

# POLICY BY DESIGN

## Tuesday, November 15, 2016



**#policybydesign**  
**@rebuildbydesign**

**Tuesday, November 15th, 2016**

**Georgetown School of Continuing Studies**

**640 Massachusetts Ave**

**Washington, DC**

# **SCHEDULE:**

**11:00am | Check In**

**11:15am | Program**

## **Introduction**

- **Amy Chester** (Rebuild by Design) & **Alyson Beha** (U.S. Department of Housing and Urban Development)

## **Updates on the Hurricane Sandy**

### **Rebuild by Design Competition Projects**

- **Bridgeport, Connecticut | David Kooris** (State of Connecticut) & **Alan Plattus** (Yale University)
- **Hudson River and Meadowlands, New Jersey | Alexis Taylor** (New Jersey Department of Environmental Protection)
- **Staten Island, New York | Alex Zablocki** (Governor's Office of Storm Recovery) & **Pippa Brashear** (SCAPE)
- **Long Island, New York | Laura Munafo** (Governor's Office of Storm Recovery) & **Michael Bomar** (Tetra Tech)
- **Manhattan, New York | Carrie Grassi** (City of New York) & **Travis Bunt** (One Architecture)
- **Hunts Point, New York | Jessica Colon** (City of New York)

## **Policy Report Presentation**

- **Jessica Grannis** (Georgetown Climate Center)

**12:30pm | Panel Discussion**

moderated by: **Vicki Arroyo** (Georgetown Climate Center)

- **Representatives from the projects, Georgetown Climate Center and U.S. Department of Housing and Urban Development**

**1:00pm | Lunch**



# SPEAKER BIOGRAPHIES



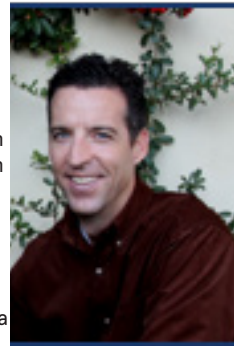
**ALYSON BEHA, Senior Regional Planner at the U.S. Department of Housing and Urban Development**

Alyson Beha advances the implementation of resilient infrastructure projects intended to prepare coastal New York, New Jersey, and Connecticut for the effects of climate change. Her portfolio includes the winning projects of the Rebuild by Design competition, which are collectively receiving \$930 million from HUD. Alyson works closely with the HUD grantees –State of New Jersey, State of New York, State of Connecticut, and City of New York-- on project development, environmental review and permitting, and HUD compliance.

Additionally, Alyson is part of a federal interagency team in the Sandy region that facilitates coordination of infrastructure projects, identifies opportunities for enhanced resilience, and trouble-shoots potential implementation challenges for the most complex projects receiving federal funds. A graduate of Davidson College and NYU Wagner School of Public Service, Alyson has a background in urban planning. Prior to her role at HUD, she served as the Director of Research, Planning and Programs at New Yorkers for Parks.

**MICHAEL B. BOMAR, PE, Vice President, Tetra Tech**

A registered Professional Engineer in New York and Vice President with Tetra Tech, Michael Bomar has managed more than 200 different public infrastructure design and construction projects during his 20+ year career. In the process, he has helped communities impacted by natural disasters along the Atlantic Ocean and Gulf of Mexico in the form of planning, design, and construction oversight. His experience includes Hurricane Sandy recovery and resiliency projects in the New York Metro area at JFK International, LaGuardia, Holland Tunnel, five marine terminal facilities in New York and New Jersey, Long Beach (NY) Floodwall, and Rebuild by Design's Living with the Bay program on Long Island. Mr. Bomar's other storm resiliency project experience includes Hurricane Katrina in New Orleans and Biloxi and along the Florida Panhandle following Hurricane Ivan and Hurricane Opal.



**PIPPA BRASHEAR, Director of Planning and Resilience, SCAPE**

Pippa works with planning, engineering and design teams to integrate landscape strategies that are sustainable and resilient, and that balance environment, infrastructure, development, and community quality of life needs. Pippa is currently managing the implementation of SCAPE's Living Breakwater's project. Other recent work includes developing coastal protection strategies for New York City's Strategic Initiative for Rebuilding and Resilience (SIRR); working with community planning committees as part of the New York Rising Community Reconstruction Program; and serving as a key team member in the development of the Hudson River RBD project. Pippa holds a Master in Landscape Architecture and Master in Urban Planning with Distinction from the Harvard University Graduate School of Design, and a Bachelor of Arts, cum laude, in Environmental Science and Public Policy from Harvard College.



