

Supporting Regional Implementation of Integrated Climate Resilience Consortium for Climate Risk in the Urban Northeast (CCRUN)

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Impact Stories, June 1, 2025 – May 31, 2026



Boston



New York City



Philadelphia



CCRUN

**CONSORTIUM FOR CLIMATE RISK
IN THE URBAN NORTHEAST**

A NOAA RISA Team

Impact Stories

Building Coastal Resilience Through Community-Based Tide Monitoring in Stafford Township and Barnegat Bay, New Jersey

Challenge and Context

Coastal communities throughout New Jersey are experiencing increasing impacts from tidal flooding, storm surge, and sea level rise. In Stafford Township and Bay Head, flooding has become a growing concern for residents, businesses, and local governments. In Stafford Township, recurring flooding prompted development of the Resilient Stafford Action Plan, which identified the need for improved monitoring and data collection to support resilient infrastructure planning. Similarly, in Bay Head, local officials and the Bay Head Environmental Commission Flood Subcommittee recognized the need for more accurate, site-specific information to better understand changing flooding conditions and support future mitigation efforts.

While regional water level data are available, local governments often lack the community-scale observations needed to understand how changing water levels translate into flooding impacts within their own neighborhoods. Without these data, it is more difficult to plan infrastructure improvements, prepare for emergencies, and compete for resilience funding opportunities.

RISA Contribution

Through CCRUN, researchers from Drexel University, including Dr. Franco Montalto and Dr. Matina Shakya, partnered with Stafford Township, Bay Head stakeholders, and regional organizations to expand local flood monitoring capacity through installation and operation of a network of tide gauges in Ocean County. During the reporting period, two tide gauges were installed in Stafford Township's Beach Haven West section and one tide gauge was installed to support flood monitoring efforts in Bay Head.

CCRUN researchers provided technical expertise in sensor selection, installation, programming, calibration, data management, and integration of real-time observations into Drexel University's data platform. The monitoring network provides continuous water level information that can be used by municipal officials, emergency managers, and community organizations to better understand flooding conditions and long-term coastal change.

The project built upon recommendations identified through local resilience planning efforts and leveraged partnerships among local governments, educational institutions, environmental organizations, and community stakeholders.

Impact and Broader Relevance

The tide gauge network has increased local capacity to monitor and understand coastal flooding conditions in communities vulnerable to tidal flooding and storm surge. For example, approximately 8,000 residents in the Beach Haven West section of Stafford Township directly benefit from the enhanced monitoring system. The data are being incorporated into municipal preparedness, flood resilience, and long-term planning efforts.

The project has also strengthened the ability of local governments to pursue future resilience investments. Stafford Township leadership has specifically identified the tide gauge data as a resource that will support future grant applications and resilience projects. By providing locally relevant observations of water levels and flooding conditions, the monitoring network helps decision makers better document risk, justify adaptation investments, and evaluate future mitigation strategies.

Beyond the immediate benefits to Stafford Township and Bay Head, the project demonstrates how relatively low-cost monitoring infrastructure, combined with technical assistance from university partners, can improve local preparedness and support evidence-based decision making in coastal communities throughout the Northeast.

Primary Partners and Roles

- Stafford Township (local government and decision makers)
- Bay Head Environmental Commission Flood Subcommittee (local planning and flood resilience partner)
- Drexel University / CCRUN (technical lead and research partner)
- New Jersey Coastal Coalition, Save Barnegat Bay, Barnegat Bay Partnership, and MATES (supporting partners)

Geographic Scope

- Stafford Township, New Jersey
- Bay Head, New Jersey
- Barnegat Bay Region

Keywords

- Coastal Flooding
- Sea Level Rise
- Resilience Planning

Evidence of Impact

- Installation and operation of three tide gauges (two in Stafford Township and one in Bay Head).
- Data are being used to support municipal resilience planning, emergency preparedness, and future grant applications.
- Featured on Stafford Township resilience project webpages, presented at the New Jersey Coastal and Climate Resilience Conference, and highlighted in regional sustainability communications.

