

Rockaway West

NY Rising Community Reconstruction Plan

MARCH 2014



NY Rising
Community Reconstruction Program



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Foreword

Introduction

In the span of approximately one year, beginning in August 2011, the State of New York experienced three extreme weather events. Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy wreaked havoc on the lives of New Yorkers and their communities. These tragic disasters signaled that New Yorkers are living in a new reality defined by rising sea levels and extreme weather events that will occur with increased frequency and power. They also signaled that we need to rebuild our communities in a way that will mitigate against future risks and build increased resilience.

To meet these pressing needs, Governor Andrew M. Cuomo led the charge to develop an innovative, community-driven planning program on a scale unprecedented and with resources unparalleled. The NY Rising Community Reconstruction (NYRCR) Program empowers the State's most impacted communities with the technical expertise needed to develop thorough and implementable reconstruction plans to build physically, socially, and economically resilient and sustainable communities.

Program Overview

The NYRCR Program, announced by Governor Cuomo in April of 2013, is a more than \$650 million planning and implementation process established to provide rebuilding and resiliency assistance to communities severely damaged by Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. Drawing on lessons learned from past Recovery efforts, the NYRCR Program is a unique combination of bottom-up community participation and State-provided technical expertise. This powerful combination recognizes not only that community members are best positioned to assess the needs and opportunities of the places where they live and work, but also that decisions are best made when they are grounded in rigorous analysis and informed by the latest innovative solutions.

One hundred and two storm-affected localities across the State were originally designated to participate in the NYRCR Program. The State has allocated each locality between \$3 million and \$25 million to implement eligible projects identified in the NYRCR Plan. The funding for these projects is provided through the U.S.

Department of Housing and Urban Development (HUD) Community Development Block Grant – Disaster Recovery (CDBG-DR) program.¹

Forty-five NYRCR Communities, each comprising one or more of the 102 localities, were created and led by a NYRCR Planning Committee composed of local residents, business owners, and civic leaders. Members of the Planning Committees were identified in consultation with established local leaders, community organizations, and in some cases municipalities. The NYRCR Program sets a new standard for community participation in Recovery and resiliency planning, with community members leading the planning process. Across the State, more than 500 New Yorkers represent their communities by serving on Planning Committees. More than 400 Planning Committee Meetings have been held, during which Planning Committee members worked with the State's NYRCR Program team to develop community reconstruction plans and identify opportunities to make their communities more resilient. All meetings were open to the public. An additional 125-plus Public Engagement Events attracted thousands of community members, who provided feedback on the NYRCR planning

process and proposals. The NYRCR Program's outreach has included communities that are traditionally underrepresented, such as immigrant populations and students. All planning materials are posted on the NYRCR Program's website (www.stormRecovery.ny.gov/nyrcr), providing several ways for community members and the public to submit feedback on materials in progress.

Throughout the planning process, Planning Committees were supported by staff from the Governor's Office of Storm Recovery (GOSR), planners from New York State (NYS) Department of State (DOS) and NYS Department of Transportation (DOT), and consultants from world-class planning firms that specialize in engineering, flood mitigation solutions, green infrastructure, and more.

With the January 2014 announcement of the NYRCR Program's expansion to include 22 new localities, the program comprises over 2.7 million New Yorkers and covers nearly 6,500 square miles, which is equivalent to 14% of the overall State population and 12% of the State's overall geography.

The NYRCR Program does not end with this NYRCR Plan. Governor Cuomo has allocated over \$650 million of funding to the program for implementing projects identified in the NYRCR Plans. NYRCR Communities are also eligible for additional funds through the program's NY Rising to the Top Competition, which evaluates NYRCR Communities across eight categories, including best use of technology in the planning process, best approach to resilient economic growth, and best use of green infrastructure to bolster resilience. The winning NYRCR Community in each category will be allocated an additional \$3 million of implementation funding. The NYRCR Program is also working with both private and public institutions to identify existing funding sources and create new funding opportunities where none existed before.

