

# Massachusetts State Hazard Mitigation and Climate Adaptation Plan

September 2018



EXECUTIVE SUMMARY



# First-of-its-Kind Integrated State Plan

**The Commonwealth's 2018 State Hazard Mitigation and Climate Adaptation Plan is an innovative, first-of-its-kind statewide plan that fully integrates a traditional hazard mitigation plan with a climate change adaptation plan.**

In the face of climate change, it is critical to build long-term resilience throughout Massachusetts by leveraging historical risk data and integrating that data with projected future climate conditions. The *2018 State Hazard Mitigation and Climate Adaptation Plan* (SHMCAP) expands upon the previous planning efforts of the Commonwealth's 2013 State Hazard Mitigation Plan and the 2011 Massachusetts Climate Change Adaptation

Report. It accounts for projected changes in precipitation, temperature, sea level rise, and extreme weather events to position the Commonwealth to effectively reduce the risks associated with natural hazards and the effects of climate change.

The SHMCAP fulfills two important requirements: It updates the 2013 Massachusetts State Hazard Mitigation Plan and fulfills the requirements for the Executive Order 569 climate adaptation plan.

## Contents

- First-of-its-Kind Integrated State Plan  
2
- Climate Change is Intensifying Natural Hazards  
4
- Risks and Vulnerabilities the Commonwealth Faces  
6
- Current Capabilities and Adaptability  
10
- Our Strategy  
12
- A Living Plan  
16
- Key Points  
18



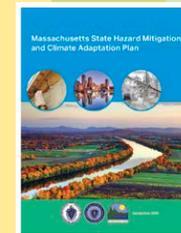
## Eligibility for Federal Disaster Mitigation Funding

As a condition of receiving non-emergency Stafford Act assistance and Federal Emergency Management Agency (FEMA) disaster mitigation grants, states are required to have an approved State Mitigation Plan following the criteria established in 44 CFR §201.4, including requirements to address the projected effects of climate change on hazard risks.

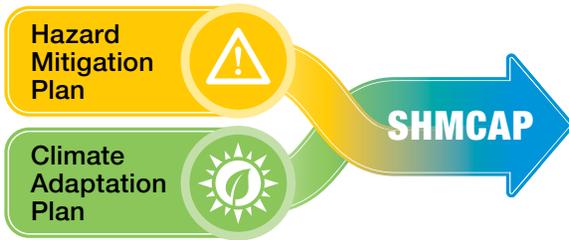


## Compliance with Governor Baker's Executive Order 569

Executive Order 569 directs the Executive Office of Energy and Environmental Affairs (EOEEA) and the Executive Office of Public Safety and Security (EOPSS) to coordinate efforts across the Commonwealth to strengthen the resilience of communities, prepare for the impacts of climate change, and proactively plan for and mitigate damage from extreme weather events, including publishing a climate adaptation plan that outlines a statewide strategy to address these impacts through adaptation and resiliency measures and policies.



Blizzard of 2015, Weymouth



This innovative plan encompasses the results of a multi-step planning process with a robust outreach and engagement program to incorporate diverse stakeholders across the Commonwealth in all phases of plan development, including identification of risks and vulnerabilities as well as goal setting and action development. The planning process was managed through a close partnership among the Executive Office of Energy and Environmental Affairs (EOEEA), the Executive Office of Public Safety and Security (EOPSS), and the Massachusetts Emergency Management Agency (MEMA), and involved a Project Management Team composed of technical specialists from several key state agencies.

## GLOSSARY

### Hazard mitigation

The effort to reduce loss of life and property by lessening the impact of disasters.

### Climate change

A change in the state of the climate that can be identified by statistical changes of its properties that persist for an extended period.

### Climate adaptation

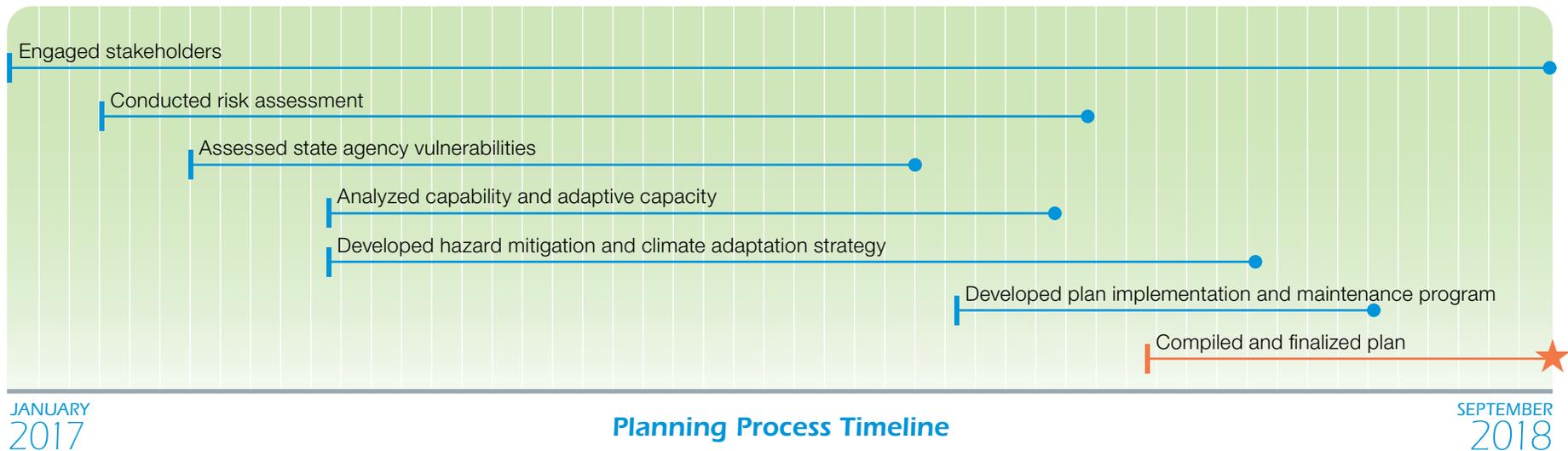
Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

### Resilience

The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner.

