands and tree canopy
- Develop outreach and education materials to communicate climate change vulnerabilities and the benefits of ongoing resilience investments
- Develop a mobile market for at-risk residents



ADAPTATION STRATEGIES: COMMUNITY RESILIENCE

- Reduce barriers to participation
 - Childcare, transportation, food, translation, multi-pronged media, etc
- Work with local volunteers
- Work with local businesses
- Host community events at local warming and cooling shelters to raise awareness

CAMBIO CLIMÁTICO EN FITCHBURG



¿Qué es el Cambio Climático?

Definición
El clima es el patrón de eventos climáticos observados a lo largo del tiempo.
El cambio climático es un fenómeno causado por el aumento de gases de efecto invernadero en la atmósfera de la Tierra, lo que resulta en una temperatura global más alta. Las temperaturas globales afectan a corrientes de aire y patrones climáticos.

El uso de los combustibles fósiles emite dióxido de carbono a la atmósfera. La atmósfera es como una manta que rodea la Tierra. El dióxido de carbono hace que la manta sea más gruesa, atrapando el calor que calienta el planeta. En Massachusetts, los impactos del calentamiento global incluyen el aumento de temperaturas altas, nivel del mar y precipitaciones.



¿Cómo se refleja esto en Fitchburg?

Fitchburg experimenta condiciones tanto como tensiones.
Las condiciones son eventos repetitivos de corto plazo que causan el mayor daño a los sistemas y poblaciones vulnerables.
Las tensiones son tendencias de largo plazo que aumentan la vulnerabilidad de la ciudad y sus residentes.

Ejemplos de condiciones incluyen:

- Fitchburg experimentó olas de calor en los veranos del 2013 y '18.
- Fitchburg recibió cinco tormentas de nieve en los primeros tres meses del 2018.
- Las fuertes lluvias en el Noroeste aumentaron más de un 70% entre 1958-2010.

Ejemplos de tensiones incluyen:

- La temperatura promedio podría aumentar 10 °F para el 2100.
- La densidad de nieve del 2013 dejó a casi 400,000 residentes de Massachusetts sin electricidad.
- Las sequías podrían aumentar en 25% para el 2100. Fitchburg tuvo una sequía en el 2016.

¿Cómo me puedo preparar?

seguir el sitio web y redes sociales de Fitchburg

identificar el refugio más cercano

preparar kit de suministros de emergencia

reducir el consumo de energía y agua

Compartir la información con amigos y familiares

Ejemplos de estrés incluyen:

- Fitchburg tiene una importante población de justicia ambiental.
- El ingreso familiar promedio es de \$ 51,412, más bajo que el promedio estatal.
- Más del 12% de los residentes de Fitchburg tienen una discapacidad.
- Casi el 18% de los residentes de Fitchburg viven en la pobreza.

NEXT STEPS

Thank You!



Come back for the next webinar.

Stay tuned for details on a public listening session to be held later this spring.

Appendix C: Public Listening Session

Public Listening Session Attendance

Chester MVP – Public Listening Session 6-7-21. 6:30-8 PM (GoToMeeting) Attendees

Meredyth Babcock

Nick Chiusano

Judith Dalesandro

Bob Daley

Rich Holzman

Barbara Huntoon

Elizabeth Massa

Andrew Myers

Jessica Saleaske

Jill Strong

Lora Wade

Katherine Warden

Corrin Meise-Munns (PVPC)

Patty Gambarini (PVPC)

Mary Ann Pease (left 6:40)

Building Inspector (left meeting at 6:45)

John Baldasaro (left 6:49)

PLS Workshop Presentation



Chester: Resilient & Ready

*MVP Planning Grant June 2021
Public Listening Session*



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

Contents

CHESTER RESILIENT & READY | June 7, 2021

- 01.** Overview of Chester's MVP Planning Process
- 02.** A Changing Climate: The New Normal
- 03.** Community-Identified Vulnerabilities & Assets in Chester
- 04.** Top Strategies for Resilience in Chester
- 05.** Next Steps and Q&A



Funding

CHESTER RESILIENT & READY | June 7, 2021

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



01.

CHESTER RESILIENT & READY | June 7, 2021

Overview of Chester's MVP Planning Process





Municipal Vulnerability Preparedness (MVP) Program

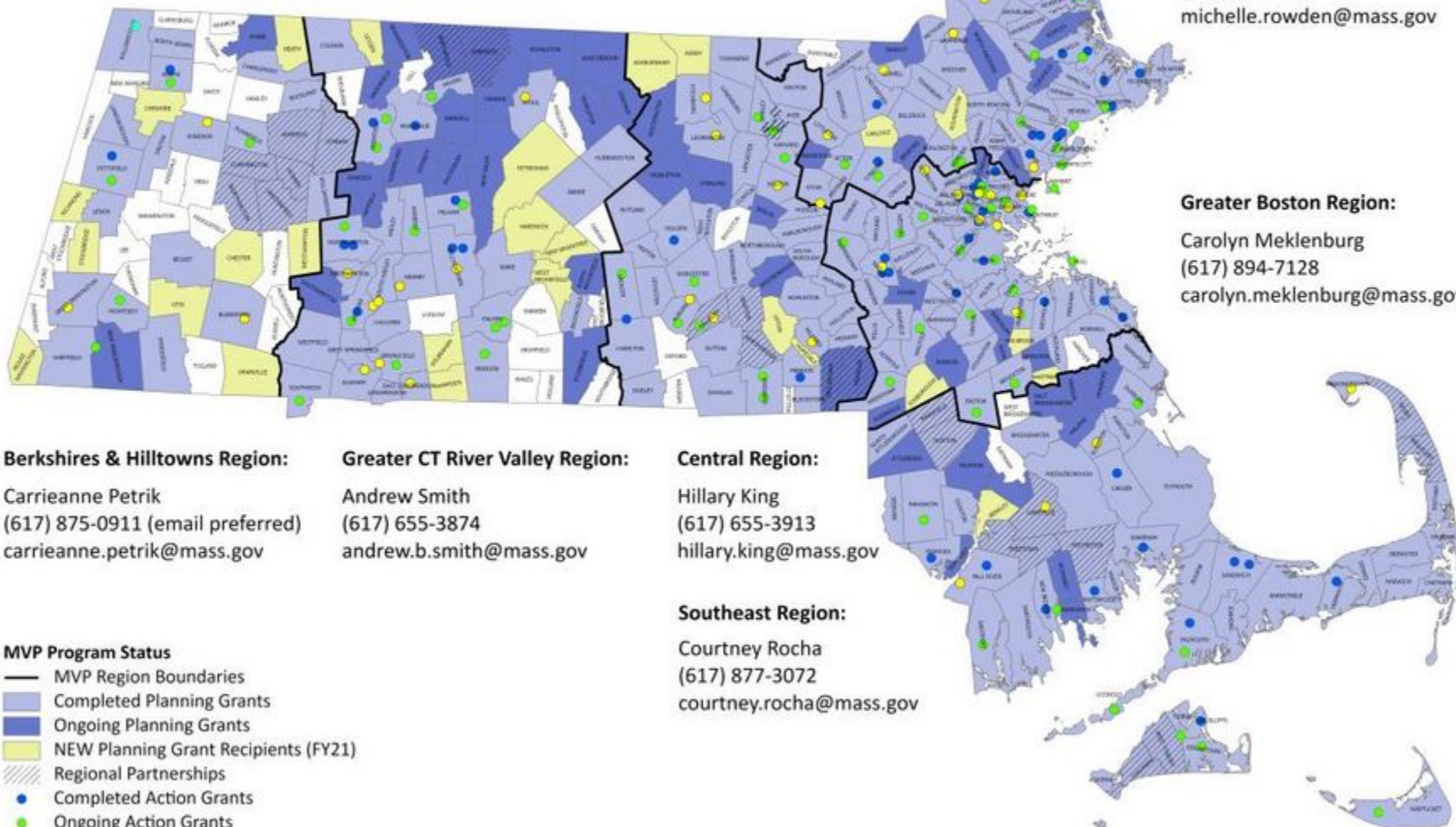
Program Manager: Kara Runsten, (617) 312-1594, kara.runsten@mass.gov

Northeast Region:

Michelle Rowden
(857) 343-0097
michelle.rowden@mass.gov

Greater Boston Region:

Carolyn Meklenburg
(617) 894-7128
carolyn.meklenburg@mass.gov



Berkshires & Hilltowns Region:

Carrieanne Petrik
(617) 875-0911 (email preferred)
carrieanne.petrik@mass.gov

Greater CT River Valley Region:

Andrew Smith
(617) 655-3874
andrew.b.smith@mass.gov

Central Region:

Hillary King
(617) 655-3913
hillary.king@mass.gov

Southeast Region:

Courtney Rocha
(617) 877-3072
courtney.rocha@mass.gov

MVP Program Status

- MVP Region Boundaries
- Completed Planning Grants
- Ongoing Planning Grants
- NEW Planning Grant Recipients (FY21)
- ▨ Regional Partnerships
- Completed Action Grants
- Ongoing Action Grants
- NEW Action Grant Recipients (FY21)

Updated: September 2020



CHESTER MVP PROCESS

MVP Planning Grant

- Define and characterize hazards using latest science and data
- Identify existing and future community vulnerabilities and strengths
- Develop and prioritize community adaptation actions
- Share results with the public
- Receive MVP designation

MVP

Action Grant

Implement priority adaptation actions identified through planning process

CHESTER MVP PROCESS

MVP CORE PRINCIPLES



NATURE-BASED SOLUTIONS

- Maintaining healthy, resilient forests will help them continue their critical function of carbon sequestration.
- Flood and fish friendly culverts protect infrastructure and aquatic habitat
- Rain gardens to reduce localized flooding and recharge aquifer
- Low Impact Development regulations to ensure development doesn't create future problems

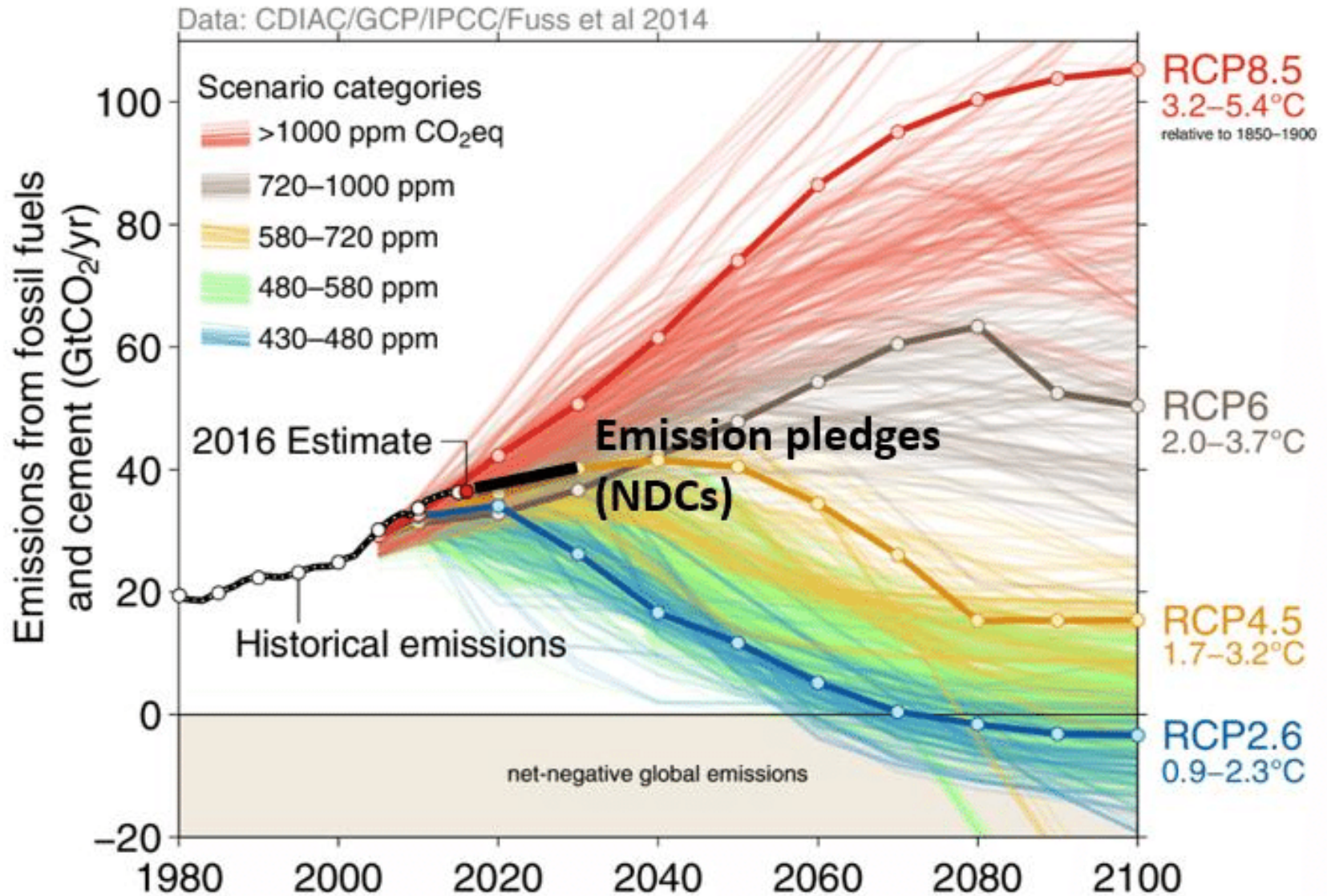


ADAPTATION & MITIGATION

Adaptation – adapting to life in a changing climate – involves adjusting to actual or expected future climate. It's doing what we can to live with and minimize the destruction and suffering that comes from climate change.

Mitigation – reducing climate change – involves reducing the flow of heat-trapping greenhouse gases into the atmosphere.

MULTIPLE PATHS TO DIFFERENT FUTURES



02.

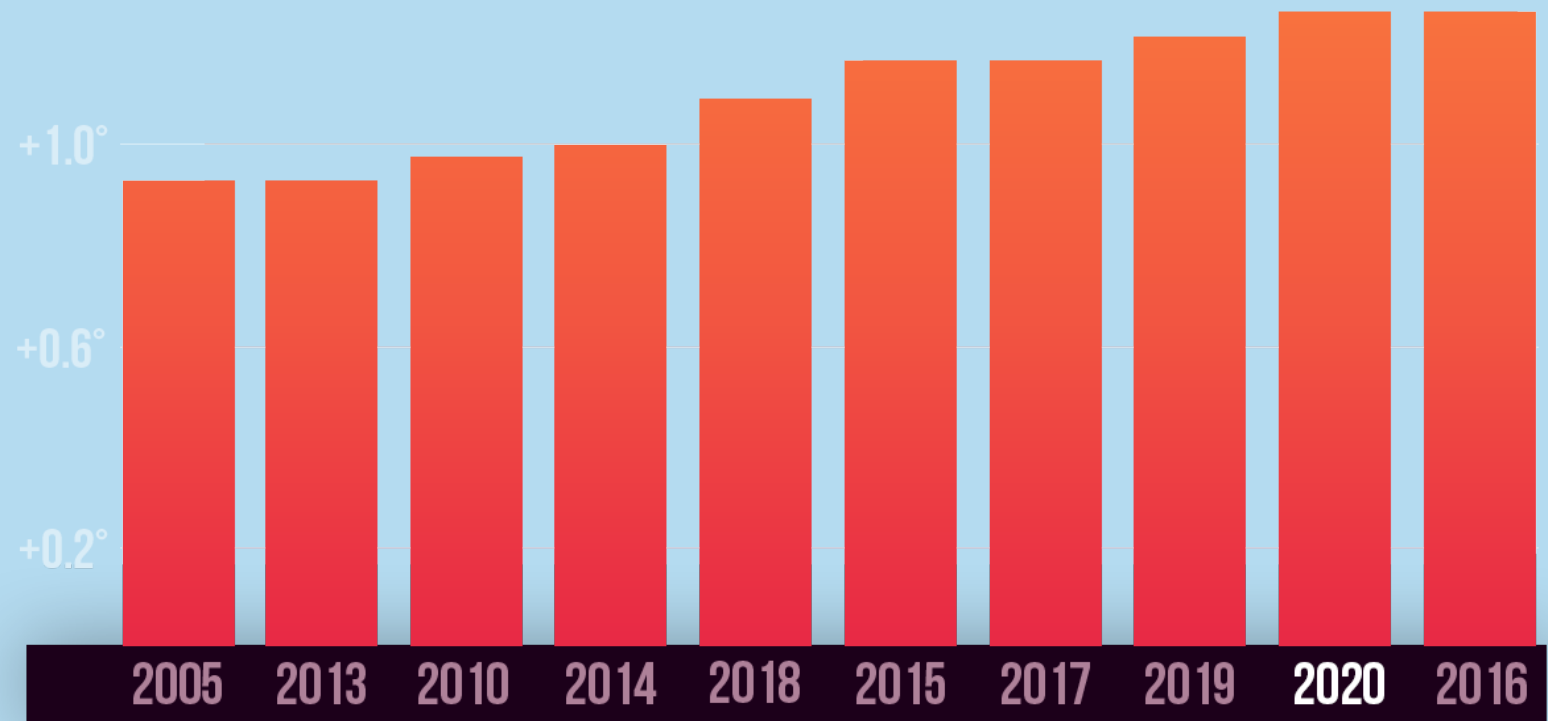
CHESTER RESILIENT & READY | June 7, 2021