The NYRCR Program has successfully coordinated with State and Federal agencies to help guide the development of feasible projects. The program has leveraged the Regional Economic Development Council's State Agency Review Teams (SARTs), comprised of representatives from dozens of State agencies and authorities, for feedback on projects proposed by NYRCR Communities. The SARTs review projects with

an eye toward regulatory and permitting needs, policy objectives, and preexisting agency funding sources. The NYRCR Program is continuing to work with the SARTs to streamline the permitting process and ensure shovels are in the ground as quickly as possible.

On the pages that follow, you will see the results of months of thoughtful, diligent work by NYRCR Planning Committees, passionately committed to realizing brighter, more resilient futures for their communities.

The NYRCR Plan

This NYRCR Plan is an important step toward rebuilding a more resilient community. Each NYRCR Planning Committee began the planning process by defining the scope of its planning area, assessing storm damage, and identifying critical issues. Next, the Planning Committee inventoried critical assets in the Community and assessed the assets' exposure to risk. On the basis of this work, the Planning Committee described Recovery and resiliency needs and identified opportunities. The Planning Committee then developed a series of comprehensive reconstruction and resiliency strategies, and identified projects and implementation actions to help fulfill those strategies.

The projects and actions set forth in this NYRCR Plan are divided into three categories. The order in which the projects and actions are listed in this NYRCR Plan does not necessarily indicate the NYRCR Community's prioritization of these projects and actions. **Proposed Projects** are projects proposed for funding through a NYRCR Community's allocation of CDBG-DR funding. **Featured Projects** are projects and actions that the Planning Committee has identified as important resiliency recommendations and has analyzed in depth, but has not proposed for

funding through the NYRCR Program. **Additional Resiliency Recommendations** are projects and actions that the Planning Committee would like to highlight and that are not categorized as Proposed Projects or Featured Projects. The Proposed Projects and Featured Projects found in this NYRCR Plan were voted for inclusion by official voting members of the Planning Committee. Those voting members with conflicts of interest recused themselves from voting on any affected projects, as required by the NYRCR Ethics Handbook and Code of Conduct.

NYRCR Rockaway West is eligible for up to \$21.3 million in CDBG-DR implementation funds.²

