FEATURE ARTICLE

Future Imperfect

Lessons Learned for an Approach to Achieve More Resilient Places

by William Kenworthey

We can create cities and campuses designed for potential hazards that also provide value culturally, environmentally, and economically.

NEW YORK CITY WAS DEALT A DEVASTATING TERRORIST ATTACK in 2001, saw the fall of its financial giants in the crisis of 2008, and in 2012 was battered by a powerful storm that flooded its communities, burned one neighborhood to the ground, and left many without power for days to weeks (figure 1). The fact that this waterfront city continues to grow and thrive demonstrates the magnetism of this adaptable place. Through the city's plan for A Stronger, More Resilient New York, the state's effort in New York Rising, and the outcomes of HUD's Rebuild By Design competition, resiliency is being implemented. It will take time, money, and a shift in culture to prepare all of our systems to be ready for whatever threat comes next. There is always more to be done as resilient is not something you are; it is something you become more so since every future hazard cannot be predicted with absolute certainty. Policies related to buildings and infrastructure need to evolve. And, solutions cannot just be copied from other parts of the world; they must be built with the uniqueness of place in mind, incorporate the concerns of the inhabitants who must live with the results, and be sensitive to culture and ecology, which can also add to economic value. The result is truly of, by, and for a locale. Design with the place in mind is how our firm Cooper Robertson approaches resiliency, which, along with beauty, craft, and sustainability, should be inherent in each solution.

Figure 1 **New York City After Super Storm Sandy**

Photograph by Iwan Baan for *New York Magazine*.

Resilient design develops long-term strategies for the adaptability of communities—physically, socially, and economically—in the face of potential disruption or disaster. It takes into consideration the potential threats and persistent issues in a place that become more obvious in a crisis. Through the latest science, a comprehensive strategy, and a willingness to invest in ambitious adaption we can create cities and campuses designed for potential hazards that also provide value culturally, environmentally, and economically.

Thirty-six years of urban design experience has positioned our firm to engage in resiliency efforts for the City of New York as part of the city's plan, for the state's New York Rising program, and for the federal HUD Rebuild by Design competition (addressing innovative design for commercial areas in both New York City and the New Jersey Shore). Resilient design must consider all potential natural and man-made threats: storms, drought, dwindling water supply, social unrest, terrorist threats, and financial crises.

The three examples described in this article—(1) A Stronger, More Resilient New York, (2) New York Rising, and (3) Rebuild by Design—demonstrate specific design and engagement processes leading to innovative results. Each weaves together the influences of public engagement, policy, innovative design, and the uniqueness of place to create resilient solutions for areas that are most at risk. Together, lessons emerge for a process for resilient design.