## **TRAVIS BUNT, New York Director, One Architecture**

As the Director for One Architecture in New York, Travis Bunt leads urban design and resiliency work for the Dutch firm in North America – most notably for the ongoing “Big U / Dryline” projects reshaping the coastline of Lower Manhattan. Prior to joining One, Mr. Bunt was the Design Director for URBANUS in Hong Kong, where he led the design for large scale architecture projects and urban developments across China, organized interdisciplinary workshops and exhibitions, and pushed forward extra-architectural experimentation through the Urbanus Research Lab platform. In 2014, he was recognized by Perspective Magazine with a 40 under 40 award as a “Rising Star” in the architecture and design industries, in part for his role curating the Hong Kong edition of the 2013-14 Bi-City Biennale of Architecture and Urbanism.

As a former officer in the US Navy’s Civil Engineer Corps, Mr. Bunt has worked on military-led reconstruction efforts in post-Katrina New Orleans, mentored the Afghan Army on Regional Facilities Planning and Management, and supervised the full catalog of work rehabilitating the Navy port and shipyard facilities at Pearl Harbor, Hawaii as the Officer in Charge of Construction.



## **AMY CHESTER, Managing Director, Rebuild by Design**

Amy Chester has spent close to 20 years in urban affairs, municipal policy, community engagement, and real estate development. As Rebuild’s Managing Director, Amy is responsible for the organization’s day-to-day operations and management in addition to overseeing its fundraising and strategic direction.

During her tenure in Mayor Michael Bloomberg’s administration she served as Chief of Staff to the Deputy Mayor for Legislative Affairs and as a Senior Policy Advisor in the Office of Long Term Planning and Sustainability. In this role she was responsible for the public engagement strategy of PlaNYC, the Mayor’s sustainability agenda, which included initiatives such as the Million Trees Campaign, congestion pricing, and the Greener, Greater Buildings Plan. Amy’s other experiences in New York City government have included positions at the New York City Council, where she successfully ensured the inclusion of affordable housing in large-scale neighborhood re-zonings, and at the New York City Housing Authority, where she created development plans to increase the utilization of government owned properties across the city.

**JESSICA COLON, Senior Policy Advisor, New York City Mayor's Office of Recovery and Resiliency**

Jessica Colon has focused her career improving opportunities and development in cities, and increasing access to justice. Jessica has worked towards implementing community-based solutions to solve complex public policy problems focused on criminal justice system reform, urban planning, and climate change resiliency and recovery. At Jessica's current position, she helps lead the City's implementation of its resiliency goals by managing complex capital resiliency projects and planning initiatives.



She previously was the Deputy Project Director at the Red Hook Community Justice Center in Brooklyn, an internationally renowned community court committed to developing local solutions to improve public safety. She also worked at the Bronx Borough President's Office, the New York City Mayor's Office of the Criminal Justice, and at the Vera Institute of Justice. She has taught as an adjunct professor at the Wagner School at NYU and Brooklyn College. She received her BS in Diplomacy and International Relations from Seton Hall University, and received her MPA from the Woodrow Wilson School at Princeton University.

**LYNN ENGLUM, Policy Manager, Rebuild by Design**

Lynn Englum is Rebuild by Design's policy manager where she brings a decade of experience in environmental policy, sustainable development, community outreach, and program management. At Rebuild, Lynn's work focuses on identifying and addressing policy barriers to resiliency implementation and working to promote governance structures and regional coordination to allow communities to better prepare for the impact of a changing climate.



Prior to joining Rebuild By Design, Lynn worked at the World Wildlife Fund, where she developed and implemented renewable energy campaigns and strategies in communities and states across the country. Lynn began her career at the Center for American Progress, researching climate and energy. She received her MA in Global Environmental Politics from American University and her BS in Public Affairs & Environmental Management from Indiana University.

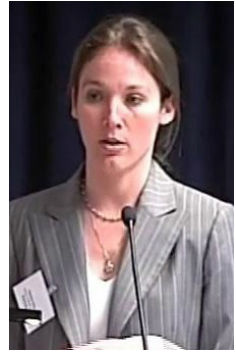
**CARRIE GRASSI, Deputy Director for Planning, New York City Mayor's Office of Recovery and Resiliency**

Carrie Grassi leads interagency collaboration and community coordination for the implementation of neighborhood-based climate change resiliency efforts, such as HUD's Rebuild By Design program and its resulting \$335M East Side Coastal Resiliency project, and the State's NY Rising Community Reconstruction Program. She is also leading the City's appeal of the FEMA flood maps and serves on FEMA's Technical Mapping Advisory Council. After Hurricane Sandy, Carrie was a member of the Special Initiative for Rebuilding and Resiliency, the result of which is the City's first comprehensive climate resiliency plan, A Stronger, More Resilient New York. Carrie has worked in both government and non-profit institutions focused on project implementation, civic engagement, and environmental stewardship. She holds a Masters in City Planning from MIT.