A Changing Climate: The New Normal



10 HOTTEST GLOBAL YEARS ON RECORD

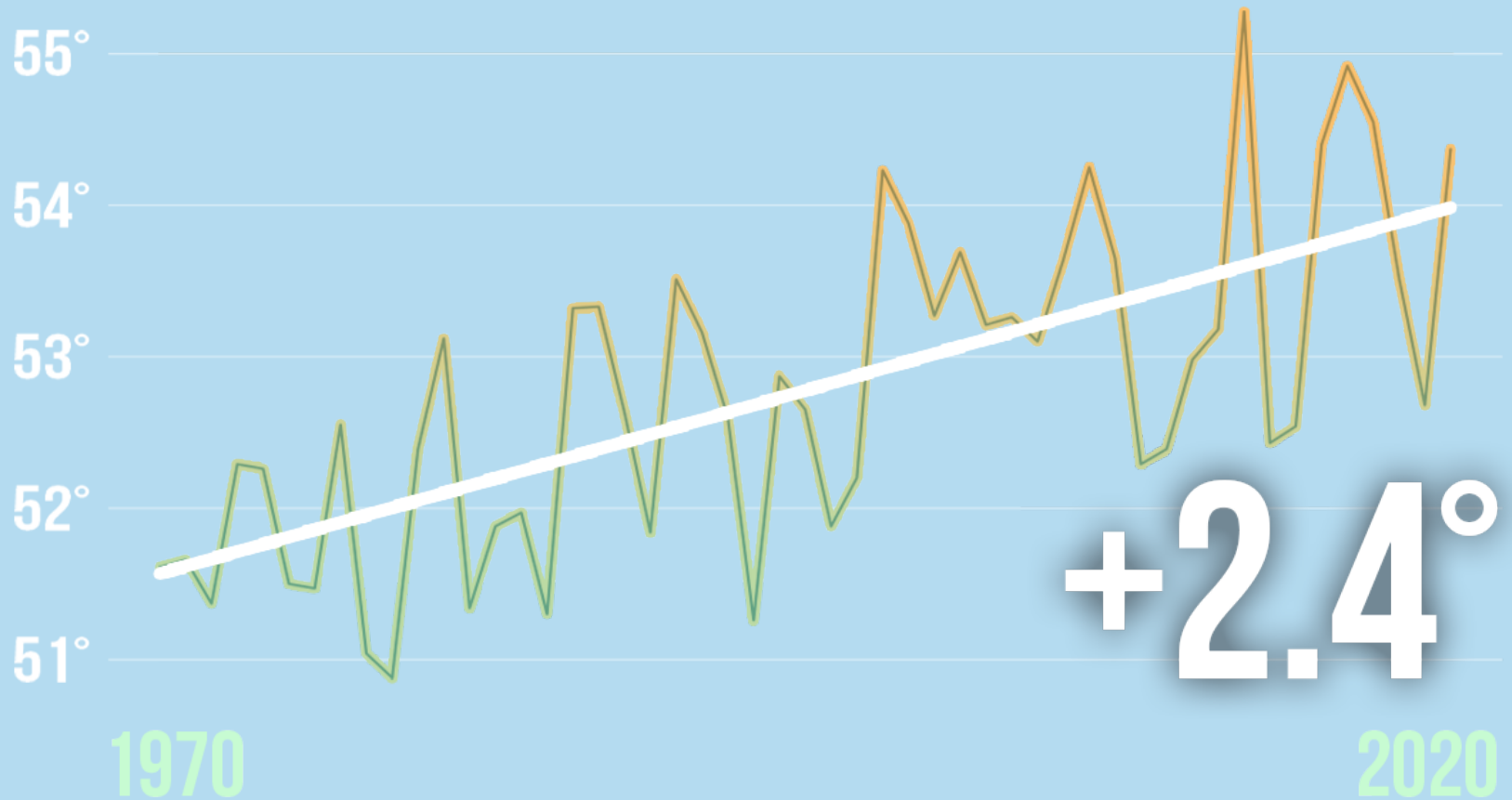
+1.4°C 2.52°F



Source: NASA GISS & NOAA NCEI global temperature anomalies averaged and adjusted to early industrial baseline (1881-1910). Data as of 1/14/2021.

CLIMATE  CENTRAL

THE U.S. IS WARMING

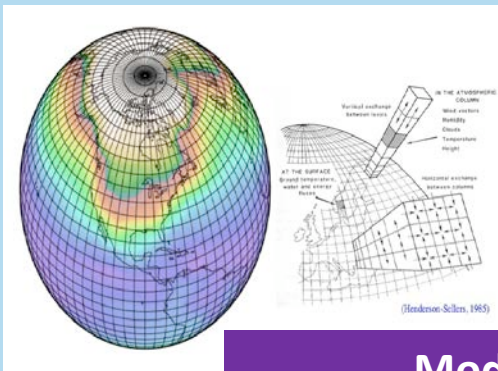


Annual average temperature
Source: RCC-ACIS

CLIMATE  CENTRAL

NECSC CLIMATE PROJECTIONS

Global Climate Models (GCMs)