A STRONGER, MORE RESILIENT NEW YORK

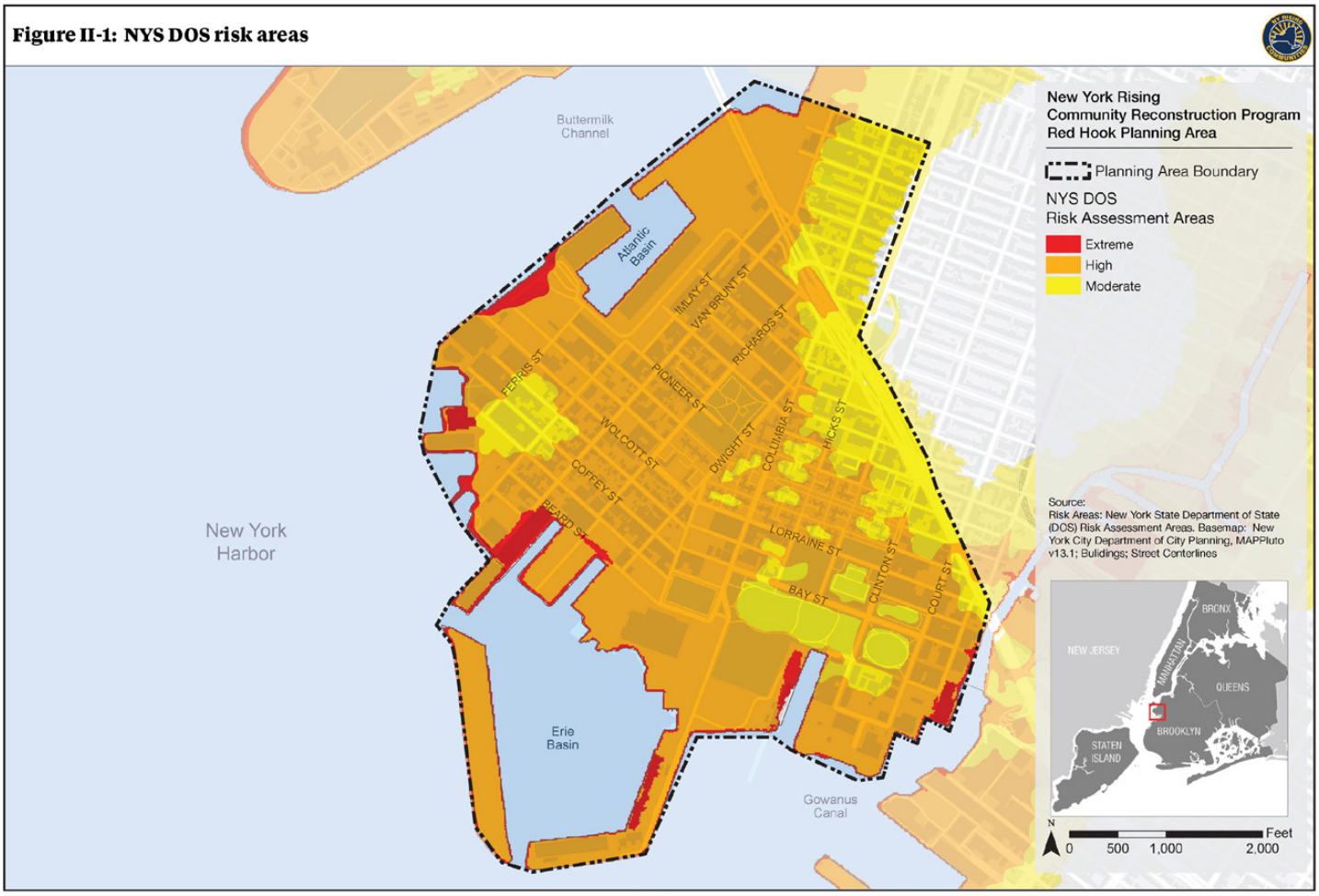
The tragedy of Super Storm Sandy led to several initiatives through A Stronger, More Resilient New York that can change New York City forever and offer lessons for others on how to address similar issues. In a city with a strong mayoral system, the centralized control of efforts allows policy and a framework for achieving goals to be crafted expeditiously. Centralized control—or at least coordination—is a critical factor enabling both clarity of mission and pragmatic implementation of any metropolitan or regional-scale initiative. Under an intense six-month schedule, this effort defined strategies for the city's five hardest hit communities (Southern Manhattan, Staten Island, South Brooklyn, Southern Queens, and the Brooklyn-Queens Waterfront) and organized initiatives into four project categories: coastal protection, critical infrastructure, buildings, and economic recovery. These initiatives were not just about flooding. They were also about rebuilding communities better than they were before and enhancing the social interconnections that will make them more able to adapt to multiple threats in the future. In each of the five communities, targeted community engagement events included summary presentations on neighborhood issues by the city's project teams, relevant solutions from around the world, and opportunities for dialogue in small groups. Discussions were specific to the needs of each neighborhood, what actions were necessary, and how changes would impact both individuals and the larger community. An integrated team of professionals from both the public and private sides crafted the plan for each of the five communities with input from citizens, policy makers, key stakeholders, and governmental agencies. The physical scale and nature of each place both geographically and in terms of existing development led to very different strategies. For example, the Seaport City proposal creates new real estate by filling in the East River to the Pier Line to help offset the costs of a new elevated levee designed as a vibrant new promenade along the riverfront to protect the low-lying upland areas of Lower Manhattan (figure 2). The integration of the Army Corps coastal protections tailored for Staten Island added increased elevation to address sea level rise and a new boardwalk to activate the beachfront and parkside experience (figure 3). Recommending modifications to citywide regulations for buildings and infrastructure is also part of the action plan. An example is the resilient zoning implemented to address issues related to dry floodproofing of retail ground floors in mixed-use buildings and increased heights for buildings that abandon residential floor area in jeopardy in the city's R6 districts through incentives. The city's Economic Development Corporation is currently

carrying out priority initiatives by retaining consulting teams to prepare designs and further feasibility studies. Given the large expense and vast scale of these projects, transformation will happen slowly even with significant federal funding.

