

# Climate Resilient Communities Initiative Case Study: Onondaga County, NY

## Overview

Onondaga County sits in the central portion of New York State, flanked by Oneida Lake in the northeast and the hilly Appalachian Plateau in the south. The county has taken steps to address climate impacts, including developing a Climate Action Plan outlining its roadmap for future climate change mitigation projects.

AT&T saw an opportunity to enhance the analysis and planning being done by Onondaga County by providing new data sets from the Climate Risk and Resilience Portal (ClimRR) to supplement the county's climate change mitigation plans with climate change adaptation planning insights.

## Approach

Together with Onondaga County, the AT&T and Project IN-CORE team worked to visualize projections for summer heat, winter weather, pluvial flooding, harmful algal blooms and runoff. The analysis applies two forward-looking climate models to visualize the data: RCP 4.5 (representing a scenario where human greenhouse gas emissions peak around 2040, then decline) and RCP 8.5 (representing a scenario where human greenhouse gas emissions continue to rise throughout the 21st century). Mitigation strategies to address impacts from these climate changes were also identified as part of the analysis.

An important element of the analysis was examining social and economic considerations, which can impact a neighborhood's ability to respond to the

## Background: ClimRR and the Climate Resilient Communities Initiative

The [Climate Risk and Resilience Portal \(ClimRR\)](#) is a collaboration between AT&T, the Federal Emergency Management Agency (FEMA) and the U.S. Department of Energy's Argonne National Laboratory. The portal offers free, dynamically downscaled climate projections produced using Argonne's supercomputer.

ClimRR is based on peer-reviewed climate datasets and gives users highly localized future projections for temperature, heat index, precipitation/drought, wind, fire and flooding.

The Climate Resilient Communities Initiative puts ClimRR into action. BRADD is one of the communities selected to work with AT&T and a climate risk consultant at Project IN-CORE to receive actionable insights on climate risks and mitigation strategies—tailored to their specific needs and vulnerabilities. Initiative participants receive an insights report describing local-level climate risks and mitigation strategies (which can be used to update a Hazard Mitigation Plan or similar documentation), ClimRR training and communications support.

identified climate hazards. ClimRR is designed to be easily integrated with data from FEMA's Resilience Analysis and Planning Tool (RAPT). With this data, users can focus an extreme heat analysis on populations with disabilities, for example.

## Key Findings

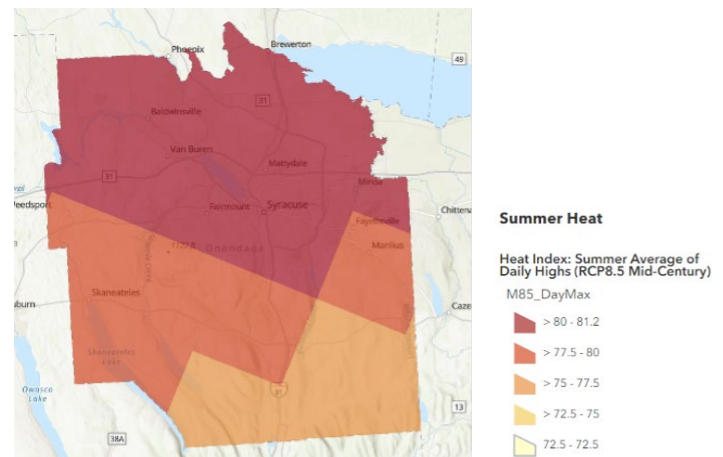
An [analysis](#) using ClimRR data found that Onondaga County is projected to see hotter and wetter conditions overall. The average summer heat index is projected to rise above the 80-degree threshold outlined by FEMA as a temperature of greater concern, increasing the risk of heat-related illnesses and injuries. These higher temperatures, combined with a projected increase in rainfall, could lead to more runoff and more intense harmful algal blooms. Pluvial (precipitation-based) flooding is also a concern for buildings throughout the county, particularly those with basements.

The county will need a multifaceted approach to address these changing climate conditions in the future. Potential mitigation strategies could include:

### Increasing cooling options and enacting heat awareness campaigns:

Onondaga County residents may not be used to experiencing extreme heat, making it especially important to communicate the risks associated with it. Particular attention should be given to those in rural areas, under the poverty level or aging populations, all of whom are more at risk of experiencing negative impacts due to extreme heat. Installing cooling centers and providing rebate programs for air conditioning units and electricity bills can help reduce the burden on these populations. It will also be important to ensure strategies are in place to protect outdoor workers from the effects of extreme heat.