### Natural hazards

Natural events that threaten lives, property, and other assets. Often, natural hazards can be predicted. They tend to occur repeatedly in the same geographical locations because they are related to weather patterns or physical characteristics of an area.





Climate change is already exacerbating natural hazards and extreme weather events, as well as leading to new impacts that will affect the Commonwealth.

# Climate Change is Intensifying Natural Hazards

The SHMCAP integrates information and planning elements for 14 natural hazards that could affect the Commonwealth of Massachusetts with the following four climate changes: changes in precipitation, sea level rise, rising temperatures, and extreme weather. Projected climate changes will alter these natural hazards, in most cases increasing their severity, duration, or frequency.

The table on the following page shows the relationships between the natural hazards and projected climate changes. Natural hazards can be affected by more than one climate change, but a primary climate change has been identified for each hazard for the purpose of this plan.

## How Precipitation Increases Affect Inland Flooding

### Example of Climate Change / Natural Hazard Interaction

The Fourth National Climate Assessment published by the U.S. Global Change Research Program shows that heavy precipitation events have increased in both intensity and frequency over the past century across much of the country, with the largest increases occurring in the Northeast. Annual precipitation in Massachusetts is projected to increase by as much as 7.3 inches by the end of this century.

Because this additional precipitation will likely take the form of more intense periods of precipitation coupled with more frequent episodic drought, it is likely to result in more stormwater runoff and higher surface water levels. As storms occur more often and produce more precipitation, areas that lie in FEMA-designated floodplains (which are mapped using historical records) will flood more frequently, and land that is not typically affected by flooding may become inundated.

Also, projected increases in extreme precipitation events will increase the risk of flash flooding and damage to drainage systems not designed to accommodate the higher flows.