Figure 2 **SIRR-Seaport City Proposal**

Figure 3 **SIRR-Midland Beach Proposal**

Figure 4 **New York Rising: Red Hook Planning Area**



NEW YORK RISING

A subsequent initiative of the State of New York was New York Rising, a community-based planning effort for areas affected by Hurricanes Ike and Irene as well as Super Storm Sandy. Over 40 communities across the state were included in this program (figure 4 shows an example of the output from the Red Hook Planning Area). This effort is now being implemented by the Governor's Office of Storm Recovery, which appointed community-based committees to lead the planning initiatives. This was a fully bottom-up endeavor, with additional competitive funding available for communities that showed innovation, obtained more funding, or partnered with other communities in the program to create regional strategies. Communities were encouraged to identify projects that could help with bottom-up resiliency, and the committees acted as the agents to raise awareness among the larger public and stakeholders. Public meetings in each community were used to communicate the progress of the planning effort as well as to allow for small groups to learn about possible solutions and voice their input (figure 5). Professional planning teams were integrated into the effort as advisers to help the committees receive the resources and information they needed to guide their decision making. Having these resources was essential for tracking the evolving regulatory framework, projects, and incentive programs supported by all levels of government. Weekly meetings were held by the committees, state staff, and consulting teams to advance the work. The result was a series of action items prioritized for funding based on each community's specific needs.

Figure 5 **New York Rising: Community Meeting**

REBUILD BY DESIGN

HUD's Rebuild by Design is an innovative approach to design competitions that enhance the national resilient design discussion. Ten international multidisciplinary teams were selected to undertake design research and stakeholder engagement efforts over an eight-month period to support proposals for securing funding for communities throughout the Sandy-affected region. This effort was intended to create innovation and provide a broader approach to the resiliency problem using the best talent and resources available. Major universities joined design professionals on several teams to add a significant research dimension to the proposals. Some of the public engagement took the form of parades and outdoor rallies in the project areas in order to get out the word, discuss the places in a whole new light, and inspire citizens to participate. Conferences were held in cities in the affected region as well as in cities like New Orleans that had experienced similar disasters.

Cooper Robertson was the design lead for the Commercial Corridor Resiliency Project. Convinced that "resilient businesses make stronger communities," our efforts studied the regional impact of commercial use within the flood plain and the three dominant geographic conditions: (1) barrier island (represented by Beach 116th Street, Rockaways; figure 6), (2) coastal community (represented by Asbury Park, New Jersey; figure 7), and (3) post-industrial inner-city waterfront (represented by Red Hook, Brooklyn; figure 8). Solutions emerged with input from stakeholders and community organizations, which then, in many cases, joined the competition teams to help advocate for funding and demonstrate the local capacity to implement projects. Major public presentation events were held at the midpoint of design and at the completion of the competition in both New York and New Jersey to broadcast the efforts of the teams and assist with communicating the schemes to the public (figure 9).

Figure 6 **Rebuild by Design: Barrier Island Example (represented by Beach 116th Street, Rockaways)**