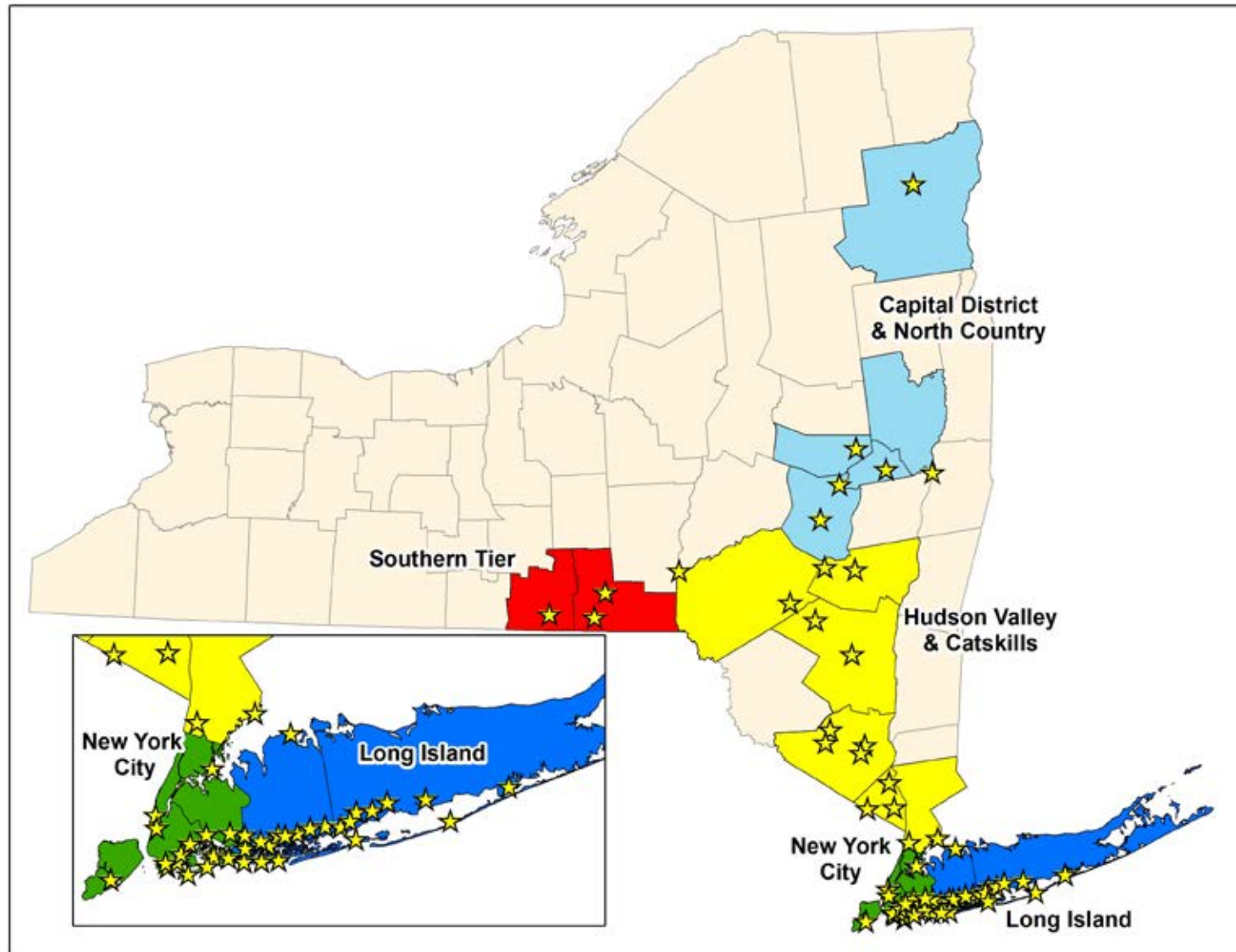
While developing projects for inclusion in this NYRCR Plan, Planning Committees took into account cost estimates, cost-benefit analyses, the effectiveness of each project in reducing risk to populations and critical assets, feasibility, and community support. Planning Committees also considered the potential likelihood that a project or action would be eligible for CDBG-DR funding. Projects and actions implemented with this source of Federal funding must fall into a Federally-designated eligible activity category, fulfill a national objective (meeting an urgent need, removing slums and blight, or benefiting low to moderate income individuals), and have

a tie to the natural disaster to which the funding is linked. These are among the factors that the Governor's Office of Storm Recovery will consider, in consultation with local municipalities and nonprofit organizations, when determining which projects and actions are best positioned for implementation.

The total cost of Proposed Projects in this NYRCR Plan exceeds the NYRCR Community's CDBG-DR allocation to allow for flexibility if some Proposed Projects cannot be implemented due to environmental review, HUD eligibility, technical feasibility, or other factors. Implementation of the projects and actions found in this NYRCR Plan are subject to applicable Federal, State, and local laws and regulations, including the Americans with Disabilities Act (ADA). Inclusion of a project or action in this NYRCR Plan does not guarantee that a particular project or action will be eligible for CDBG-DR funding or that it will be implemented. The Governor's Office of Storm Recovery will actively seek to match projects with funding sources.

In the months and years to follow, many of the projects and actions outlined in this NYRCR Plan will become a reality helping New York not only to rebuild, but also to build back better.

NYRCR Communities



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Executive summary



Executive summary

In the midsection of the Rockaway Peninsula in Queens, the neighborhoods of Neponsit, Belle Harbor, Rockaway Park, and Rockaway Beach were dramatically impacted by Superstorm Sandy (Sandy). As residents say, the ocean met the bay. Inundated both from the Atlantic Ocean and Jamaica Bay, the peninsula experienced severe damage to housing, infrastructure, and other community assets, as well as lack of access to goods and services, causing months of distress.