Quantified Outcomes

- Three tide gauge installations completed.
- Approximately 8,000 residents in Beach Haven West benefit from enhanced flood monitoring capabilities.

Supplementary Documentation

- Stafford Township Resiliency Projects webpage:
<https://www.staffordnj.gov/783/Resiliency-Projects>
- [Spring 2026 Sustainability in Action newsletter](#)

The Shade Effect: A Quantitative Analysis of Shade Interventions in Boston, Massachusetts

Challenge and Context

In Massachusetts and the City of Boston, extreme heat has been identified as a significant threat for communities, critical infrastructure, and the regional economy. To better prepare for extreme heat conditions, the city is looking to implement solutions that mitigate the impacts of high temperatures, which may disrupt transportation systems, cause electricity outages, and place a burden on the health of residents. The urban environments present a unique challenge, as there is limited green space and tree canopy, which provide relief from high temperatures. Residents and businesses seek strategies that provide cooling in advance of and during heat events.

RISA Contribution

CCRUN researchers worked with the City of Boston (Office of Climate Resilience), Boston's Community Foundation (The Boston Foundation), and a non-profit (A Better City), as part of the B-COOL partnership. From our team, Dr. Patricia Fabian and her team at Boston University, lead CCRUN's contributions to the research.

This project worked with Boston Chinatown Neighborhood Center, Franklin Park Zoo, and Turner Construction, as these were locations where structures were built and temperatures were monitored. The goal of the research was to evaluate the impact of shade structures on heat exposure, a critical step in providing effective and community-driven heat relief. Shade structures evaluated in the research were semi-permanent coverings, pop-up (tent), and permanent (green and clear roof). The sites were selected with input from partners and are areas where heat-vulnerable residents frequently go during the warm season. These include locations along transportation corridors, outdoor job sites, and areas where children and families visit. Data was collected in July and August, 2025.

Hand-held temperature sensors were used to measure wet bulb globe temperatures in locations covered and uncovered to compare the differences. Initial results found a range 1.6 and 8.9F between shaded and unshaded spots across the five monitoring locations.

Impact and Broader Relevance

Results from the research show the heat structures deployed made a significant difference on temperatures, reducing exposure to heat extremes. The use of different types of materials and structures provides a range of potential solutions for decision-makers, allowing for flexibility when planning future deployment. More permanent solutions, such as green roof bus shelters, reduce stormwater runoff (in addition to providing cooling), making them a strategy that can mitigate multiple environmental hazards. Semi-permanent structures like pop-up shade tents offer a more affordable and accessible option that still provides cooling.

Boston's 2030 Climate Action Plan, released in May 2026, references the shade structures that were evaluated in this pilot program. The city is also planning to release a heat research agenda which will further investigate topics related to reducing the impacts of extreme heat. This pilot, and prior work with B-COOL, also illustrate the strength that partnerships can provide when developing solutions to improve resilience to high temperature extremes.

Primary Partners and Roles

- City of Boston Office of Climate Resilience (Decision Maker)
- Boston University School of Public Health (Academic/Technical Lead)
- The Boston Foundation (Community Foundation)
- A Better City (Non-Profit/Business))
- Boston Chinatown Neighborhood Center (Community Partner)
- Zoo New England/Franklin Park Zoo (Community Partner)
- Turner Construction Company (Community Partner)

Geographic Scope

- Boston, Massachusetts

Keywords

- Heat
- Public Health
- Infrastructure

Evidence of Impact

- Boston's 2030 Climate Action Plan includes heat mitigation strategies piloted in this research.

Quantified Outcomes

- Temperature monitoring completed at five sites across the city of Boston.
- A temperature difference range of 1.6 and 8.9F between shaded and unshaded spots

Supplementary Documentation

- [A Better City Website](#)