**JESSICA GRANNIS, Adaptation Program Manager,  
Georgetown Climate Center**

Jessica Grannis is the Adaptation Program Manager for the Georgetown Climate Center (GCC) and a staff attorney and adjunct professor at the Harrison Institute, at Georgetown University Law Center. She supervises students and staff and works directly with state and local government officials on projects to help them adapt to climate change. Her recent publications include a book chapter on Coastal Retreat in the Law of Adaptation to Climate Change: U.S. and International Aspects (2012, with Peter Byrne) and an Adaptation Tool Kit for Sea Level Rise (2012). Prior to joining the Climate Center, she was staff counsel for the California State Coastal Conservancy and the Ocean Protection Council.



**DAVID KOORIS, Director of Rebuild by Design and National  
Disaster Resilience, State of Connecticut**

These Federal grants, totaling \$65 million, will enable resilience planning for Fairfield and New Haven Counties and the construction of several pilot projects for green infrastructure, raised mobility corridors, distributed energy generation, and 21st Century flood protection in Bridgeport.

Prior to this position, Mr. Kooris was Director of the Office of Planning and Economic Development for Connecticut's most populous city, Bridgeport. This role enabled him to chart a long-range strategy for the city's revitalization grounded in its diverse neighborhoods, spur economic development in its downtown and commercial centers, and reposition thousands of acres of brownfields for sustainable redevelopment. Before assuming that appointment, Mr. Kooris held various positions at Regional Plan Association, the nation's oldest regional planning organization, culminating in his role as Vice President.

**LAURA MUNAFO, Deputy Director, New York Rising  
Community Reconstruction Program**

Ms. Munafo has been with the New York State Governor's Office of Storm Recovery (GOSR) since 2013. As Deputy Director of the New York Rising Community Reconstruction (NYRCR) Program, Laura oversees and manages over 45 infrastructure projects throughout Long Island as a result of Sandy. Most recently, Laura joined as Program Manager for Living with the Bay, where she oversees multiple stakeholders along with assisting in project development.

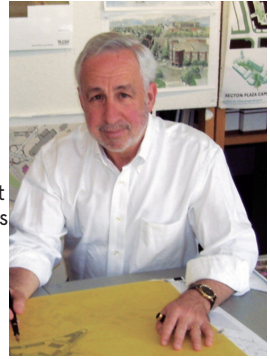
Prior to joining GOSR, Laura served in the Nassau County Office of Emergency Management as a Community Service Representative. She developed and oversaw FEMA's Sheltering and Temporary Essential Power Program for Nassau County following Sandy. She also served as a liaison on behalf of the County with FEMA, New York State, and localities during and following the storm.





**ALAN PLATTUS, Professor, Yale University**

Mr. Plattus began teaching at Yale in 1986 after serving on the faculty of Princeton University for seven years. He is the current director of the School's Ph.D. Program, and also is the Director the Yale Urban Design Workshop and Center for Urban Design Research, which he founded in 1992 and which undertakes research and design studies for communities throughout Connecticut and the metropolitan region. Current projects include planning for a Heritage Park along the Thames River between New London and Groton, and resiliency planning for Bridgeport and the Connecticut coast funded by H.U.D.'s Rebuild by Design program. Mr. Plattus also directs the School's China Studio, a collaboration between Tsinghua University in Beijing and the Yale School of Architecture, and recently led a Yale and international team to develop plans for a Peace Park along the Jordan River on the Israeli-Jordanian border. Mr. Plattus received a B.A. from Yale University and an M.Arch. from Princeton University.



**ALEXIS TAYLOR, Outreach Team Leader, New Jersey Department of Environmental Protection**

Alexis Taylor works for the Bureau of Flood Resilience, Engineering and Construction at the New Jersey Department of Environmental Protection. She is Outreach Team Leader for the Hudson River and Meadowlands Rebuild by Design projects. Prior to this position, Ms. Taylor worked at Rebuild by Design as a Senior Project Manager. Alexis worked to catalyze innovative design solutions that address the potential impacts from climate change on the Sandy-affected areas of New York, New Jersey and Connecticut. This approach engages a highly collaborative effort, involving coordination among several levels of government, public agencies, local community groups, planners and designers, and philanthropy.

Alexis has focused, in both her education and work experience, on the opportunities and challenges in creating successful large-scale urban infrastructure projects by combining public and private resources. She graduated with her B.A. from University of Pennsylvania, and went on to earn a Master of City Planning (MCP) degree from MIT.