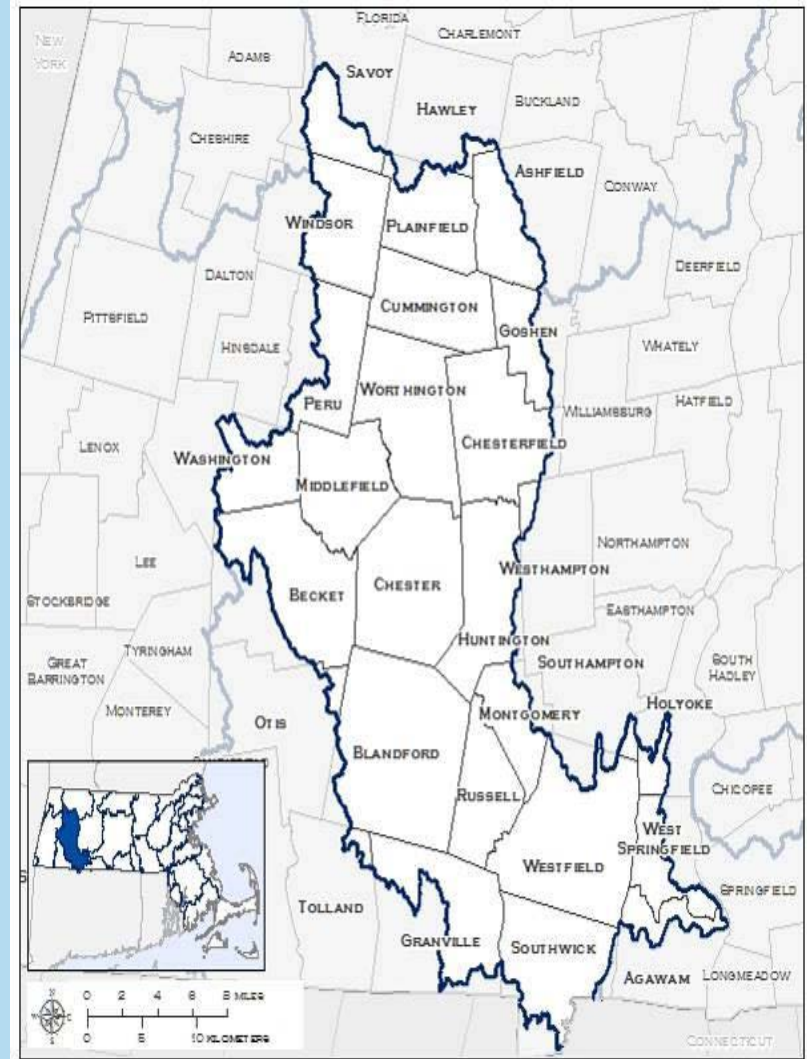


Model Selection
Rigorous assessment of model performance and projections



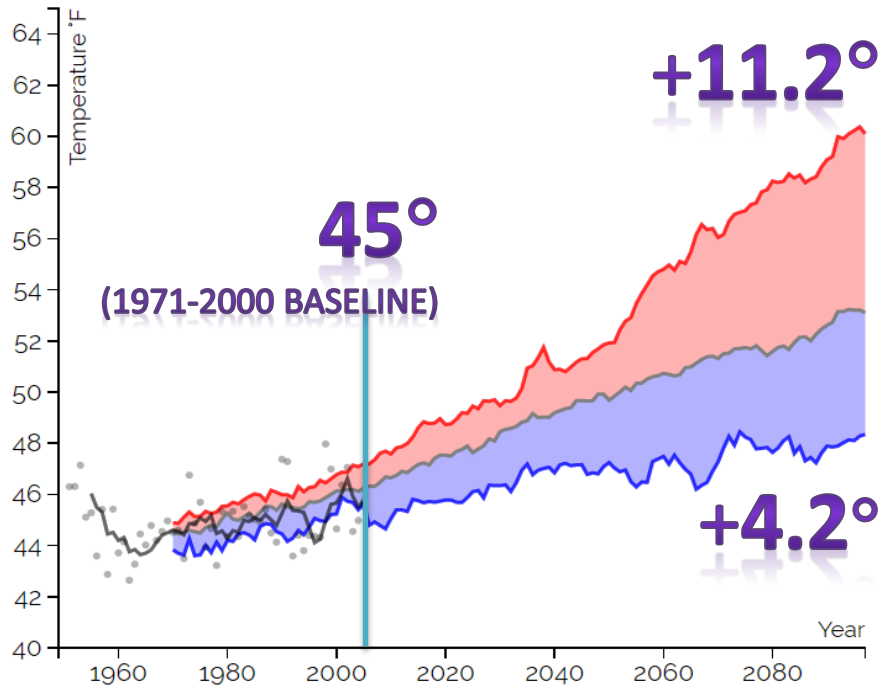
Daily data for MA at 6-km resolution

DOWNSCALED MODEL DATA
Statistical Downscaling

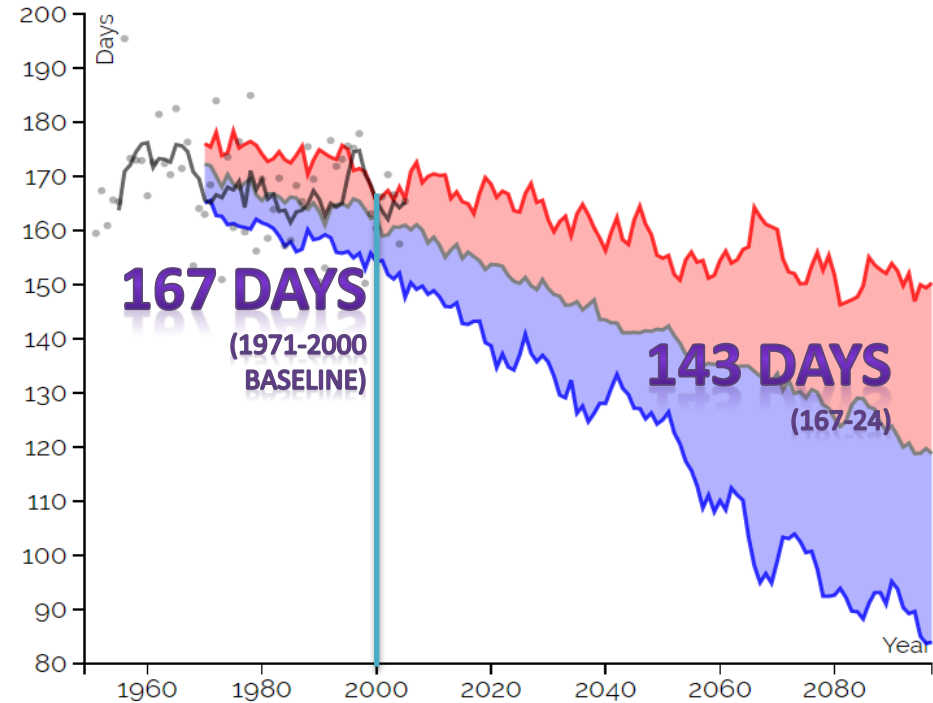


WESTFIELD BASIN IS WARMING

Annual Average Temperature
Westfield

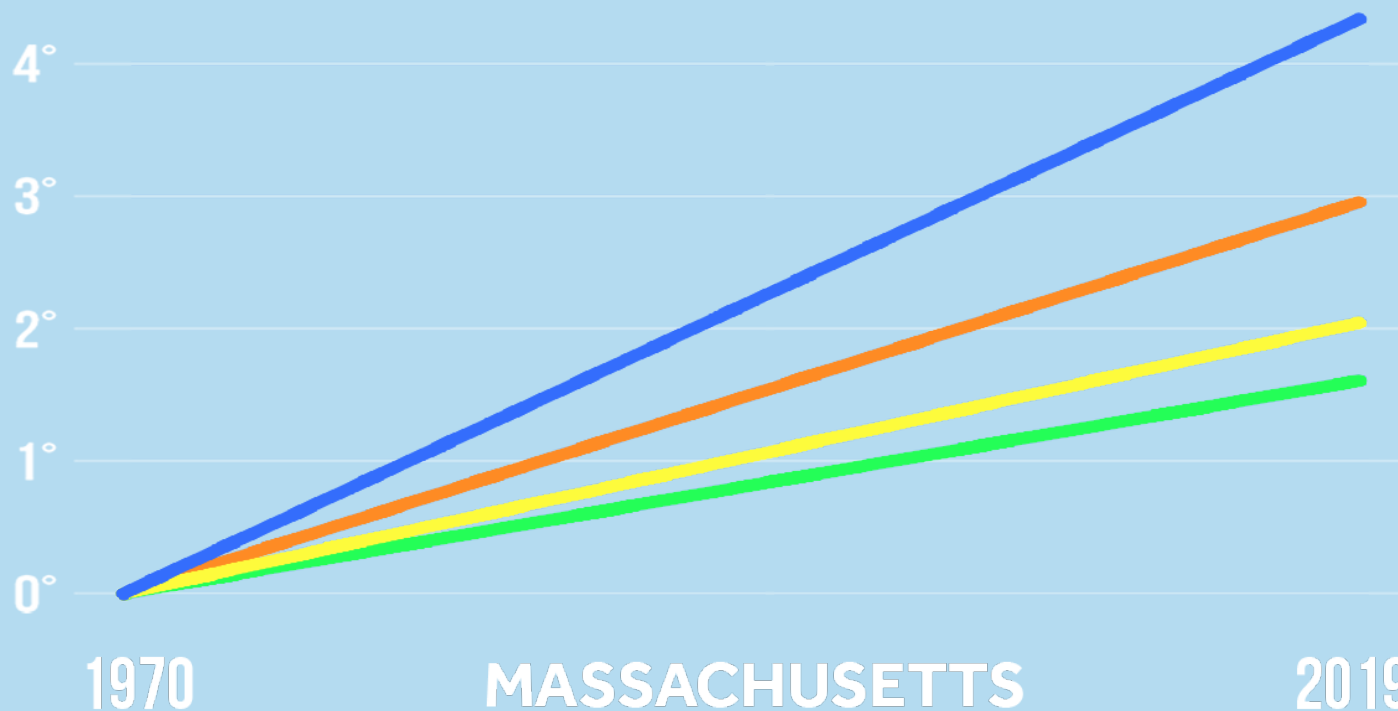


Annual Days with Minimum Temperature Below 32°F
Westfield



