



# KEY TAKEAWAYS • CLIMATE CHANGE & SUSTAINABILITY •

## WHY CLIMATE CHANGE & SUSTAINABILITY MATTER

Maintaining quality of life for residents into the future requires consideration not only of day-to-day conditions, but of the operations of the City’s government, economy, utilities and infrastructure, food systems, natural systems, and social resources leading up to, during, and following significant disruptions. While sustainability is the capacity of a system to maintain conditions over a long period of time, resiliency is the capacity of a system to restore and improve upon its initial conditions following a disruption. As Chicopee continues to grow and evolve, it is important to incorporate both resiliency and sustainability into all the City’s planning and development processes to better prepare the City for climate change and natural hazard events. Climate change impacts will be incorporated into all aspects of Envision Our Chicopee: 2040, and climate projections should be explicitly considered in the planning and design of critical facilities and infrastructure.

### EXPECTED CLIMATE HAZARDS

The Northeast Climate Adaptation Science Center (NE CASC) at the University of Massachusetts Amherst has developed specific climate change projections for communities throughout Massachusetts. Envision Our Chicopee: 2040 is taking these projected hazards seriously, to ensure that residents, businesses, buildings, infrastructure, and our natural environment can be resilient in the face of climate change.

#### Riverine & Urban Flooding

More overall precipitation in Chicopee and in the Chicopee River Watershed is expected, along with more intense precipitation events (i.e. more rain in shorter periods of time). While Chicopee has a very extensive and well-functioning flood control and storm water management system today, both could very well be overwhelmed in the coming decades if these storm trends continue. A robust combination of hard infrastructure and green infrastructure will be increasingly important in the future

#### High Winds & Temperatures

As storms and storm intensity increase, so do chances for high winds and the damage they can bring. Chicopee is also expected to have overall warmer temperatures and more days of extreme heat, as well as periods of summertime drought. Both extreme low and extreme high temperatures can cause negative health impacts and/or death. Extreme temperatures can also affect the City’s infrastructure, straining the electric grid, weakening roads and pipes, and affecting the management of water and wastewater.

**What is Green Infrastructure?**  
Green infrastructure is a cost-effective, resilient approach to managing rainwater impacts that provides many community benefits. While conventional piped drainage and water treatment systems are designed to move rainwater away from streets and buildings, green infrastructure absorbs and treats rainwater where it lands while delivering environmental, social, and economic benefits. Green infrastructure can include things such as rain gardens, bioswales, and other engineered open spaces.



# HARNESSING NATURAL RESOURCES FOR RESILIENCY

The natural systems of Chicopee, including its rivers, parks, and urban forest, present valuable opportunities to buffer the City from the effects of climate change.

## Urban Forest

Urban trees provide shade and cooling during hot weather, take up water and reduce flooding during high precipitation events, provide local reduction in air pollution, slow traffic, create aesthetic value and community character, and mitigate greenhouse gas emissions. Maintaining and expanding the urban tree canopy is a key component of resiliency. According to the City's Tree Management Plan (2013), most of the inventoried trees were recorded to be in fair or good condition, 61% and 22%, respectively. Based on these data, the general health of the overall inventoried tree population is rated in a fair condition. Most of the young, established, maturing, and mature trees were rated to be in fair condition; however, over time the number of trees rated in conditions "poor" to "dead" had a steady increase. There are many opportunities through the City's Urban Forestry program for residents to get new trees planted in their neighborhoods. The City makes a concerted effort to prioritize new tree plantings in neighborhoods with lower tree canopies.



## Parks & Open Space

Chicopee's parks and open spaces provide recreational value and ecosystem services and can be designed to minimize hazard risks both by retaining runoff or floodwaters and by preventing development in potentially at-risk areas.



# IDENTIFYING SPECIFIC VULNERABILITIES

The City's Hazard Mitigation Plan and Municipal Vulnerability Preparedness (MVP) report note specific vulnerabilities that Chicopee will need to address in the coming decades, on top of the natural resource vulnerabilities noted above.

## Vulnerable Populations

People who are less able to protect themselves from the impacts of climate change, such as the homeless, homebound, people with mental and physical disabilities, immigrants, non-native English-speakers, etc.

## Transportation Infrastructure

Protecting key roadways from flooding is a major public health consideration (for evacuation routes and emergency access) and also important for economic resiliency.

## Utility Infrastructure

Protecting utility lines from the elements and tree falls, making sure energy distribution networks have redundancy, and encouraging more local electricity generation (e.g. solar) can all help make sure utilities remain operational during hazardous events and/or get back up quickly.

## Historic & Cultural Resources

Older, historic buildings are often more vulnerable to damage from climate change and natural hazards than more modern buildings. It is important for the "soul" of Chicopee that these resources can weather such events and persist for the next generation.