**ALEX ZABLOCKI, Senior Program Manager, Governor's Office of Storm Recovery**

Alex Zablocki serves as senior program manager at the Governor's Office of Storm Recovery (GOSR), managing the design team for the Living Breakwaters Rebuild by Design project for the State of New York. Alex joined the GOSR in August 2013 leading multiple NY Rising Communities impacted by Superstorm Sandy through the NY Rising Community Reconstruction Program. A life-long Staten Island resident, Alex served as the Director of Community Relations for the NYC Department of Homeless Services (NYC DHS) prior to joining GOSR, and has worked in various capacities of public service for over thirteen years.



# THE BIG U

Implementation in three parts as the East Side Coastal Resiliency Project  
and Lower Manhattan Coastal Resiliency Project: Two Bridges and Financial District



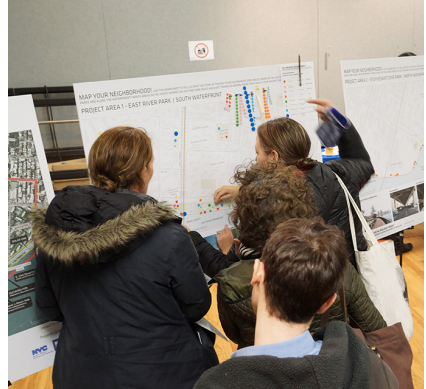
After Hurricane Sandy, The City of New York proposed a series of integrated flood protection investments in Southern Manhattan to reduce the risk of flooding and integrate into the neighborhood fabric. In collaboration with the City, The Big U was developed as a protective system around the low-lying topography from West 57th Street, down to The Battery, and up to East 42nd Street. The proposal was conceived of as ten continuous miles of protection, broken up into compartments, with each one shaped by the communities and stakeholders it was intended to protect.

In June 2014, HUD announced a \$335 million award to the City of New York for the implementation of one of the three compartments described in The Big U proposal. The compartment, from East 23rd Street to Montgomery Street was named the East Side Coastal Resiliency (ESCR) Project. The ESCR Project is being refined as a stand-alone compartment to mitigate future climate change and coastal flood risks on Manhattan's East Side. The options for achieving this goal include a variety of measures, including deployable flood barriers, floodwalls, and berms. When completed, it will benefit thousands of public housing and other residents of a particularly vulnerable part of Manhattan. It will also demonstrate a new model for integrating coastal protection into neighborhoods, consistent with the City's resiliency vision.

## HUD AWARD: \$335 Million

**GRANTEE:** The City of New York (Mayor's Office of Recovery and Resiliency, Department of Design and Construction, Department of Parks and Recreation, Department of Transportation)

**LOCATION:** Lower East Side, East Village, Stuyvesant Town, NYC



### BACKGROUND

Proposal developed by: BIG (Bjarke Ingels Group) with One Architecture, Starr Whitehouse, James Lima Planning + Development, Project Projects, Green Shield Ecology, AEA Consulting, Level Agency for Infrastructure, Arcadis, and the Parsons School of Constructed Environments

The low-lying topography of Lower Manhattan from West 57th St down to The Battery, and up to East 42nd St is home to approximately 220,000 residents and is the core of a \$500 billion business sector that influences the world's economy. Hurricane Sandy devastated not only the Financial District, but 95,000 low-income, elderly, and disabled city residents. Infrastructure within the 10-mile perimeter was damaged or destroyed, transportation and communication were cut off, and thousands sat without power or running water.

### PROGRESS ON IMPLEMENTATION

HUD has dedicated a total of \$511 million, including Rebuild by Design and National Disaster Resiliency Competition funding, toward the implementation of The BIG U, and New York City has committed an additional \$305 million in capital funding to start the first phases of the East Side Coastal Resiliency (ESCR), and Lower Manhattan Coastal Resiliency (LMCR) projects.

The projects are broken into the three original sections, known as compartments:

- 1.) ESCR: 25th Street to Montgomery Street
- 2.) LMCR - Two Bridges: Montgomery Street to Brooklyn Bridge
- 3.) LMCR - Financial District: Brooklyn Bridge to the Battery.

# HUNTS POINT RESILIENCY

## Building off of the Hunts Point Lifelines Proposal

The Lifelines proposal outlines four “Lifelines” for Hunts Point, the New York City metropolitan area’s food distribution hub, which demonstrate a model of a working waterfront, community, and ecology that could apply in maritime industrial areas across the region. The Hunts Point Resiliency Implementation Project is a continued study, analysis, planning, and community engagement effort that builds off the Lifelines proposal and will lead to the selection of an energy resilient pilot project for design and construction that benefit the residential and industrial area.

**Flood Protection Levee Lab:** Flood protection for the food hub could integrate with a waterfront greenway to open up access to the rivers, with dynamic windows on its operations to provide the spectacle of a real working waterfront. A Lab of designed ecologies and applied material research could create a string of platforms for recreation and use on the water.

