

Climate Resiliency and Mitigation for Deerfield



Deerfield's Municipal Vulnerability Preparedness (MVP) Planning Process

Summary of Planning and Grant Process

The Town of Deerfield was the first community in Massachusetts to become certified under the Municipal Vulnerability Preparedness (MVP) program.

Deerfield has been actively engaged in planning for climate resiliency and climate action for the past five years. In that time, Deerfield has received five grants under the Municipal Vulnerability Preparedness program, totaling \$1.3 million. These grants have saved the town sizable amounts of money for needed projects, and have allowed the town to increase its preparedness for the impacts of climate change. Grants by year have included:

- 2017 MVP Planning Grant: \$15,000 – Action Plan
- 2018 MVP Action Grant: \$66,936
- 2019 MVP Action Grant: \$389,069
- 2020 MVP Action Grant: \$769,145

- 2022 MVP Action Grant: \$54,497

Total MVP Projects to date: \$1,294,497

Deerfield's Adopted MVP Plan

Deerfield began its Municipal Vulnerability Preparedness planning process in 2017 and formally adopted its MVP plan in 2018. The planning process included holding a townwide Community Resilience Building workshop and establishing a Community Resilience Building project team made up of town officials and residents. The Deerfield MVP Plan identifies top four priority climate hazards, which include:

- floods and dam failures;
- tornados and windstorms;
- hurricanes and tropical storms;
- severe winter storm and ice storms.



Severe flooding on the Deerfield River during Hurricane Irene.



Ice storm damage.

Here are some of the recommended actions in Deerfield's adopted MVP plan:

- Replace Culverts
- Develop an Emergency Action Plan (EAP) with Great River Hydro
- Protect Flood Storage Areas - and improve participation in the state's Agricultural Preservation Restriction (APR) program in town
- Establish and Implement a Mosquito Control District
- Improve and Increase Participation in the Reverse 911 Warning System
- Advance and Coordinate Emergency and Evacuation Plans - Between the town and private schools.
- Implement No Till Farming
- Carry Out a Utility Undergrounding and Tree Management Program to Bury Power Lines
- Petition FEMA to Update the Town's Floodplain Maps; Update Flood Zoning
- Floodproof the Town's Wastewater and Water Treatment Plants

Projected Climate Change in Deerfield

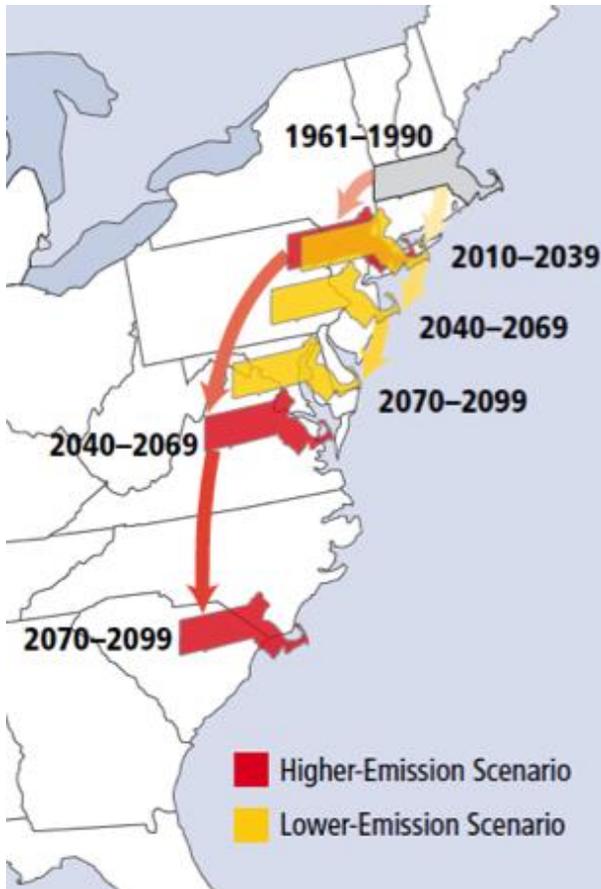
Our climate is already changing. Evidence of this change can be seen in many components of the climate:

- Temperature: Increased 2.9 degrees 1895
- Growing Season: Increased 11 days since 1950
- Sea level rise: 11 inches since 1922
- Strong Storms: 55% increase since 1958



The Northeast Climate Science Center at the University of Massachusetts Amherst has developed downscaled projections for changes in temperature, precipitation, and sea level rise for Massachusetts:

- Annual precipitation will increase from 50" to 57" by 2050
- Large rainstorms increase from 7 to 11 annually by 2050 with flooding impacts
- By mid-century Massachusetts climate will be similar to northern Virginia, and by end of century like South Carolina



Summer in Massachusetts by the end of this century could feel like a present-day typical summer in South Carolina.

Most notable for Deerfield, which has chronic flooding problems, these projections show that total annual precipitation for the Deerfield River Basin is expected to increase from the current 50 inches by as much as 6 inches per year by the 2030's, and 7 inches per year by the 2050's. Days with precipitation over 1" are expected to increase from the current 7 days annually by as much as 4 additional days by the 2050's. These increases will greatly exacerbate Deerfield's flooding problems and must be addressed in our MVP priority actions.

Winter precipitation is projected to increase through the 21st century. Due to increasing temperatures, in winter there will be more rain and less snow. Summer daytime high temperatures rarely go above 95 degrees F in today's climate. The number of days with extreme heat increases significantly under high emissions scenario.



Deerfield can expect more severe storm events and flooding. Flooding in the Deerfield River floodplain from Hurricane Irene shown above.

Climate Impacts in Deerfield

Deerfield's most important climate-related problem, and the one that our MVP grants have been primarily designed to address, is flooding. Other related and priority threats are tropical storms and dam failures. Deerfield is a low-lying town located at the confluence of the Deerfield River and the Connecticut River. The Connecticut River is New England's longest river, with a huge watershed. Deerfield is at the bottom of the watershed of the Deerfield River, a fast flowing river with headwaters in the Green Mountains of Vermont that is susceptible to major floods as seen in 2011 with Tropical Storm Irene. Localized flooding, particularly on Bloody Brook in the town center, is also a frequent problem every year.



Highway damage from Hurricane Irene flooding.



Areas in Deerfield that are highly vulnerable to flooding are Old Deerfield village on the Deerfield River and the town center on Bloody Brook. Historic Deerfield, which has vulnerable student populations at Deerfield Academy, Bement School and Eaglebrook School, was heavily

flooded during Tropical Storm Irene. Bloody Brook causes flood damages at least once a year in the town center, particularly along North Main Street. Bloody Brook has vulnerable student populations immediately adjacent to the brook at Frontier Regional High School and Deerfield Elementary School. In the areas subject to frequent flooding, Deerfield has tested mosquitoes positively for seven years for West Nile virus, making flooding a significant public health threat in town as well.