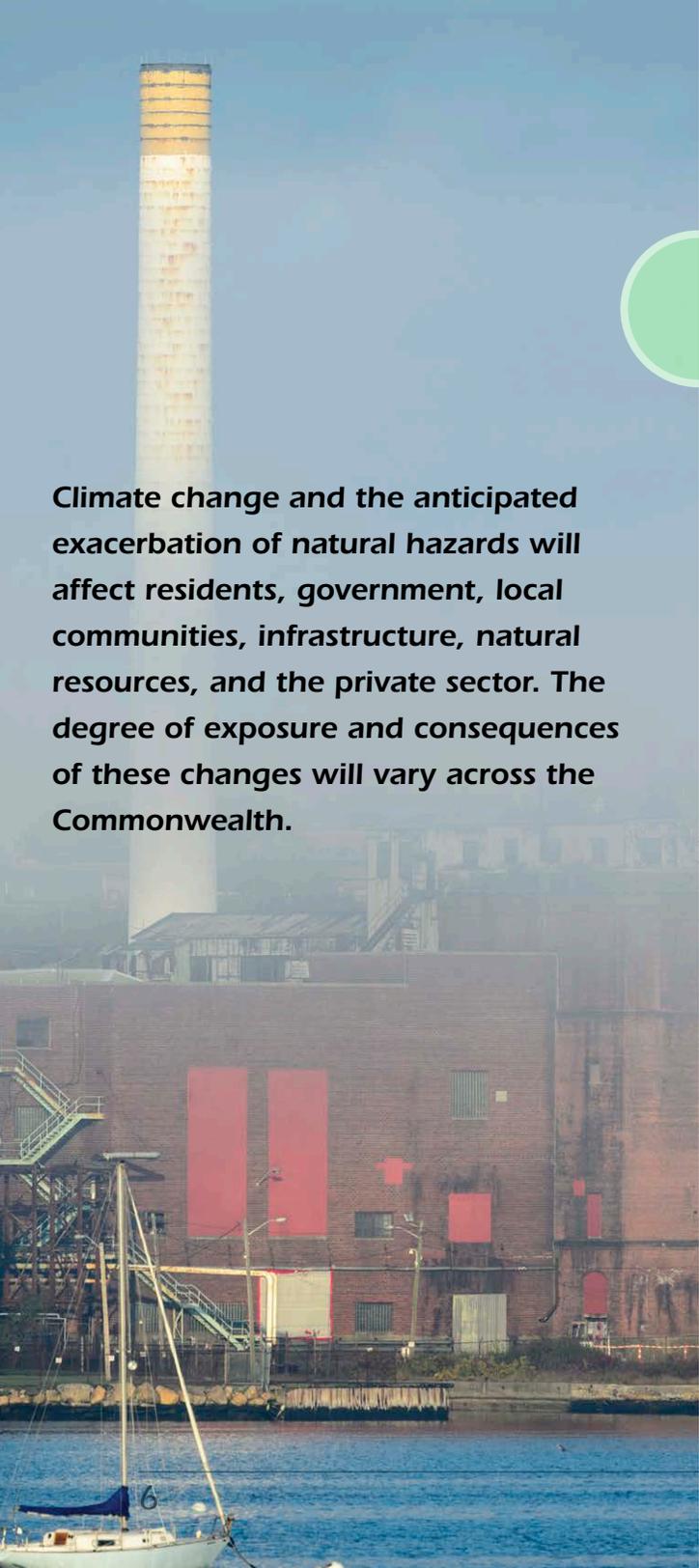
Storm-watching, Cape Cod

# Climate Change Projections for Massachusetts

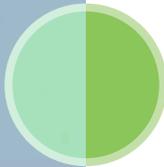
CLIMATE CHANGES	RELATED NATURAL HAZARDS	PROJECTIONS BY THE END OF THIS CENTURY
<b>Changes in precipitation</b> 	<ul style="list-style-type: none"> <li>- Inland flooding</li> <li>- Drought</li> <li>- Landslide</li> </ul>	<ul style="list-style-type: none"> <li>- Annual precipitation: Increase up to 16% (+7.3 inches)</li> <li>- Days with rainfall accumulation 1+ inch: Increase up to 57% (+4 days)</li> <li>- Consecutive dry days: Increase 18% (+3 days)</li> <li>- Summer precipitation: Decrease</li> </ul>
<b>Sea level rise</b> 	<ul style="list-style-type: none"> <li>- Coastal flooding</li> <li>- Coastal erosion</li> <li>- Tsunami</li> </ul>	<ul style="list-style-type: none"> <li>- Sea level: Increase 4.0 to 10.5 feet along the Massachusetts coast</li> </ul>
<b>Rising temperatures</b> 	<ul style="list-style-type: none"> <li>- Average/extreme temperatures</li> <li>- Wildfires</li> <li>- Invasive species</li> </ul>	<ul style="list-style-type: none"> <li>- Average annual temperature: Increase up to 23% (+10.8 degrees Fahrenheit)</li> <li>- Days/year with daily minimum temperatures below freezing: Decrease up to 42% (-62 days)</li> <li>- Winter temperatures: Increase at a greater rate than spring, summer, or fall</li> <li>- Long-term average minimum winter temperature: Increase up to 66% (+11.4 degrees Fahrenheit)</li> <li>- Days/year with daily maximum temperatures over 90 degrees Fahrenheit: Increase by up to 1,280% (+64 days)</li> <li>- Growing degree days: Increase by 23% to 52%</li> </ul>
<b>Extreme weather</b> 	<ul style="list-style-type: none"> <li>- Hurricanes/tropical storms</li> <li>- Severe winter storms/nor'easters</li> <li>- Tornadoes</li> <li>- Other severe weather</li> </ul>	<ul style="list-style-type: none"> <li>- Frequency and magnitude: Increase</li> </ul>

Note: This plan also assesses earthquakes, but there is no established correlation between climate change and earthquakes.

Source of Climate Change Projections: Northeast Climate Adaptation Science Center at the University of Massachusetts, Amherst.

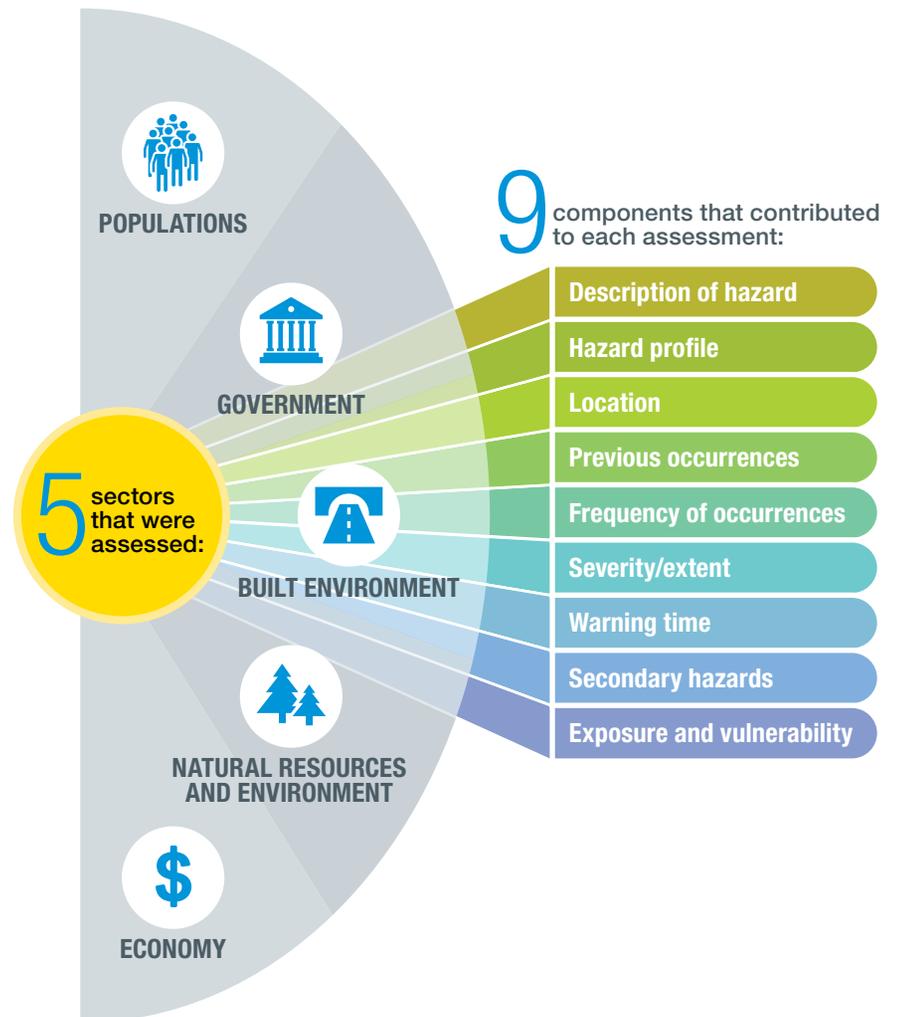


Climate change and the anticipated exacerbation of natural hazards will affect residents, government, local communities, infrastructure, natural resources, and the private sector. The degree of exposure and consequences of these changes will vary across the Commonwealth.



# Risks and Vulnerabilities the Commonwealth Faces

A risk assessment is used to identify potential hazards and analyze the consequences if a hazard occurs. The risk assessment conducted for this plan covers five key sectors—populations, government, built environment, natural resources and environment, and economy—and incorporates the best scientific data available to more accurately and comprehensively assess risks and vulnerabilities associated with natural hazards in a changing climate.



Foggy morning, New Bedford

The risk assessment includes information from almost 80 state agency climate change vulnerability assessments undertaken during development of this plan as a key requirement of Executive Order 569. Vulnerability to climate change is a function of exposure, sensitivity, and adaptive capacity.