**Livelihoods:** New techniques for construction, maintenance, and research for the Levee Lab ensure that the community can participate in building their protective infrastructure without compromising engineering or procurement integrity. When communities benefit from government’s climate adaptation investments, the value can be felt every day in new jobs, community economic assets, and awareness of the waterfront.

**Maritime Emergency Supply Lines:** Once the peninsula is dry and powered up, new pier infrastructure on the site of a Marine Transfer

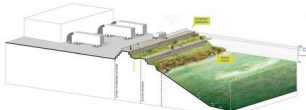
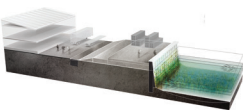


image credit: PennDesign/OLIN

## HUD AWARD: \$20 Million

**GRANTEE:** The City of New York (Mayor's Office of Recovery and Resiliency, New York City Economic Development Corporation)

**LOCATION:** Hunts Point, Bronx, NYC

Station builds on emerging federal programs to create marine highways and improve preparedness by creating a logistics base for a Maritime Emergency Supply Chain that serves the entire East Coast when roads are impassable. The emergency infrastructure expands intermodal transport by serving commercial fishing delivery to the fish market every day.

Cleanways: A new district-tailored tri-generation plant with huge refrigeration demand could create low-cost, low-carbon cooling and a micro-grid island when the big grid goes down. It could also introduce a series of strategies to re-center the neighborhood around transit and connect it to the waterfront greenway.

### BACKGROUND

Proposal developed by: PennDesign/OLIN with HR&A Advisors, eDesign Dynamics, Level Infrastructure, Barretto Bay Strategies, McLaren Engineering Group, Philip Habib & Associates, Buro Happold  
The Hunts Point peninsula is a single square mile of the South Bronx in New York City, and serves as the hub of the food supply for 22 million people in the Northeast U.S., housing its produce, fish, and meat markets. Its \$5 billion annual economy provides over 20,000 jobs to the region. Directly adjacent to the industrial area is a vibrant residential community cut off from its waterfront by thousands of daily truck trips. Residents of Hunts Point are located in the poorest congressional

district in the United States and have little access to fresh food from the wholesale markets, often exasperating health disparities.

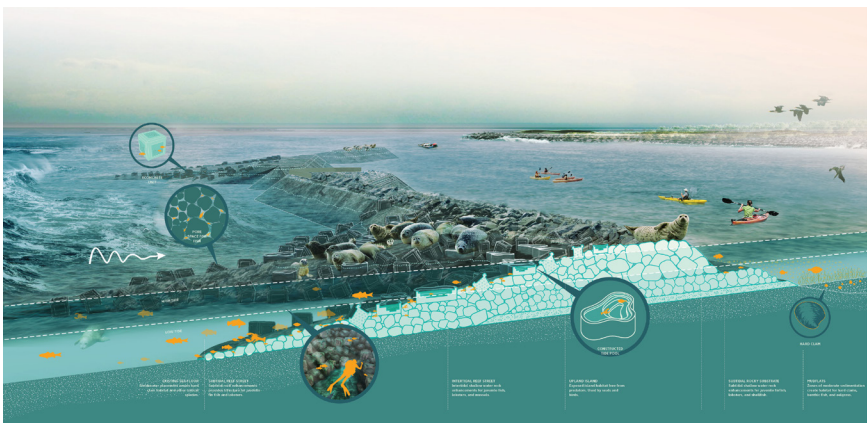
Although Hurricane Sandy's arrival at low tide spared much of Hunts Point, the area is nonetheless vulnerable to flooding. Climate change and sea level rise are threat multipliers to a neighborhood already challenged by poverty, isolation, and environmental degradation.

### PROGRESS ON IMPLEMENTATION

The federal government awarded \$20 million for a "Hunts Point Resiliency" pilot project, grown out of the Lifelines proposal. The City of New York has allocated an additional \$25 million in CDBG-DR funding. After a year-long community engagement process, two priority categories were identified for feasibility studies: flood risk reduction and resilient energy. Given time and funding constraint, the City will pursue a pilot project to provide resilient power for critical backup generation. New York City also plans to seek additional funding for a flood risk reduction project, and for a longer-term resilient energy project.



# LIVING BREAKWATERS



Living Breakwaters is proposed as a necklace of off-shore breakwaters designed to reduce risk, revive ecologies, and connect residents and educators to Staten Island’s southeast shoreline. The breakwaters will reduce wave energy, shoreline erosion, and overall risk to residents living in Tottenville, Staten Island. The structure will also provide habitat to the Raritan Bay’s rich ecosystem of marine life, restoring biodiversity through a unique design that accommodates organisms of different lifecycle stages and sizes. The project is imagined to have an on land “Water Hub” component that will foster community engagement on the shoreline with space for visiting groups, recreational activities, and educational programming.