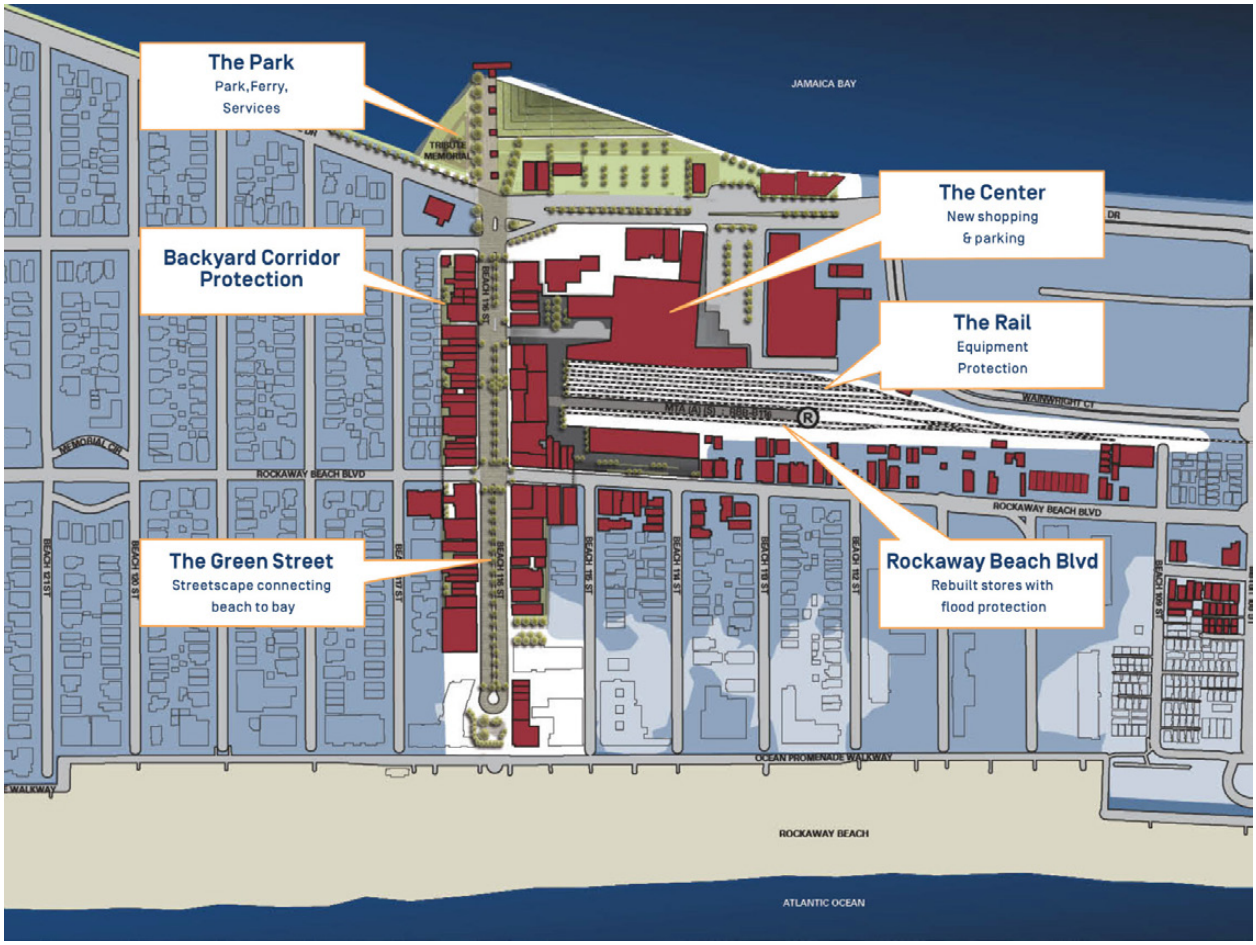


Figure 7 **Rebuild by Design: Coastal Community Example (represented by Asbury Park, New Jersey)**

Figure 8 **Rebuild by Design: Inner-City Waterfront Example (represented by Red Hook, Brooklyn)**

