

Collaborative Climate Adaptation Planning for Urban Coastal Flooding R/6310-0001

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Coastal cities across the country are weighing their options for adapting to rising floods, yet there is limited quantitative information available to help make these decisions. Here, we propose a collaboration between coastal flooding scientists and Jersey City planners to develop and test several options for adapting the region's urban coasts to flooding and sea level rise. Jersey City is the second-most populous city in New Jersey, yet has 43% of its land within the new FEMA 100-year flood zones. The investigators lay out a plan to leverage existing storm surge modeling to quantify the performance of a set of protective measures for Jersey City, including a variety of grey and green options such as storm surge barriers, deployable barriers, and wetlands.

Outcomes and outputs from the proposed research include: (1) flood zone maps that account for future sea level rise and storm climatology changes, (2) model-based map animations of how floodwaters enter Jersey City to help understand how the

pathways can be blocked, (3) a report on the flood protective benefits of a collaboratively determined set of coastal adaptation options, and their performance with future climate change, (4) an outreach workshop where we present the project's results to additional regional stakeholders, and (5) a transferable, peer reviewed and published adaptation planning and evaluation framework. Lastly, a primary performance measure for success will be that at least Jersey City, and possibly additional area cities, will implement climate change planning policies to adapt to coastal flooding.

The framework can also be utilized for many other U.S. coastal regions – anywhere that hydrodynamic models are already being used to simulate storm surges or map flood zones. FEMA has embarked on an ambitious effort to re-evaluate the nation's coastal flood zone maps, and many of these regional efforts are utilizing these models. Many areas also have storm surge forecast models in place that can be similarly used for adaptation studies.



Jersey City planning personnel project team members Jeff Wenger and Tanya Marione-Stanton are pictured at right meeting with Dr. Philip Orton (left) to discuss GIS delineations of coastal protection features.