The Living Breakwaters are designed to work in concert with other ongoing resilience initiatives in the area, including the New York Rising Community Reconstruction “Tottenville Dune and Coastal Dune Plantings” project. The vegetated dune system will be strengthened by the breakwaters, to provide a layered system of protection. The State is ensuring that the design and environmental review of the breakwater and dune projects are coordinated to maximize the complementary nature of each system. Through a robust public engagement process, the State is identifying benefits and impacts of the projects during its environmental review and design. To further these goals, the State is working with the City of New York – primarily the Department of Parks and Recreation – as well as other stakeholders throughout design and ultimately construction of these projects.

**HUD AWARD: \$60 Million**

**GRANTEE: New York State Governor's Office of Storm Recovery**

**LOCATION: Tottenville, Staten Island, NYC**



**BACKGROUND**

Proposal developed by: SCAPE/LANDSCAPE ARCHITECTURE with Parsons Brinckerhoff, Dr. Philip Orton / Stevens Institute of Technology, Ocean & Coastal Consultants, SeArc Ecological Consulting, LOT-EK, MTWTF, the Harbor School and Paul Greenberg

Situated at the mouth of the New York Bight, the south shore of Staten Island is vulnerable to wave action and erosion, particularly on its south shore in Tottenville. Dredging and the diminishment of natural and farmed oyster reefs have left it increasingly exposed over time. One of the hardest hit areas during Hurricane Sandy, Tottenville experienced severe erosion from the storm, and, given the predicted impacts of sea level rise, it will continue to lose acreage in the future if no action is taken to protect the area.

**PROGRESS ON IMPLEMENTATION**

Numerous studies have been performed to gather and assess sediment, archaeological and historic resources, and wildlife and plant species. The community is engaged through interactive design workshops and meetings, shorewalks, and beach clean-ups, as the project's design is refined.

# LIVING WITH THE BAY: MILL RIVER

The Living with the Bay project will provide a suite of interventions for Nassau County communities along the Mill River, an environmentally degraded north-south tributary flowing from Hempstead State Park into the South Shore of Long Island's Back Bay.

Overall, a "Greenway Corridor" will link communities along the Mill River from Hempstead Lake State Park to Bay Park through bike paths and trails, road crossings, and by providing opportunities for educational and recreational activities. In particular, along the:

**Northern Section:** the Hempstead Lake Dam will be restored and revitalized to manage stormwater flow and prevent flooding of the Sunrise Highway and Hempstead communities. Restoration and enhancement will create a second catch basin to provide additional stormwater runoff management and address predicted precipitation events and high tides. Accessibility (including ADA approved paths) and recreational opportunities at the Hempstead Lake State Park will also be improved.

**Middle Section:** the project will incorporate drainage system improvements and underground storage systems from municipalities along the river. Check valves will be installed along the river to only allow fluid to flow in one direction and prevent tidal water from entering the stormwater system. The project will transform an underutilized waterfront area into an accessible, floodable riverfront park to filter stormwater, and act as additional storage space for the Mill River water to overflow.

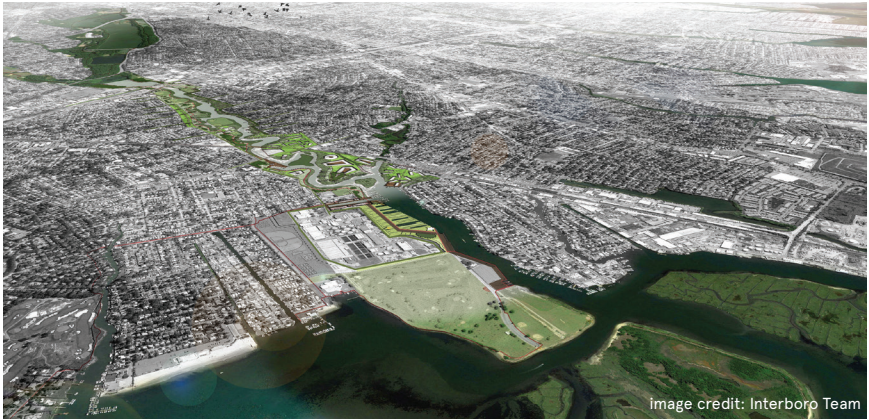
**Southern Section:** the project will encourage coastal restoration by employing numerous options south of the Bay Park Wastewater Treatment Plant. This could include road raising, seawalls, small sluice gates, and wetland restoration to protect the southern municipalities of the Mill River from tidal inundation.