## Key Vulnerability Assessment Findings for State Agencies

- **Vulnerability assessment completed by approximately 80 state agencies**
- **Nearly 1,000 critical items were assessed:**  
386 physical/non-physical assets | 340 functions | 231 population groups
- **Vast majority of agencies identified multiple concerns regarding impacts from climate change and natural hazards**
- **Top five hazards based on number of assets with a “High Risk” rating:**  
Extreme Precipitation | Hurricanes/Tropical Storms | Nor’easter | Ice Storms | Severe Winter Storm
- **Ability to withstand natural hazards and climate impacts:**  
Excellent: 6% | Good: 38% | Satisfactory: 42% | Fair: 14% | Poor: 0%
- **Length for agency to return to essential functionality following an extreme weather event that results in significant damage to critical assets and/or functions:**  
Months: 7% | Weeks: 32% | Days: 43% | Hours: 19%
- **Remote operation capability:**  
Yes: 82% | No: 18%
- **Status of incorporating natural hazard mitigation and climate change adaptation into programs:**  
Currently incorporating: 28% | Planning to incorporate: 32% | Not incorporating: 29% | Don’t know: 10%
- **Plans, policies, or procedures in need of revision to better consider climate change:**  
Yes: 24% | No: 37% | Don’t know: 39%
- **Application of factors derived from state agency adaptive capacity responses to risk scores significantly reduced the number of “High Risk” critical items – overall 80% reduction**
- **Top hazards with “High Vulnerability” scores based on number of critical items:**  
Physical/Non-Physical Assets: Severe Winter Storm/Ice Storm | Functions: Coastal Flooding | Population Groups: Coastal Flooding

## Assessing Climate Change Vulnerability



## Key Risk Assessment Findings by Hazard Type



### Inland flooding

- Areas that are highly developed or within the floodplain are most vulnerable
- Caused an average of over \$9.1 million in damages/year between 2007 and 2014
- Essex County experienced the most FEMA flood disaster declarations from 1954–2017
- More intense and frequent downpours will result in more frequent flooding and greater area exposed



### Drought

- Entire commonwealth is vulnerable and impacts on all sectors are widespread
- Chance of a Watch level drought occurring in any given month: 8%
- Frequency and intensity projected to increase during the summer and fall



### Landslide

- Areas with unstable slopes, such as around Mount Greylock and the US Highway 20 corridor near Chester, are most vulnerable
- Secondary impacts such as road closures can have a significant impact on communities
- More frequent and intense storms will result in more frequent soil saturation conditions that are conducive to landslides



### Coastal Flooding

- An average of six events/year have occurred in the last decade
- Highest concentration of events has occurred in Eastern Plymouth County
- Sea level rise will increase the frequency and severity of both routine tidal flooding and storm-related coastal flooding



### Coastal Erosion

- Exacerbated by storm surge and development
- Highest erosion rates occur in Eastham, Orleans, and Yarmouth
- Rising waves, tides, and currents will contribute to increased levels of future coastal erosion



### Tsunami

- Likelihood of occurring is low (one every 39 years on the east coast), but impact could be extensive
- Sea level rise may increase the area potentially impacted



### Average and Extreme Temperatures

- An average of two extreme heat and 1.5 extreme cold weather events/year have occurred over the last two decades
- Young and elderly populations and people with preexisting health conditions are especially vulnerable to heat and cold
- By the end of the century there could be 13–56 extreme heat days during summer



### Wildfire

- Massachusetts is likely to experience at least one event/year with noteworthy damages
- Barnstable and Plymouth Counties are most vulnerable due to their vegetation, sandy soils, and wind conditions
- There are over 1,200 state-owned buildings in identified wildfire hazard areas
- Projected increase in seasonal drought and warmer temperatures will increase the risk for wildfire



### Invasive species

- Risk to native or minimally managed ecosystems has increased as dispersion of exotic species has increased
- Changes in temperature and precipitation may increase chances of a successful invasion of non-native species



## Hurricanes/Tropical Storms

- Average occurrence of one event every two years
- Coastal areas are more susceptible to damage due to high winds and tidal surge, but all locations are vulnerable
- Vulnerable populations include those who may have difficulty evacuating
- Warmer oceans will likely result in increased intensity of storms



## Severe Winter Storm/Nor'easter

- Currently the most frequently occurring natural hazard in the state
- High snowfall and ice storms are greater in high elevations of Western and Central Massachusetts, while coastal areas are more vulnerable to nor'easters
- Over 1,000 state-owned facilities are in coastal locations that are vulnerable to nor'easters
- Increases in the intensity and frequency of extreme weather events as the climate changes may include more nor'easters and higher precipitation amounts during winter storms



## Tornadoes

- Massachusetts experiences an average of 1.7 tornadoes/year
- The most tornado-prone areas of the state are the central counties
- Over 200 critical facilities and 1,500 government facilities are in identified tornado hazard zones
- Increase in frequency and intensity of severe thunderstorms may increase risk of tornadoes



## Other Severe Weather

- The coastal zone is most frequently impacted by high-wind events
- Massachusetts experiences 20–30 thunderstorm days/year, high winds occur more frequently
- Road closures and power outages are common impacts
- Expected increase in the intensity and frequency of severe weather events