SEASONAL WARMING

■ WINTER ■ SPRING ■ SUMMER ■ FALL



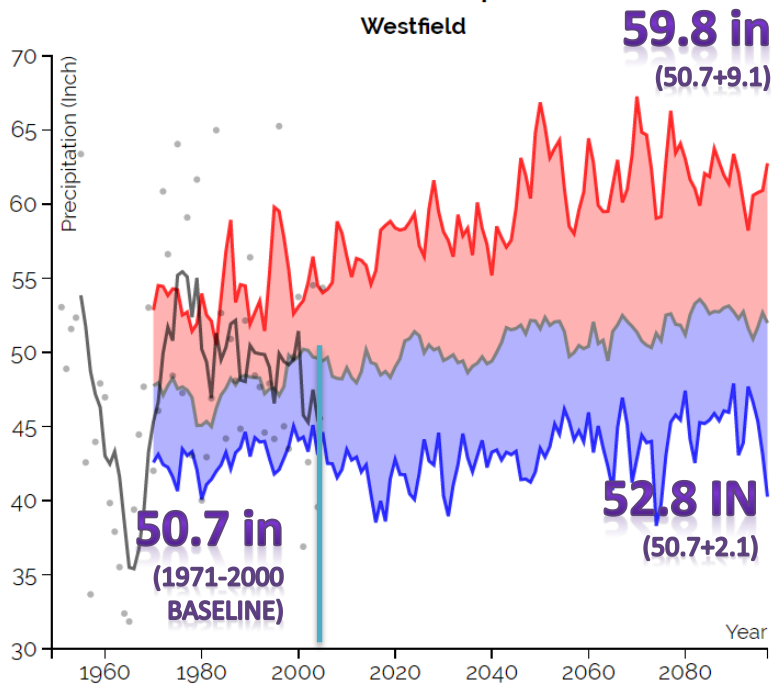
Linear seasonal trends fitted to 1970-2019 data.
Source: NOAA/NCEI Climate at a Glance

CLIMATE  CENTRAL

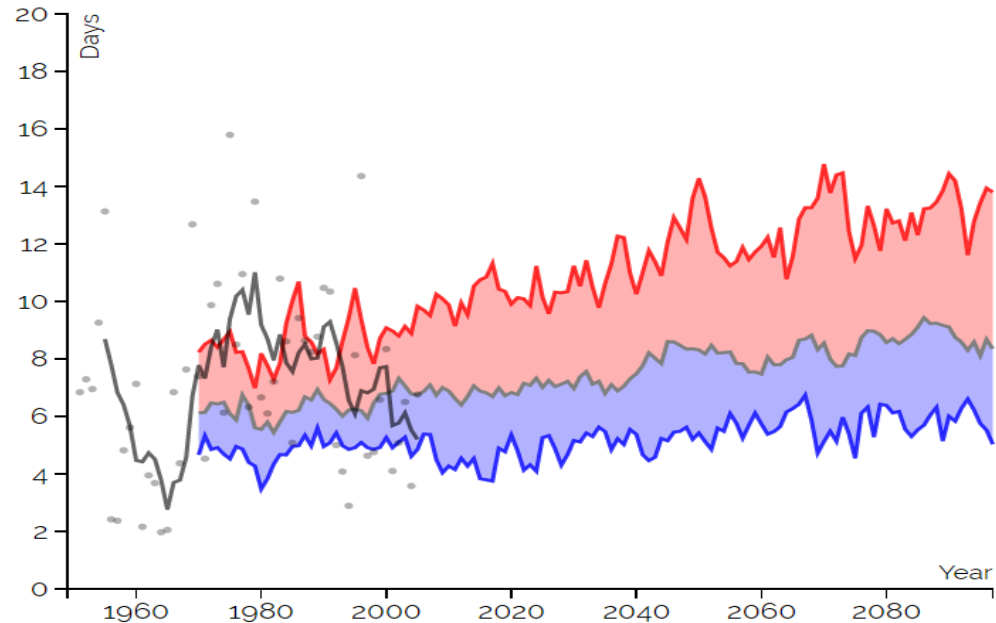
***WHAT ARE THE LOCAL IMPACTS
OF CLIMATE CHANGE?***

WARMER CLIMATE LEADS TO... MORE PRECIPITATION

Annual Total Precipitation
Westfield



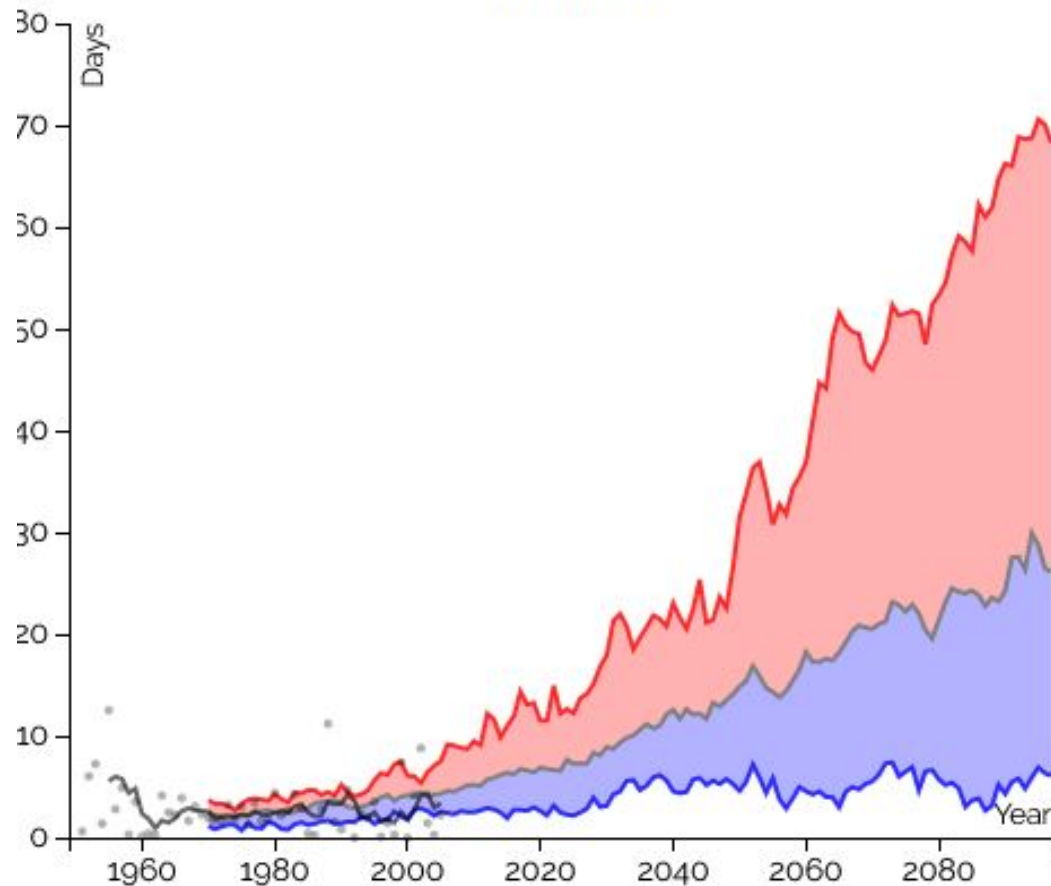
Annual Days with Precipitation > 1"
Westfield