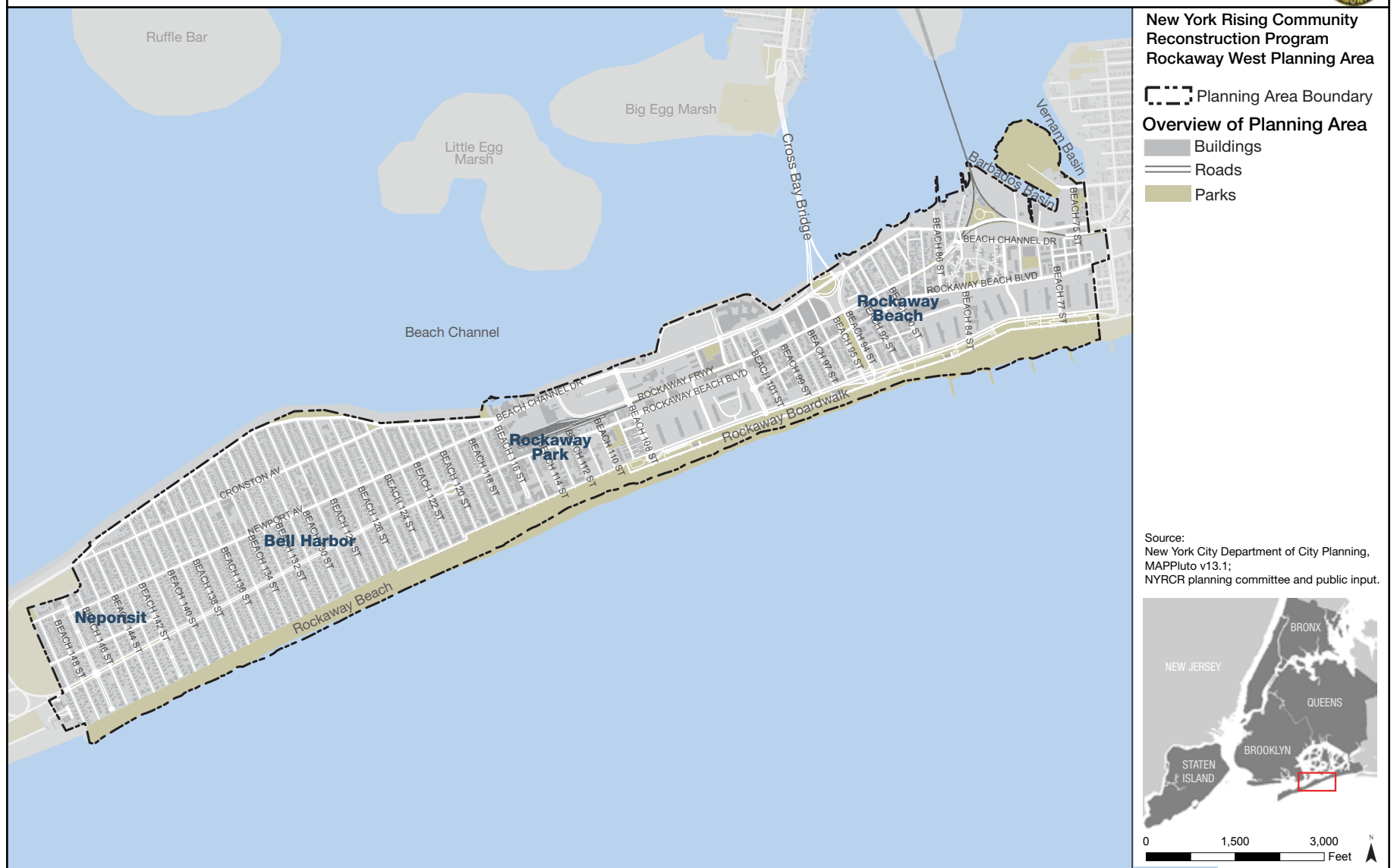
Uniting as the Rockaway West NY Rising Community Reconstruction (NYRCR) Planning Committee, these neighborhoods have collaborated to create a community-based plan addressing their common risks and needs. This NYRCR Plan builds on lessons learned from Sandy to identify strategies and projects for increasing resiliency throughout the Rockaway West Community. The NYRCR Plan documents the Community's experience during and after Sandy and articulates a vision and strategy for long-term redevelopment and growth.