**HUD AWARD: \$125 Million**

**GRANTEE: New York State Governor's Office of Storm Recovery**

**LOCATION: Nassau County, Long Island, NY**



**BACKGROUND:**

Proposal developed by: Interboro / Apex / Bosch Slabbers / Deltares / H+N+S / Palmbout / IMG Rebel with Center for Urban Pedagogy, David Rusk, NJIT Infrastructure Planning Program, Project Projects, RFA Investments, TU Delft

After World War II, Nassau County's proximity to New York City and room for growth made it ideal for suburban, single-family homes. But its development came at a cost: Long Island has had to confront day-to-day threats like stormwater runoff flooding, bayside inundation, and coastal wave action. All of these are acutely underscored by sea level rise, ecological failures from overdevelopment and pollution, and a lack of access to housing and public space. When Hurricane Sandy hit the south shore of Nassau County, the blow was devastating: 14 people were killed and thousands of homes were damaged or destroyed.

**PROGRESS ON IMPLEMENTATION**

The New York Governor's Office of Storm Recovery has worked to re-scope Living with the Bay. The updated vision, based on the Slow Streams strategy, includes a "Greenway Corridor" to link communities along the Mill River through bike paths and trails. The updated Living with the Bay plan will mitigate damage from storm surge and common rain events by strategically deploying protective measures like constructed marshes and dikes, which in turn will improve water quality and the bay ecology. The State has engaged a community advisory group to help shape the project to improve the area's social and environmental resilience.

# HUDSON RIVER: RESIST, DELAY, STORE, DISCHARGE

This flood risk reduction project is designed to take a multi-faceted approach to address flooding along the Hudson River in the Hoboken/Weehawken/Jersey City area both from major storm surges and high tides, as well as more common heavy rainfall events. It contemplates using hard infrastructure and soft landscape for coastal defense, while also addressing systemic rainfall related drainage issues. It could also include a park landscape at Weehawken Cove; green infrastructure measures, such as permeable paving and rain gardens; a range of rainwater storage initiatives; and a variety of flood risk reduction infrastructure that will be built along the Hudson River, stopping flood waters from intruding into Hoboken and parts of Weehawken and Jersey City.

The project's comprehensive approach to resilience consists of four integrated components:

- **Resist:** a combination of hard infrastructure (such as bulkheads, floodwalls and seawalls) and soft landscaping features (such as berms and/or levees which could be used as parks) that will act as barriers along the coast during exceptionally high tides and/or storm surge events;
- **Delay:** policy recommendations, guidelines and urban green infrastructure designed to focus on slowing stormwater runoff;
- **Store:** green and grey infrastructure improvements, such as bio-retention basins, swales, and green roofs, intended to slow down and capture stormwater, and complement the City of Hoboken's existing Green Infrastructure Strategic Plan;
- **Discharge:** enhancements to Hoboken's existing stormwater management system.

The HUD funding awarded to this project is provided for Phase 1, which includes the "Resist" component. The new infrastructure will integrate with other resilience measures under development and/or planned, such as the City of Hoboken Green Infrastructure Strategic Plan and NJ Transit's Long Slip Flood Protection project. A cumulative impacts analysis will consider how the project will affect other nearby projects.

**HUD AWARD:** \$230 Million

**GRANTEE:** State of New Jersey, Department of Community Affairs; to be administered by Department of Environmental Protection

**LOCATION:** Hoboken, Weehawken, Jersey City, NJ

**RESIST**



**DELAY**



**STORE**



**DISCHARGE**



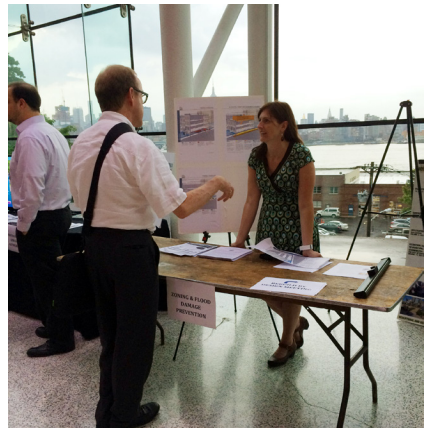
**BACKGROUND**

Proposal developed by: OMA with Royal HaskoningDHV; Balmori Associates; and HR&A Advisors

Hoboken is the fourth densest city in the U.S. Once a blue collar industrial and manufacturing city, it is becoming a bedroom community of New York City's central business districts. Since large parts of Hoboken were once marshland and a filled-in island, the city is susceptible to flash floods and storm surges, even from minor storms. Hurricane Sandy flooded much of the city, disrupting the primary transit hub for over 50,000 people.

**PROGRESS ON IMPLEMENTATION**

The \$230 million in federal funding provides for the "Resist" component. The new infrastructure will integrate with other resilience measures such as Hoboken's Green Infrastructure Strategic Plan and New Jersey Transit's Long Slip Flood Protection project. A cumulative impacts analysis will consider how the project will affect other nearby projects, while the city explores ways to fund the construction of some of the Delay, Store, and Discharge strategies.