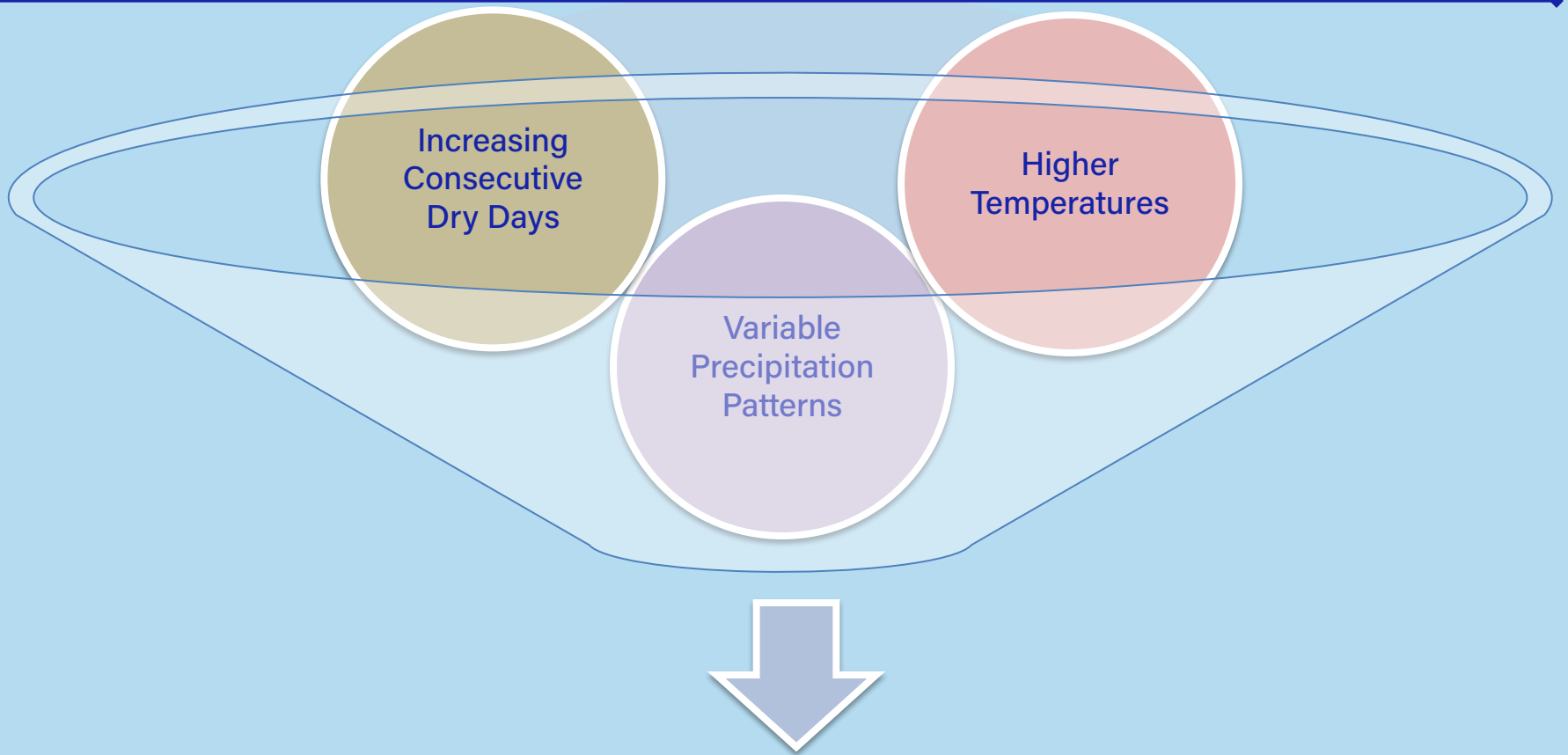


...EXTREME HEAT

Summer Days with Maximum Temperature Above 90°F
Westfield



...CASCADING EFFECTS



Change in geographical distribution of plants and insects, depleted groundwater, intensified droughts, higher risk of forest fire

...SOCIAL VULNERABILITY

Air Pollution & Increasing Allergens

Asthma, cardiovascular disease,
respiratory allergies

Extreme Heat

Heat-related illness and death,
cardiovascular failure

Severe Weather

Injuries, fatalities, loss of homes,
mental health impacts

Environmental Degradation

Forced migration, civil conflict, mental
health impacts, loss of jobs and income

Degraded Living Conditions & Social Inequities

Exacerbation of existing social and health
inequities and vulnerabilities

Changes In Vector Ecology

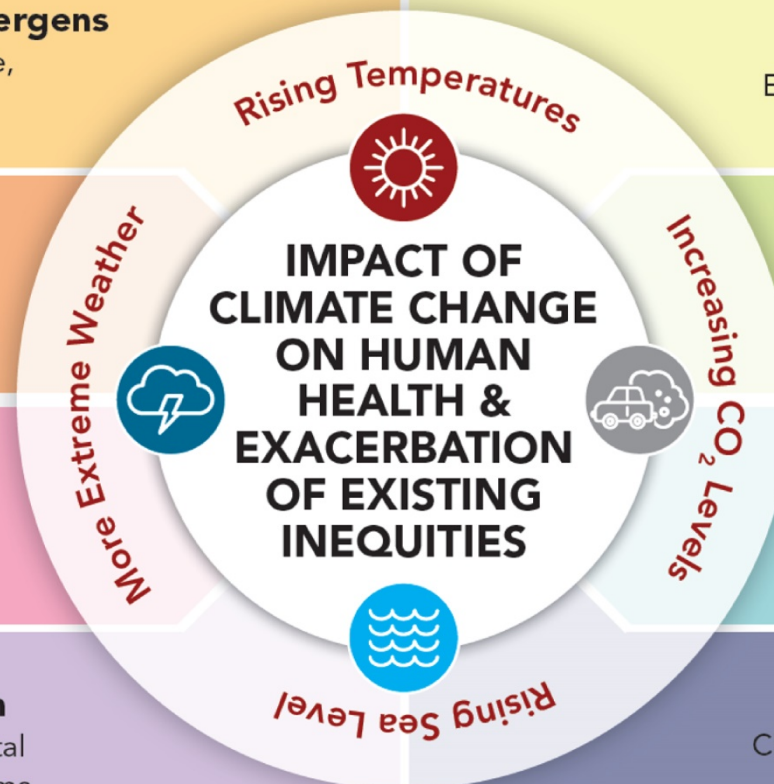
Malaria, dengue, encephalitis,
hantavirus, Rift Valley fever, Lyme
disease, chikungunya, West Nile virus

Water & Food Supply Impacts

Malnutrition, diarrheal disease

Water Quality Impacts

Cholera, cryptosporidiosis, Campylobacter,
leptospirosis, harmful algal blooms



Adapted from CDC, J. Patz

SOCIAL IMPACTS OF EXTREME TEMPERATURES

- Seniors are particularly prone to experiencing heat stroke and exhaustion
- Seniors are also more likely to experience hypothermia



SOCIAL IMPACTS OF EXTREME TEMPERATURES

- Chester households are less likely to have AC
- Financial constraints affect how often households can run heat or AC
- Financial and physical constraints affect the ability to respond quickly to a household emergency



SOCIAL IMPACTS OF FLUCTUATING TEMPERATURE

- Can limit mobility & ability to conduct routine business
- Can impact evacuation routes
- Strains Town budget
- Can increase groundwater contamination



SOCIAL IMPACTS OF DROUGHT

- Chester relies on groundwater wells for half of all drinking water
- Can affect food availability and price
- Can impact ability to grow your own produce

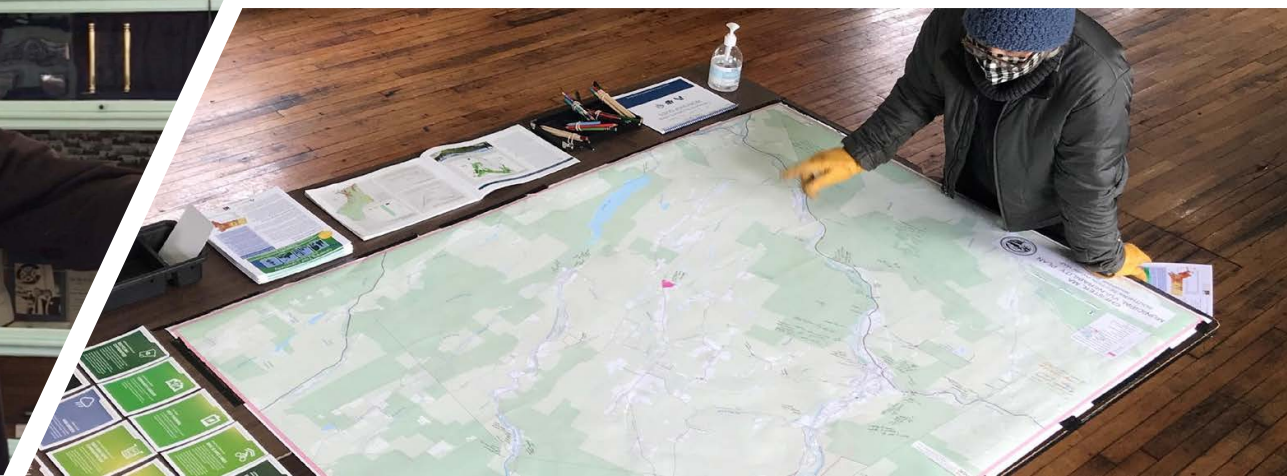


03.

CHESTER RESILIENT & READY | June 7, 2021

Community- Identified Vulnerabilities & Assets in Chester





CONCERNS & VULNERABILITIES

- Bridges passing over Westfield River & Walker Brook
- Undersized / damaged culverts
- Dirt roads in poor repair
- Many waterbodies (flooding)
- CSX Railroad (lack of control)
- Invasive species
- Tax-exempt lands
- Increasing development



ASSETS & STRENGTHS

- Historic town center and infrastructure
- Tourism & recreation-based economy
- Engaged residents
- Increasing development
- Abundance of natural resources and preserved land



04.