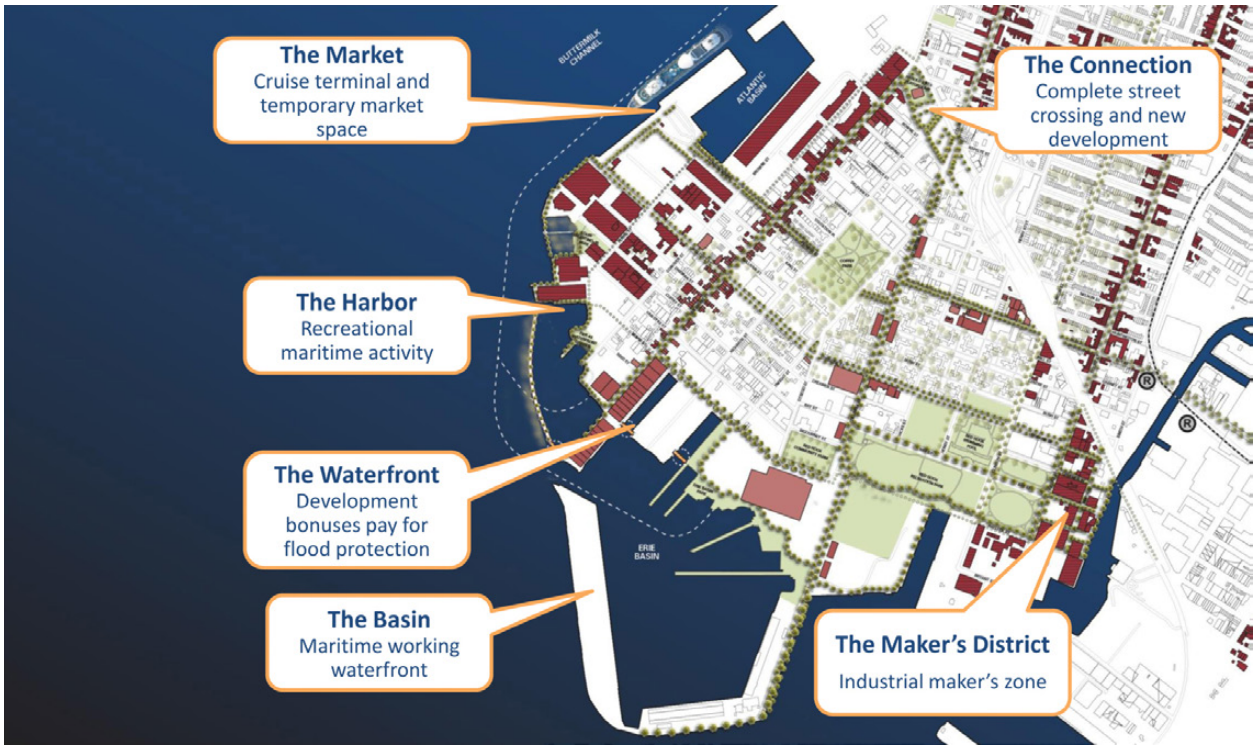


Figure 9 **Rebuild by Design: Community Event**

From this work, an approach for creating resiliency plans has emerged that is consistent with many of the design and engagement efforts described in this article. This approach is summarized in the following section.

RESILIENCY PLAN WORKING APPROACH

1. Identify vulnerable neighborhoods, populations, and assets that have been impacted in past events.
2. Engage affected populations, stakeholders, and government agencies in ways that inspire participation and leadership.
3. Define potential future threats—hazards and chronic problems.
4. Assess buildings and critical infrastructure susceptible to threats.
5. Evaluate potential financial and physical impacts (business, tourism, etc.) through an approach that includes a cost-benefit analysis.
6. Develop clear design principles to guide efforts and measure success in terms of outcomes and time frame.
7. Explore partnerships and funding opportunities to enhance existing investments and expand benefits into a region.
8. Review and amend existing regulatory constraints to improve resiliency.
9. Prepare a multilayered and multifaceted resiliency strategy to enhance the benefits of investment. Resiliency incorporates redundant protections to support social, environmental, and economic sustainability.
10. Articulate a unique and memorable vision that is the extension of a place.
11. Create an implementation plan that defines phasing for funding capacity and considers the uncertainty of climate change outcomes for near-term protection as well as long-term implementation flexibility should the worst-case scenarios emerge.

This is a working approach for integrative thinking to address potential hazards for cities and campuses. Ultimately, resiliency efforts are about the long-term livability of our cities in the face of future threats and an amplification of the issues that should be addressed in good urban design. Through this process, communities can enhance the thoughtful integration of development and ecology through resilient and sustainable approaches that are inspired by the authenticity of place and can adapt over time as the environment changes around us. Awareness is the key. The education of the public (and design professionals) on these matters is paramount in building political momentum for the investments, programs, and projects needed to achieve genuinely sustainable cities and campuses.

AUTHOR BIOGRAPHY

WILLIAM KENWORTHEY, AIA, Partner, Cooper Robertson, has been responsible for leading waterfront redevelopment projects throughout his 17 years in the field. In the aftermath of Super Storm Sandy, he led the firm's design focus on resiliency of coastal communities: The Special Initiative for Rebuilding and Resiliency (New York City Mayor's Office), New York Rising (New York State), and Rebuild by Design (United States Department of Housing and Urban Development). He also led the Master Plan for the Central Delaware and the CHOP Schuylkill Avenue Campus, both in Philadelphia, as well as the Hunters Point Shipyard Phase 2 / Candlestick Point Streetscape Master Plan in San Francisco. He has lectured extensively on urban waterfront design at institutions including Yale University, Columbia University, and Parsons School of Design. He holds a master of science in architecture and urban design from Columbia University and a bachelor of architecture from Wentworth Institute of Technology.