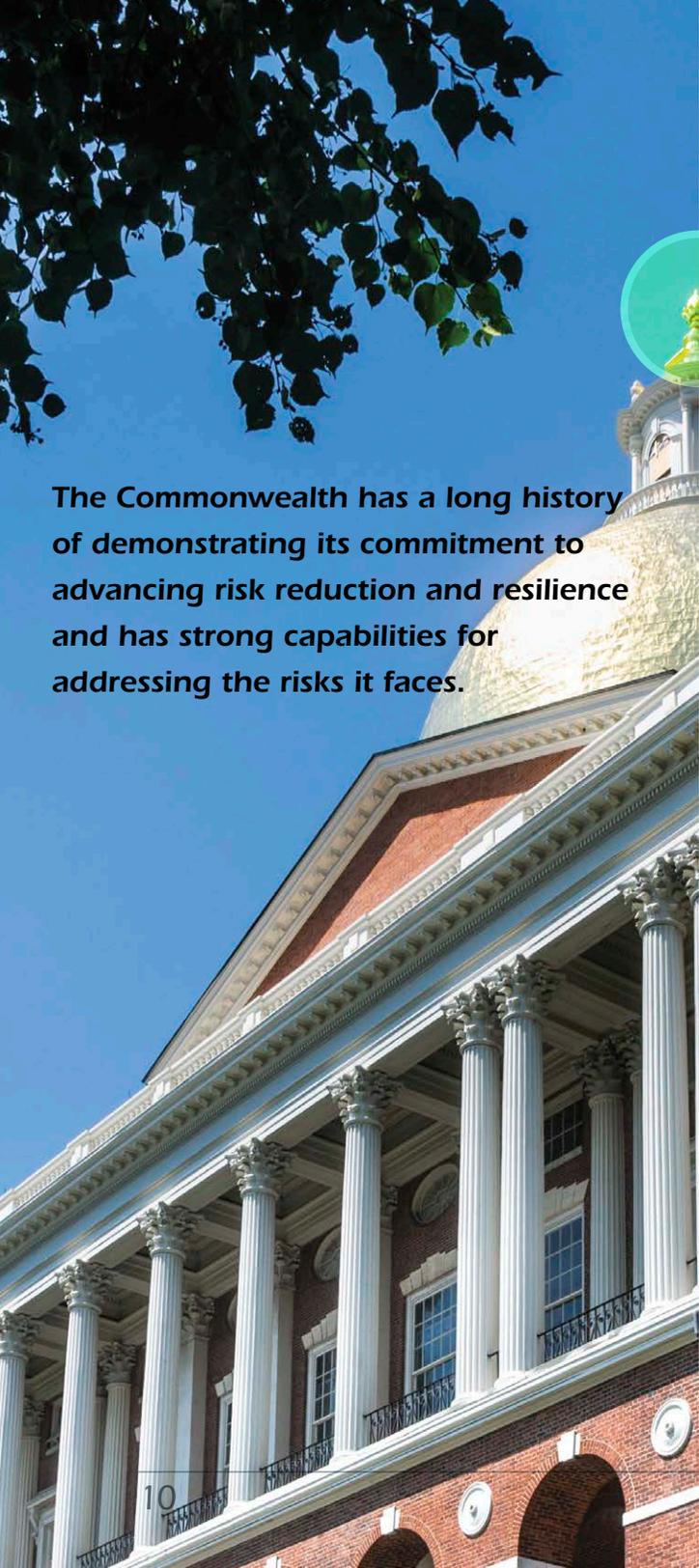


## Earthquakes

- Cannot be predicted
- Probability of a magnitude 5.0 or greater earthquake centered in New England is about 10–15% in a 10-year period
- Tall buildings, high population, and soil characteristics contribute to vulnerability



Atlantic storm, Lynn



**The Commonwealth has a long history of demonstrating its commitment to advancing risk reduction and resilience and has strong capabilities for addressing the risks it faces.**

# Current Capabilities and Adaptability

To maintain its commitment, the Commonwealth will continue to work across state government to build institutional capacity, maintain best available science and data, and develop operations and policies to adapt to changing natural hazards and the effects of climate change. The SHMCAP evaluates the Commonwealth's existing capabilities to implement hazard mitigation and climate adaptation activities on a statewide level, and presents agency-specific analyses of the State's capacity to adapt to changing hazards and climate conditions over time. These results were used to create a comprehensive and effective strategy to integrate future hazard mitigation and climate change adaptation.

The Commonwealth has bolstered its long history of advancing risk reduction and resilience across the state through recent State-led initiatives to increase state and local government capacity to deal with the challenge of climate change and natural hazards. Examples include:

- Significant investment in statewide, downscaled climate change projections at the county and watershed scale

## GLOSSARY

### State capabilities

The authorities, laws, policies, programs, staff, funding, and other resources available to support hazard mitigation and climate adaptation efforts.

### Adaptive capacity

The ability of state agencies to adjust or modify their operations, policies, or other functions to adapt to changing natural hazards and climate change impacts.

- Coordination of regional and community-based hazard mitigation plans
- Fiscal Year 2019 Capital Investment Plan
- Environmental Bond Bill signed into law August 2018
- Coastal Resilience Grant Program expansions
- Municipal Vulnerability Preparedness program growth (see map on the following page)

## Fiscal Year 2019 Capital Investment Plan

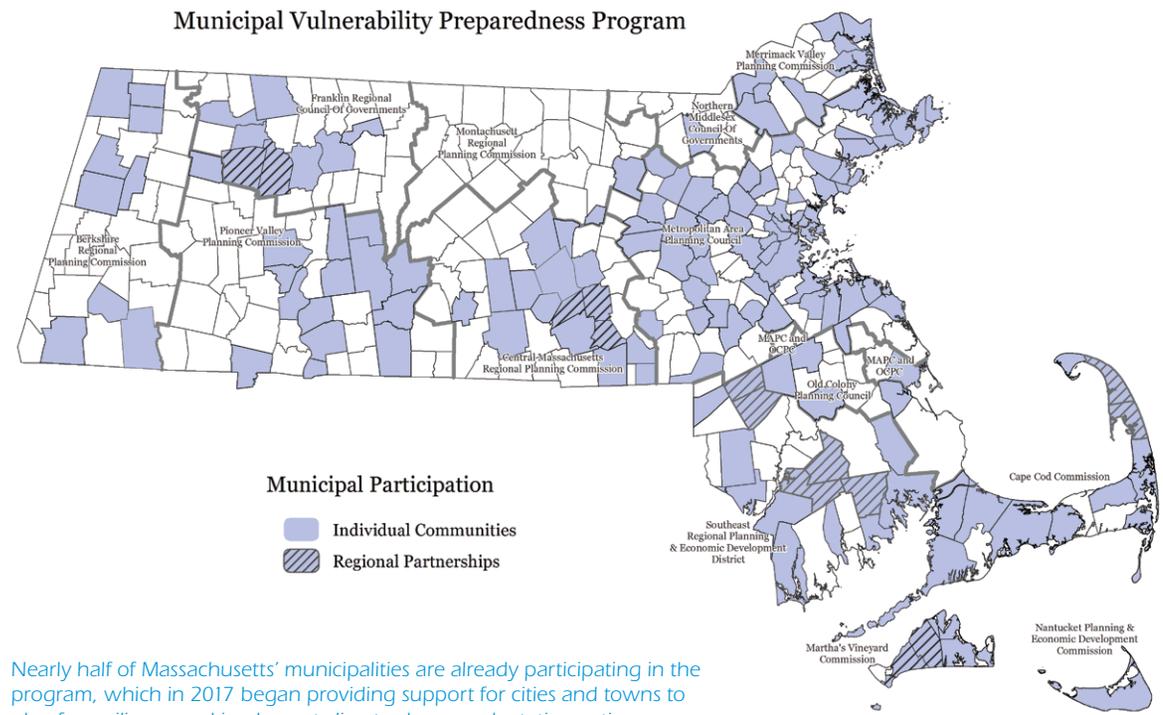
The Fiscal Year 2019 Capital Investment Plan incorporates the goals of Executive Order 569 and has an increased emphasis on climate change mitigation (emissions reduction) and adaptation. Each investment was evaluated for potential climate change implications, and the plan provides more than \$60 million in FY19 to directly address issues related to climate change.