# NEW MEADOWLANDS

The New Meadowlands proposal is envisioned to consist of two components, a “Meadowpark” and a “Meadowband.” The Meadowpark, a large natural reserve with public accessibility, will offer flood protection by connecting and expanding past marshland restoration efforts in the region with a system of berms and marshes. As conceptualized, the Meadowband would define the edge of the Meadowpark, offering flood protection, connections between towns and wetland, and opportunities for towns to grow through public transportation enhancements, and a series of public spaces, recreation zones, and access points to Meadowpark.



image credit: MIT CAU + ZUS + URBANISTEN

**HUD AWARD: \$150 Million**

**GRANTEE:** State of New Jersey, Department of Community Affairs; to be administered by Department of Environmental Protection

**LOCATION:** Carlstadt, Little Ferry, Moonachie, South Hackensack, Teterboro, NJ



**BACKGROUND**

Proposal developed by: MIT CAU + ZUS + URBANISTEN with Deltares; 75B; and Volker Infra Design

The low-lying Meadowlands, a flood-prone area located across the Hudson River from New York City, is home to critical power, wastewater treatment, and transportation infrastructure for the region. These facilities include two airports and thousands of acres of rail yards, as well as 14 separate municipalities and 150,000 jobs. Interventions here need to address the combined effects of flooding, heat islands, pollution, social vulnerability, and vital network protection.

Almost 10 miles from the coast, parts of the Meadowlands were inundated by Hurricane Sandy. Flooding affected both warehouses and residences. Because the municipal sewer system cannot handle rainwater runoff, the area regularly floods during strong rainstorms.

**PROGRESS ON IMPLEMENTATION**

The State of New Jersey is evaluating the feasibility of options for the project, including systems of berms that could improve streetscapes, active recreation in a resilient park, and transportation infrastructure, while reducing flood risks from the Hackensack River and protecting against flooding in western and southern parts of the Meadowlands. The ongoing community engagement process for the project will allow the State to work with affected communities to design alternatives.

# RESILIENT BRIDGEPORT

Resilient Bridgeport was proposed as a prototype for coastal cities; consisting of both a resilience framework and specific design proposals focused on three of its key principles:

- Integrated lines of resilience are critical to inhabiting the coast, with site and district level measures complementing engineered solutions and natural buffers.
- The city's coastal and riparian edges are productive places of exchange. The restoration of these zones can be the basis for a revived regional ecology and economy.
- Bridgeport's identity is founded upon the relationship of its people and industries to its watercourses, estuaries, and beaches. Reclaiming this identity and redefining what it means to live at the water's edge are critical to the city's safety and long-term prospects.

The State of Connecticut received \$10 million for the implementation of a pilot based on Resilient Bridgeport.



image credit: WB unabridged with Yale ARCADIS

**HUD AWARD: \$10 Million**

**GRANTEE: State of Connecticut, Department of Housing**

**LOCATION: Bridgeport, CT**



**BACKGROUND**

Proposal developed by: Waggoner and Ball Architects, unabridged Architecture, Yale University Urban Ecology and Design Lab, Yale Urban Design Workshop, BumpZoid, Dorgan Architecture & Planning, Mississippi State University Gulf Coast Community Design Studio

The City of Bridgeport is the most densely-populated, ethnically diverse, and socially vulnerable city in Connecticut, and provides much-needed affordable housing for the area. Situated on the coast of Long Island Sound, Bridgeport is vulnerable to sea level rise, which would inundate power plants, wastewater treatment plants, hospitals, a financial center, sports and entertainment facilities, and a university.

By 2100, it is predicted that over half of Bridgeport could flood regularly. Transportation infrastructure, including the regional rail from Boston to New York City and the busy interstate highway, could be chronically disrupted.

**PROGRESS ON IMPLEMENTATION**

The State of Connecticut received \$10 million for the development of a multi-neighborhood strategy and for the implementation of a pilot project that achieves flood risk reduction in the South End's public and affordable housing. The design team is working with the community to make progress toward identifying the pilot project. Resilient Bridgeport is developing this pilot project as the first implementation step within the larger strategy for the city of Bridgeport. \$42 million of additional funding was awarded Bridgeport to build the next several projects from the larger strategy as a part of the National Disaster Resilience Competition.

# REBUILD BY DESIGN: POLICY REPORT

As communities affected by Hurricane Sandy have begun to implement the winning proposals from the Hurricane Sandy Design Competition, they are navigating various policy and regulatory hurdles. Rebuild by Design has worked with the Georgetown Climate Center and the state and local implementing agencies to inform current and future resilience initiatives of federal agencies and other innovators while identifying needed policy reforms. This report is part of the effort to stimulate policy discussions.