### Heat Index: Summer Average of Daily Highs by Mid-Century

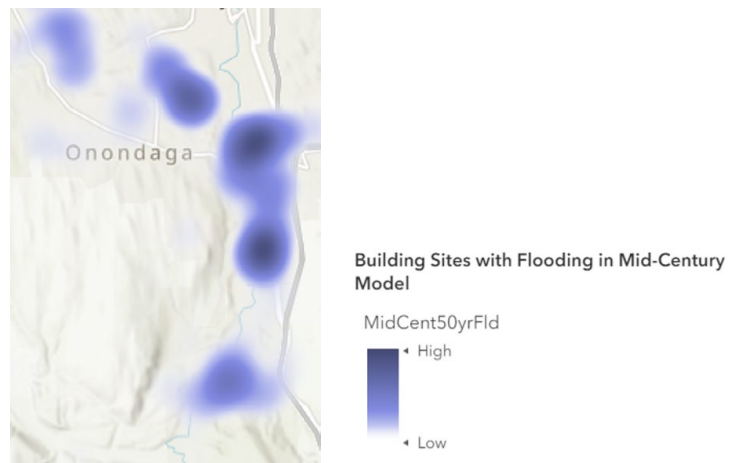


*Portions in red indicate areas that are projected to experience summer average daily highs of 80 degrees Fahrenheit or higher by mid-century under an RCP 8.5 scenario.*

### Strategically planning new developments to minimize flooding and floodproofing existing buildings:

With a projected increase in rainfall and pluvial flooding, building developers should aim to construct new developments outside the areas of highest concern where possible. At the same time, homeowners, especially newcomers to the region, should be given education and tools for floodproofing their homes, such as installing sump pumps in basements.

### Building Sites with Flooding in Mid-Century Model

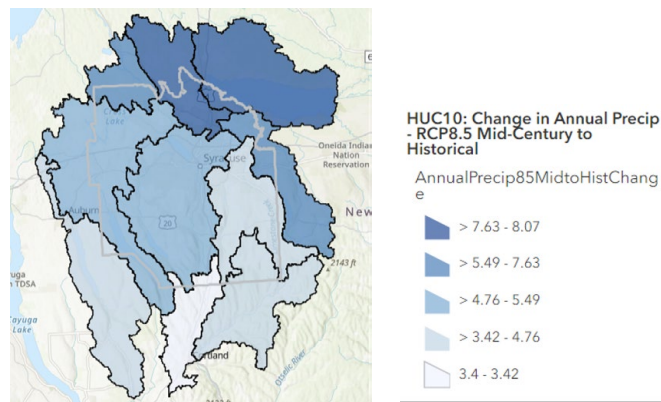


Portions in dark purple indicate non-urban areas that are projected to see increasingly consequential flooding by mid-century under the RCP 8.5 scenario. Note that there is a lack of pluvial flooding data for large cities due to the complexity involved with modeling each city's stormwater system.

### Monitoring sediment and limiting fertilizer runoff where possible:

With more rainfall and extreme heat comes a higher risk of more intense and longer-lasting algal blooms resulting from fertilizer runoff. This has already been an area of concern for the county, and mechanisms are in place to monitor sediment and limit runoff where possible. Continuing these activities and potentially implementing new technologies and methods will help to mitigate the increasing risk of algal blooms.

### Change in Annual Precipitation by Mid-Century



Portions in dark blue indicate areas projected to experience up to eight inches or more of increased rainfall compared to historical values under an RCP 8.5 scenario. The northern portion of the county is projected to see a more pronounced increase in precipitation, affecting runoff volumes in Oneida Lake and Oneida River watersheds most significantly.

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## Testimonial



There was conventional wisdom that our region was less vulnerable to climate change. However, ClimRR's projections have highlighted the potential impacts of increased summer heat and greater rainfall, allowing us to prepare more effectively. We thank AT&T and Project IN-CORE for their support in sharpening our understanding of future hazards.

**Troy Waffner**

Director of Planning, Onondaga County

## About Project IN-CORE

Project IN-CORE (Interdependent Networked Community Resilience Modeling Environment) is a non-profit organization that provides technical support and consultation services for community resilience planning. The IN-CORE platform models the interconnected impacts of natural hazards to help communities make science-informed planning and policy decisions to lessen the impacts of hazards and enhance community resilience.