## Environmental Bond Bill

The \$2.4 billion Environmental Bond Bill recently signed into law promotes climate change adaptation and the preservation and improvement of the environmental and energy assets of the Commonwealth and puts into law key components of Executive Order 569. It dedicates over \$500 million to climate change resiliency efforts and stipulates that investments made by EOEEA and its agencies must be consistent with the SHMCA.

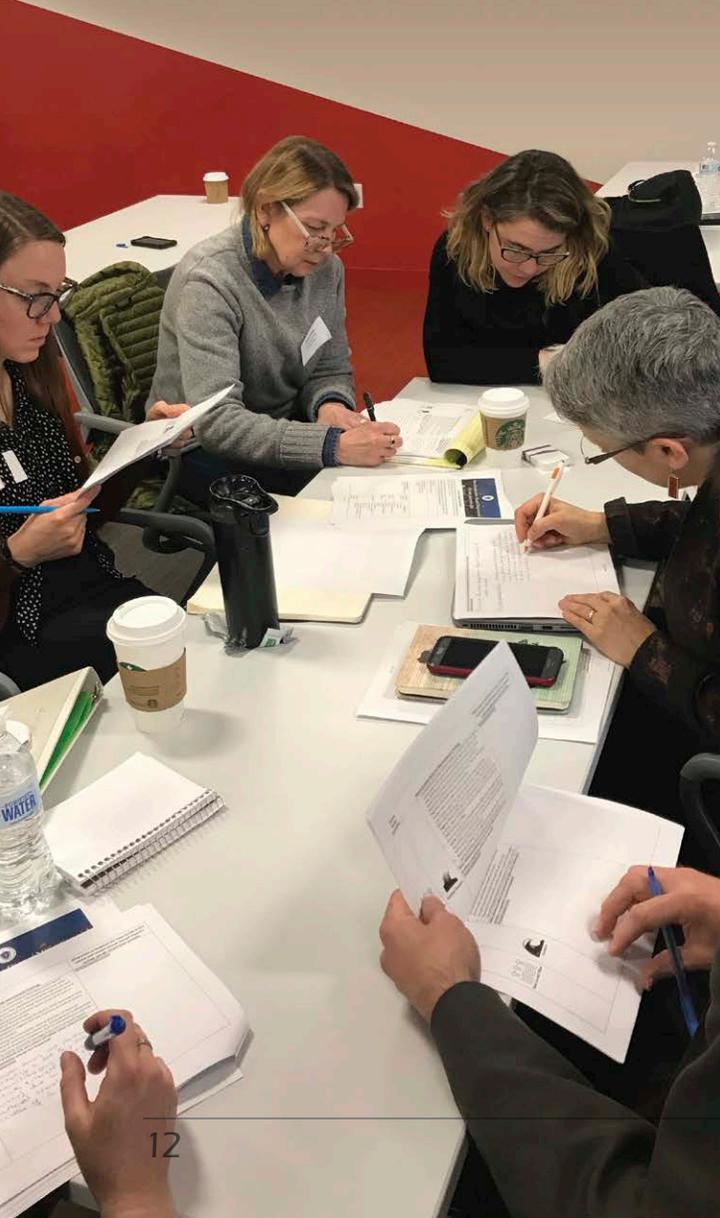
The Commonwealth also maintains a strong capacity at the state government level to adapt to changing future conditions. Results of a self-assessment survey completed by state agencies indicate that many agencies are well-positioned to protect their key assets, accomplish their missions, and deliver critical constituent services in the face of potentially increasing threats from natural hazards and climate change. For some state agencies, threats from natural hazards and climate change are significant, but for others they are minimal.

Despite these findings, there are obstacles and challenges to overcome as the Commonwealth works to further increase state and local capacity to address climate change and natural hazards. The plan's strategy outlines initial actions for state agencies to lead by example and to begin to tackle these challenges in a coordinated and forward-looking way. At the same time, additional capabilities and opportunities to increase natural hazard and climate resilience are rapidly emerging, including increased legislative support for spending and bond financing for resiliency investments, and incorporation of climate change considerations into existing budgets.



Nearly half of Massachusetts' municipalities are already participating in the program, which in 2017 began providing support for cities and towns to plan for resiliency and implement climate change adaptation actions.

State agencies identified over 100 initial priority actions to increase resilience and overcome the Commonwealth's risks and vulnerabilities related to natural hazards and projected climate changes.



# Our Strategy

The SHMCAP's strategy to address risks and vulnerabilities from natural hazards and climate change impacts, is guided by a mission statement and five goals, and includes a series of specific hazard mitigation and climate adaptation actions.

The process to develop these actions included extensive stakeholder engagement, reference to strategies and actions identified in local hazard mitigation plans, and development of initial actions by the Commonwealth's state agencies and Climate Change Coordinators across all Secretariats.

