

# Development of Multi-Hazard Coastal Resiliency Assessment and Adaptation Indices and Tools for the Charleston, SC, Region

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## **CHALLENGE: Assessing and Adapting to Increasing Coastal Hazards from Water, Waves, and Wind in Charleston, South Carolina**

Businesses, municipalities, and neighborhoods of the Charleston, South Carolina, region depend on transportation, water, energy, and other critical infrastructure facilities for continuity, successful daily operations, and quality of life. However, the critical infrastructure in the Charleston, SC, coastal region, as well as the southeastern United States coast, is subject to the threats posed by water, wave, and wind hazards due to increasing frequency and intensity of chronic and episodic events. These threats are currently manifesting themselves through daily, weekly, and monthly episodes of flooding in low-lying areas that are exacerbated by land subsidence, “King tide” and other high tide events, coastal storms, thunderstorms, rain “bombs” (wet microbursts), and tropical storms.

Currently, Charleston, SC, does not possess the local-scale information and analytical tools necessary to plan for and adapt to coastal water, wave, and wind events. Impacts of these events can disrupt and damage local businesses, transportation systems, water and wastewater systems, energy, daily continuity, and quality of life.

## **APPROACH: Development and Application of Coastal Resiliency Assessment and Adaptation Indices and Tools**

In response, the Charleston Resilience Network (CRN) is developing multi-hazards coastal resiliency and adaptation indices and tools that will focus initially on the impacts of water hazards in the region and then expand to other hazards in the future. The enhanced level of knowledge and the tools developed will further efforts to maintain and enhance transportation, water, energy, and other critical infrastructure facilities for continuity, successful daily operations, and quality of life. Coastal resilient infrastructure assessment and adaptation indices will provide the data needed to educate stakeholders about the infrastructure systems on which they depend.

In addition, the project team will conduct a comparative analysis of the functionality, breadth, and application of

the more than two dozen resilience tools which have been developed around the country. Such an analysis will allow the project team to take advantage of the investments which have already been made in assessment and adaptation development to ultimately construct a multi-hazard approach customized for Charleston, SC, specifically and coastal South Carolina generally. The resultant tools and indices will not only position the Charleston, SC, region for enhanced resilience and adaptive capacity, but will also be adapted for communities up and down the South Carolina and southeastern U.S. coast.

Specifically, the project will target select small businesses and industries, municipalities, and neighborhoods (individual homeowners) in higher risk areas of the region. Representatives of each stakeholder group will be invited to participate in a series of engagement exercises (interviews and discussions) to gauge their awareness and understanding of hazard-related issues, level of preparedness, and critical infrastructure information needs at the beginning of the project, and to evaluate the tools and indices, as well as participate in training exercises, at the back end of the project.

## **NEXT STEPS: Four phases to project completion**

This two-to-three year project will be conducted in phases: (1) Identification and analysis of existing information (including existing indices and tools) related to critical infrastructure; (2) Customization of indices and tools for the Charleston, SC, region; (3) Stakeholder engagement in the development and testing of the indices and tools; and (4) Final roll-out and implementation of the refined indices. Evaluation of the overall project will be based on feedback received from program participants, including the possible expansion to other coastal regions in South Carolina and the southeastern U.S. coast.

The National Infrastructure Protection Plan (NIPP) Security and Resilience Challenge is managed by the Office of Infrastructure Protection, within the National Protection and Programs Directorate of the Department of Homeland Security (DHS), in partnership with the National Institute for Hometown Security (NIHS). To learn more about this project, contact Jay Robinson, Program Manager, DHS, at [Jay.Robinson@hq.dhs.gov](mailto:Jay.Robinson@hq.dhs.gov) or Ewell Balltrip, CEO, NIHS, at [eballtrip@thenihs.org](mailto:eballtrip@thenihs.org).



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