CHESTER RESILIENT & READY | June 7, 2021

TOP STRATEGIES TO IMPROVE RESILIENCE IN CHESTER



1 REDESIGN THE DOWNTOWN BRIDGES TO IMPROVE FLOOD SAFETY

The redesigns should consider bridge stability in addition to the preservation and/or enhancement of the local riverine habitat and the ability of river flows and sediment to pass efficiently. The redesigns should be able to withstand high waters and consider predicted future precipitation levels.



2 IMPROVE AND ENSURE EVACUATION READINESS FOR ALL RESIDENTS

Identify and publicize plans for evacuating via MA Route 20 when the bridges are impassible.

Conduct a feasibility study for improving dirt roads so that they can be passable by ATVs during emergencies.

Conduct public engagement to ensure residents know their best options for evacuation.



3 ADDRESS UNDERSIZED / BLOCKED CULVERTS AND ROAD-STREAM CROSSINGS

Redesign and replace undersized and damaged culverts using to allow for wildlife passage and improved water flow, which will lead to less flooding.

Institutionalize surveillance of culverts and associated waterways to remove debris and allow water to move freely throughout the system.



5 INVENTORY INVASIVE PLANT SPECIES AND IMPLEMENT CONTROL MEASURES

Work with the MA Department of Ecological Restoration and other agencies to inventory invasive plant species in town.

Initiate a local volunteer program, including students, to implement control measures.

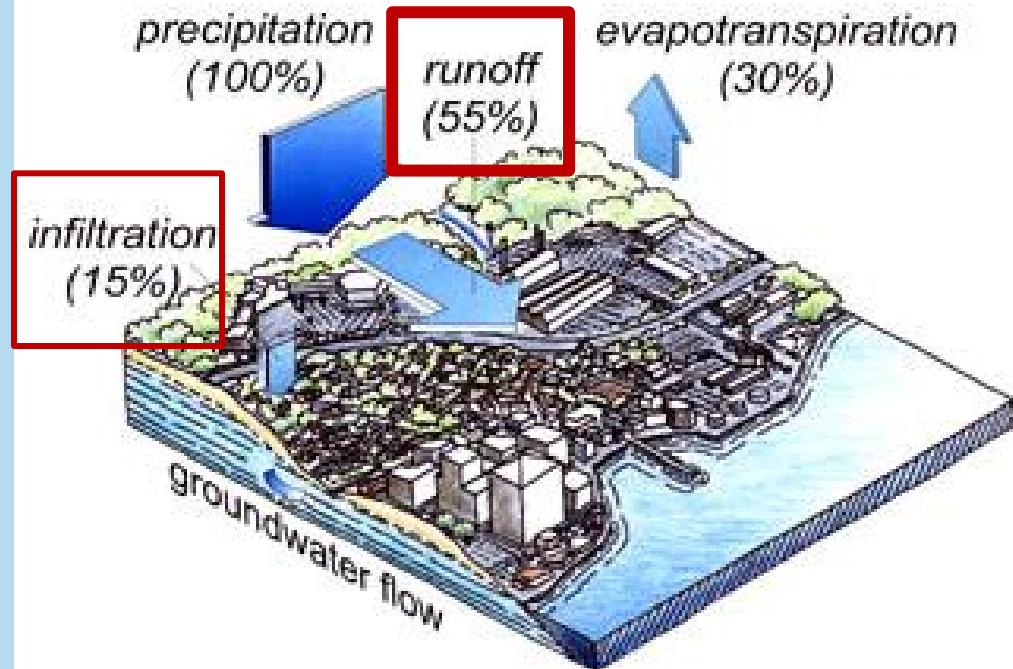
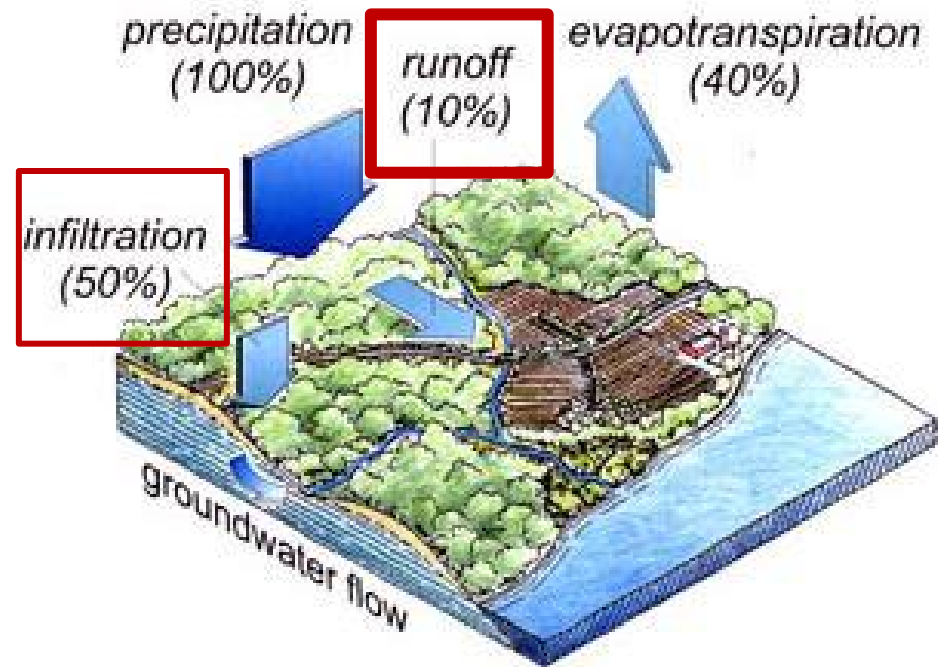


6

UPDATE BYLAWS AND REGULATIONS TO PROMOTE LOW IMPACT DEVELOPMENT

Conduct a regulatory review of all bylaws and regulations regulating development to ensure protection of natural resource and ecosystem services.

Develop recommendations to curb any undesirable impacts of development such as from residential, commercial, and infrastructural development, on open space and natural resources.



7 RENOVATE THE OLD CHESTER ELEMENTARY SCHOOL TO USE AS A COMMUNITY HUB

Renovate and preserve the old Chester Elementary School as a community building with shared use agreements for education, meetings, gatherings, and town offices, etc.



8

GROW THE LOCAL OUTDOOR- AND RECREATION-BASED ECONOMY

Build the local economy and protect natural resources simultaneously by investing in environmental education for both grade school students and at the community at large.

Develop the school district as an attractive alternative educational experience, such as including exchange student programming and outward-bound / expeditionary learning curriculum for experiential learning.



Develop inter-generational, community-based experiential learning and expeditionary style programming and place-based, natural environment learning in town for both residents and tourists.

9 EXPAND AND IMPROVE MUNICIPAL INFORMATION SHARING & COMMUNICATION

Ensure the town website is updated and that all departments and committees keep it updated with relevant news and information. Ensure residents know about and sign up for Code Red alerts. Utilize existing resources, such as Chester on Track, Watts New in the Hilltowns newsletter, and work with elementary school students to teach them how to access information about their town.

The screenshot shows the top navigation bar of the Chester, MA website with links for 'Departments' and 'Boards/Com'. Below the navigation is a dark header with 'WELCOME TO Chester, MA' and a 'NEWS' section. Two news items are displayed: 'Family Vaccination Clinic: Saturday, June 5th' and 'Planning Board Member Wanted'. Each item includes a byline 'By Webmaster on [date], 2021 in News' and a 'Read More' button.

WELCOME TO
Chester, MA

Departments Boards/Com

NEWS

Family Vaccination Clinic: Saturday, June 5th
By **Webmaster** on June 01, 2021 in **News**

FAMILY VACCINATION CLINIC Sponsored by the Hilltown Community Health Center of Northampton Health Department COVID-19 Vaccine is Free! Appointments are June 5th 9:00am-12:00pm Stanton Hall, 26 Russell Road, Huntington, MA Please call 667-3009, ext. 261 • You will...

[Read More](#)

Planning Board Member Wanted
By **Webmaster** on May 25, 2021 in **News**

The Planning Board, which has five members, has two vacancies and is looking for a new member. The board typically meets the second Monday of every month at 7PM in the Town Hall but will meet more times as needed (due to social distancing restrictions, the board currently...

[Read More](#)

05.

CHESTER RESILIENT & READY | June 7, 2021

NEXT STEPS IN THE MVP PLANNING GRANT PROGRAM



NEXT STEPS

FOR MUNICIPALITY

- ✓ Review results of resident survey and incorporate comments into SOF
- ✓ Submit SOF final report to EEA
- ✓ Receive MVP designation (June/July 2021)
- ✓ Apply for MVP Action Grants, etc.