## GLOSSARY

### Hazard mitigation or climate adaptation action

A specific action, project, activity, or process taken to reduce or eliminate long-term risk to people, property, and natural systems from climate change and/or natural hazards and their impacts.

SHMCAP action development workshop

- GOAL 1 Integrate programs and build institutional capacity  
68 recommended actions
- GOAL 2 Develop forward-looking policies, plans, and regulations  
69 recommended actions
- GOAL 3 Develop risk-reduction strategies for current and future conditions  
82 recommended actions
- GOAL 4 Invest in performance-based solutions  
56 recommended actions
- GOAL 5 Increase education, awareness, and incentives to act  
39 recommended actions

Total number of recommended actions

108

**SHMCAP Mission Statement:** Reduce the statewide loss of life, and protect natural resources, property, infrastructure, public health, and the economy from natural hazards and climate change impacts through the development of a comprehensive and integrated hazard mitigation and climate adaptation program.

### Global/Cross-Cutting Hazard Mitigation and Climate Adaptation Actions

	ACTION TITLE	ACTION DESCRIPTION	EXECUTIVE OFFICE / LEAD AGENCY	COMPLETION TIME FRAME
<p>Cross-cutting or global actions are intended to reduce risk across state government and the Commonwealth. In addition, actions are identified for all Executive Offices and over 20 state agencies. All actions address at least one of the primary climate change interactions and associated climate change impacts identified in the risk assessment. Each action includes specific details, such as completion time frame, lead agency, agency priority score, and possible funding sources.</p>	<p><b>Budgeting, coordinating administrative functions, and planning.</b></p>	<p>Incorporate climate change vulnerability, resiliency, and adaptation standards into budgeting, coordination, and capital planning.</p>	<p>A&amp;F</p>	<p>3–5 years</p>
	<p><b>Incorporate hazard and climate change vulnerability into personnel and workplace policies, training, and guidance as appropriate.</b></p>	<p>Evaluate current policies and guidance to consider updates and other training opportunities related to personnel readiness, workplace climate change vulnerabilities, hazard mitigation, and climate adaptation techniques.</p>	<p>A&amp;F / HRD</p>	<p>3–5 years</p>
	<p><b>Power system planning that incorporates climate change risk.</b></p>	<p>Assess how power system planning may incorporate existing climate models to evaluate risk and deploy cost-effective infrastructure to reduce outages, repair, and replacement.</p> <p>Identify key data gaps for system planning and provide to DPU / EOEEA to coordinate with ongoing research.</p>	<p>EOEEA / DPU</p>	<p>3–5 years</p>
	<p><b>Create and deploy a SHMCAP project database.</b></p>	<p>Deploy the SHMCAP Action Tracker, a customized tracking spreadsheet tool for reporting progress status updates on individual actions, to provide continuous updating and reporting in real-time.</p> <p>Actively maintain SHMCAP Action Tracker on a restricted, password-protected file sharing site as the primary mechanism for reporting status updates on each action and measuring effectiveness.</p>	<p>EOEEA</p>	<p>3–5 years</p>



SHMCAP stakeholder engagement workshop

ACTION TITLE	ACTION DESCRIPTION	EXECUTIVE OFFICE / LEAD AGENCY	COMPLETION TIME FRAME
<b>In consultation with DCAMM, MassDOT, and EOHEA, develop climate change design standards.</b>	EOEEA will work with Climate Change Coordinators and agency staff across Secretariats to review and update design standards using Massachusetts climate change projections that will support best management and construction practices for new and improved agency structures, roads, parkways, parking lots, housing, and other facilities.	EOEEA	3–5 years
<b>Maintain and enhance climate change projections and specific climate change data sets to support different groups of end users.</b>	Maintain, update, and enhance climate change projections for Massachusetts through additional studies, stakeholder engagement to determine key data needs, and ongoing incorporation of advancements in the field of climate change science. Updated climate change data will be maintained and made available to the public on the resilient MA website.	EOEEA	3–5 years
<b>Review the state building code to assess feasibility of incorporating hazard mitigation and resilience.</b>	Review the state building code to assess feasibility of incorporating hazard mitigation and resilience into standards.	EOHEA / OPSI	3–5 years
<b>Migrate critical systems that support multiple state agencies to the cloud.</b>	Migrate critical operational systems that support multiple state agencies to the cloud, thereby removing the need to maintain and protect on premise servers for these systems.	EOTSS	3–5 years
<b>Incorporate hazard and climate change vulnerability into capital planning, master planning, and facilities management functions.</b>	<p>Incorporate climate change vulnerability, resilience, and adaptation standards into capital planning for new projects.</p> <p>Refer to agency climate change vulnerability assessments in master planning exercises.</p> <p>Integrate climate change vulnerability assessments into a facilities management system.</p>	A&F / DCAMM	Greater than 5 years

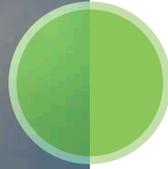
ACTION TITLE	ACTION DESCRIPTION	EXECUTIVE OFFICE / LEAD AGENCY	COMPLETION TIME FRAME
<b>Review, evaluate, and implement revisions as needed to environmental and energy policies, regulations, and plans.</b>	Conduct outreach with stakeholders to review, evaluate, and implement revisions needed to key state environmental and energy policies, regulations, and plans maintained by EOEEA and its agencies.	EOEEA	Greater than 5 years
<b>Utilize available climate change projections and risk assessment data to assess vulnerabilities of all EOEEA properties. Support efforts across the administration to assess facilities held by other Executive Offices.</b>	Utilize climate projection information and information on site-specific vulnerabilities, agency adaptive capacity, populations served, and other information to assess climate change vulnerability at all of EOEEA's land holdings, facilities, parkways, fisheries, dams, and other properties.  Use the resulting vulnerability scores and information for each asset, as well GIS layers depicting exposure and sensitivity to help EOEEA understand the risks at each site.	EOEEA	Greater than 5 years
<b>Incorporate climate change resilience into business continuity planning for state government.</b>	Work with A&F and EOTSS to update business continuity planning and to incorporate climate change hazards into plans and procedures across state government.	EOPSS	Greater than 5 years
<b>Update the SHMCAP and submit for FEMA review and approval.</b>	Update and submit the SHMCAP for FEMA review and approval every 5 years.  Continue to incorporate climate adaptation into future updates.	EOPSS / MEMA	Greater than 5 years
<b>Expand and improve the Boston Harbor Flood Risk Model to create the Massachusetts Coastal Flood Risk Model.</b>	Create improved sea level rise and storm surge scenarios for the present tidal epoch, 2030, 2050, 2070/2100; create northern and southern model grids; consider future shoreline changes; correct CZM/MassGIS shoreline mapping; assess the storm surge vulnerability of the coastal transportation network; and make data available to state agencies, coastal communities, and other interested stakeholders.	MassDOT / EOEEA	Greater than 5 years



Elevated houses in Scituate

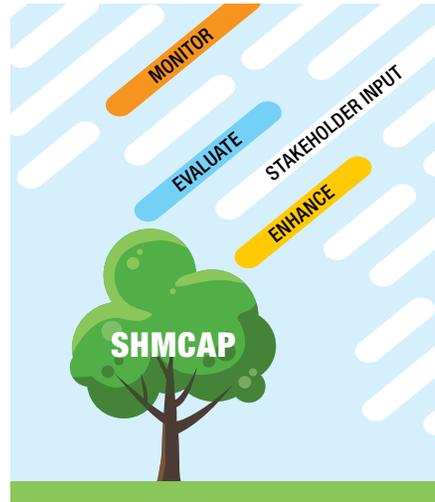
*Acronyms:*

- A&F  
Executive Office of Administration and Finance
- DPU  
Department of Public Utilities
- DCAMM  
Division of Capital Asset Management and Maintenance
- EOEEA  
Executive Office of Energy and Environmental Affairs
- EOHED  
Executive Office of Housing and Economic Development
- EOPSS  
Executive Office of Public Safety and Security
- EOTSS  
Executive Office of Technology Services and Security
- HRD  
Human Resources Division
- MassDOT  
Massachusetts Department of Transportation
- MEMA  
Massachusetts Emergency Management Agency
- OPSI  
Office of Public Safety and Inspection



# A Living Plan

To maintain relevancy, evaluate progress, and improve long-term resiliency, the SHMCAP is a living document that will evolve as specific hazard mitigation and climate adaptation actions are implemented and in response to ongoing dialogue with stakeholders.



Over the next 5 years, the plan will be continually reviewed, revised, and updated as conditions and information change and with input from stakeholders. The Commonwealth's resilient MA Climate Change Clearinghouse ([resilientma.org](https://resilientma.org)) will be the home for the online version of the 2018 SHMCAP as well as future updates and will enable communication with the general public, municipalities, state agencies, and other stakeholders.

To assist with the plan implementation and maintenance process, the Commonwealth is establishing a Resilient MA Action Team (RMAAT). The RMAAT will include representatives from each Secretariat as well as key state agencies and be tasked with specific responsibilities.

## RMAAT Responsibilities:

Conduct quarterly meetings, annual plan reviews, post-disaster reviews, and 5-year plan review and updates.

Track and facilitate the completion of annual implementation updates for all hazard mitigation and climate adaptation actions included in the plan.

Ensure that the SHMCAP incorporates new data as they become available.

Provide outreach, technical assistance, stakeholder engagement, and other educational services that increase general awareness and understanding of the SHMCAP.

Coordinate the continuous enhancement of the SHMCAP through collaborative partnerships and the active engagement of key stakeholders.

Support incorporation of the SHMCAP into other state plans and programs as appropriate.

Beach house, Cape Cod

## Plan Implementation

Effective plan implementation will be accomplished by designing implementation strategies and establishing timelines for priority actions and by continuing to monitor, evaluate, update, and develop actions as new data and experiences become available. Therefore, the responsibility for plan implementation falls on many state agencies.

## Plan Maintenance

The key components for regular SHMCAP maintenance include an annual plan review, a post-disaster review, and a 5-year plan review and update. Effective plan maintenance will also require additional recurring activities that are not bound to specific methods or schedules, such as tracking and documenting new or best practices for hazard mitigation and climate adaptation, or new policies or procedures that may affect how the SHMCAP is implemented. The RMAAT is expected to perform many of these ongoing activities, which will be discussed during the regularly scheduled plan reviews.



The RMAAT will be an expansion of the Project Management Team tasked with developing this original plan. It will continue to engage stakeholders as the plan is implemented.

The Commonwealth is proud to be a leader in establishing a forward-looking, integrated climate adaptation and natural hazard mitigation plan to advance statewide risk reduction and resilience.

## Key Points

The SHMCAP builds upon previous Commonwealth planning actions to address changes in precipitation, temperature, sea level rise, and extreme weather events and effectively reduce the risks associated with natural hazards and a changing climate.

### The SHMCAP:

- ✓ Acknowledges that climate change is already worsening natural hazards and extreme weather events and integrates information and planning elements for 14 natural hazards that affect the Commonwealth.
- ✓ Incorporates the best scientific data and projections available to assess risk and vulnerability associated with natural hazards and a changing climate for five key sectors—populations, government, built environment, natural resources and environment, and economy.
- ✓ Evaluates the Commonwealth’s existing capabilities to implement agency-specific and statewide hazard mitigation and climate adaptation activities to reduce risk and increase resilience.
- ✓ Establishes a strategy for implementation and continued evolution of the plan to incorporate new information and data as they become available as well as engage relevant stakeholders.

Ice storm, Berkshire County road



## Want to Learn More?

For more information, please visit the Commonwealth's resilient MA Climate Change Clearinghouse at [resilientma.org](http://resilientma.org) and the State's climate action page at [www.mass.gov/topics/climate-action](http://www.mass.gov/topics/climate-action). The resilient MA Climate Change Clearinghouse serves as a gateway to data and information relevant to climate change adaptation and natural hazard mitigation across the state. The Clearinghouse will be the home for the online version of the 2018 SHMCAP as well as future updates.