FOR RESIDENTS

- ✓ Review draft Summary of Findings (SOF) report (link in chat)
- ✓ Respond to 3 question resident survey about *your priorities for climate resilience* (link in chat, closes 6/14)
- ✓ Follow MVP progress!



Q & A

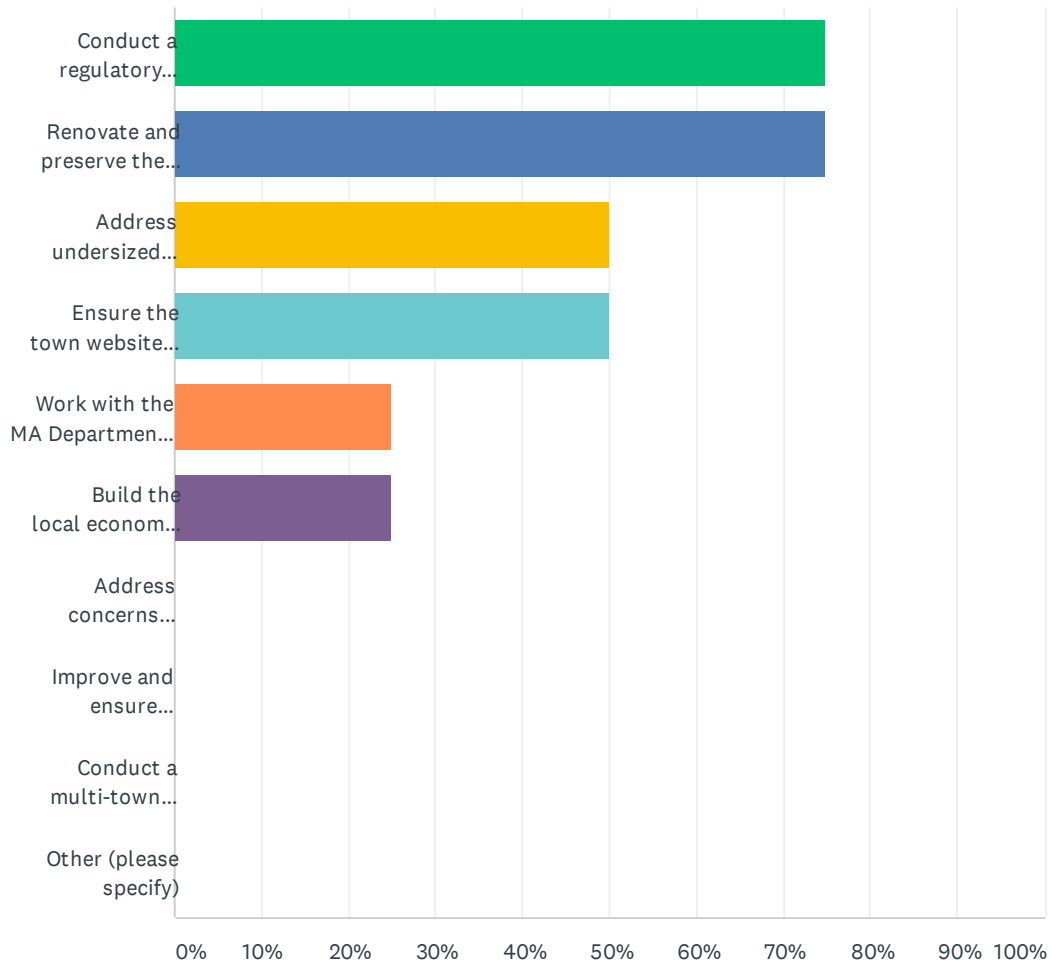


This project is made possible through funding from the Massachusetts Executive Office of Energy and Environmental Affairs' Municipal Vulnerability Preparedness (MVP) Grant Program.

PLS Survey Results

Q1 Please select your top 3 priorities to help the Town of Chester adapt to the changing climate and alleviate the vulnerabilities identified in the draft Summary of Findings report.

Answered: 4 Skipped: 0



Chester Resident Climate Readiness Priority Survey

ANSWER CHOICES	RESPONSES	
Conduct a regulatory review of all bylaws and regulations regulating development in Town to ensure protection of natural resource and ecosystem services, and develop recommendations to curb any undesirable impacts of development such as from residential, commercial, and infrastructural (cell towers, windmills, solar arrays, etc.) development, on open space and natural resources. Ensure that any new developments or redevelopments are able to withstand impacts of severe weather and increase precipitation and flooding.	75.00%	3
Renovate and preserve the old Chester Elementary School as a community building with shared use agreements for education, meetings, gatherings, and town offices, etc.	75.00%	3
Address undersized and/or blocked culverts and road-stream crossings and ensure passability during emergencies. Institutionalize surveillance of culverts and associated waterways to locate and remove debris and downed trees, etc., to allow water to move more freely through the system and prevent roadway washout and damage associated with blocked culverts. Work with DER to learn more about the culvert replacement grant and the components of a competitive application. Ensure that when replacing culverts, Town uses design standards to allow for wildlife passage and improved flow passage, which would lead to less flooding. Around those road-stream crossings and culverts known to be prone to disrepair, flooding, and/or washouts (e.g., Abbot Brook Culvert, Abbot Hill Road, Taft Hill Road, Middlefield Road), the Town should assess existing trails and determine the feasibility of using and/or creating new trails for passage by ATV, horseback, by foot, etc. for alternative evacuation. Determine the Town's emergency response capacity with ATVs, and consider acquiring some if there are none currently.	50.00%	2
Ensure the town website is updated and that all departments and committees keep it updated with relevant news and information. Ensure residents know about and sign up for Code Red alerts. Outreach can include hosting a booth at Chester on Track (annual event) to ensure information about Code Red, elected officials, and events/initiatives is dispersed; using the Watts News in the Hilltowns newsletter that is included in energy bills to share information; and working the fifth grade classes to demonstrate how students can access information about their town.	50.00%	2
Work with the MA Department of Ecological Restoration (DER) and other agencies to inventory potential invasive plant species in Town. Initiate a local volunteer program, including students to implement potential control measures.	25.00%	1
Build the local economy and protect natural resources simultaneously by investing in environmental education for both grade school students and at the community at large. Work with the high school administration to explore potential for collaboration with nearby school districts and developing a more robust cultural and environmental curriculum that capitalizes on Chester's / the Gateway Region's natural assets to retain and attract students. Develop the school district as an attractive alternative educational experience, such as including exchange student programming and outward-bound/ expeditionary learning curriculum for experiential learning. Engage with local and regional schools to ensure local environmental education around west branch of Westfield River and other wildlife areas. Celebrate unique geology and take advantage of unique conditions in town.	25.00%	1
Address concerns regarding the flooding of the three downtown bridges by developing redesigns that consider the stability of the bridge in addition to the preservation and/or enhancement of the local riverine habitat. The redesigns should address best management practices for infrastructure maintenance and maintenance of the stream beds around the bridges. Submit a written request to the MA Department of Ecological Restoration (DER) for technical assistance in making river crossings more efficient for vehicular traffic and water passage, etc., and to determine the causes of sediment build-up and blockage. Additionally, consult with the MA Department of Transportation (MDOT) to ensure that Town can take advantage of all relevant programming and grant opportunities for roadway infrastructure improvements.	0.00%	0
Improve and ensure evacuation readiness by: determining whether plans exist for evacuating via MA Route 20 when the bridges are impassible; conducting a feasibility study for improving Cooper Road enough that it can be passable by All Terrain Vehicles (ATVs)/Emergency Response vehicles for transportation during emergencies; and reviewing and assessing evacuation plans for all residents, and include a public engagement component.	0.00%	0
Conduct a multi-town watershed-wide assessment of flood storage capacity to reduce flood damage (to roads, buildings, and property) along the west branch of the Westfield River.	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 4		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q2 Do you have any comments, feedback, or concerns about the material included in the draft Summary of Findings report?

Answered: 1 Skipped: 3

#	RESPONSES	DATE
1	No	6/8/2021 7:45 AM

Q3 Is there anything else related to climate change or the MVP Planning Grant you would like to us know?

Answered: 1 Skipped: 3

#	RESPONSES	DATE
1	How Chester is run-making the same old decisions and "think" which seen in lack of progress	6/8/2021 7:45 AM