The Governor's Office of Storm Recovery has allocated up to \$21.3 million in Federal Community Development Block Grant-Disaster Recovery (CDBG-DR) monies to fund eligible Recovery and resiliency projects in the Rockaway West Community.



Rockaway West is located at the midsection of the Rockaway Peninsula.

Figure I-1: Rockaway West Planning Area





Superstorm Sandy destroyed significant swaths of the boardwalk across Rockaway West. Shown here at Beach 115th Street. Source: Flickr user cgc76, licensed under Creative Commons.

Sandy's impacts and the recovery

In October 2012, Sandy unleashed destruction at a tremendous scale and complexity, causing devastating damage. Homes and businesses in Rockaway West were destroyed by forceful wave action and storm surge, which ripped the iconic boardwalk from its planks and inundated the entire Community with rising waters from both the ocean and the bay.

Immediately after the storm, community groups and volunteers united in Rockaway West to provide emergency relief and Recovery efforts. Even 17 months later, remnants of Sandy's impact persist. A tour of the Rockaway West neighborhood today reveals a boardwalk far from fully repaired, partially rebuilt homes, shuttered businesses, and residents still struggling to adjust to a new normal.



Caption Damaged homes along the Bay (top). Boardwalk after Sandy. (bottom) Source: Flickr user Melissa Segal, licensed under Creative Commons.



Community vision statement

“Rockaway West seeks to be **stronger and more resilient**, not only to be **better prepared** for future natural disasters or large-scale emergencies, but also to **bolster and grow** our robust natural, economic, and social ecosystems.”



Source: With permission from Danny Ruscillo.

A community driven process

This Plan is the product of a collaborative community-based process led by a Planning Committee. The Rockaway West Planning Committee is composed of 13 volunteer members, including representatives from Community Board 14, non-profit organizations, and local business leaders. The public planning process that guided the development of this reconstruction plan is highly reflective of the Community-driven nature of post-Sandy Recovery efforts.

The planning process was structured to collect public input on assets, needs, vision, strategies and projects at three critical junctures. At each Public Engagement Event, members of the public provided valuable feedback that informed Planning Committee deliberations. Based on this feedback, the Committee developed a NYRCR Plan to address the specific and unique needs of the neighborhoods that make up the Rockaway West Community.

Many initiatives led by residents, public agencies, utilities, community organizations, and building owners throughout the Rockaway Peninsula and New York City are already underway. A full review and assessment of these initiatives allowed the Planning Committee to identify gaps that could be filled through the NYRCR Program.

As one of three NYRCR Planning Areas on the Rockaway Peninsula—a barrier island that provides protection to Jamaica Bay and its surrounding areas—Rockaway



Rockaway West residents have remained engaged since Sandy. Source: With permission from John Cori.

West faces challenges related to coastal protection that are shared with its neighboring NYRCR Communities: Rockaway East, Breezy Point, Five Towns, and Atlantic Beach. These communities collaborated through a Jamaica Bay Working Group to develop comprehensive and longer term protection strategies.

Critical issues

Rockaway West's low elevation and varied coastal protection leaves it greatly exposed to risk from future storm events, sea level rise, and frequent flooding. Some areas are more vulnerable than others, especially those on the bayside with natural or degraded edges. With baywalls and newly-built dunes, much of the Planning Area has some form of protection, but it does not protect against the 100-year storm; increasing protection will require significant capital investment and coordination with other communities and many governmental agencies.

Sandy demonstrated the strength and resiliency of the residents of the neighborhoods in Rockaway West, but it also showed that the Community would benefit from increased planning and capacity-building to ensure even stronger preparedness for future events. The storm also exacerbated the need for increased health care on the Peninsula, especially local emergency services.

Access to the Community is limited to a few key transportation links, which are both vulnerable and limited. The Rockaway Ferry has expanded and enhanced commuter transit, but its sustainability is unknown and it is not fully utilizing tourist opportunities. Further, small businesses and natural resources offer potential to draw visitors and build economic resiliency, but the Community has struggled to recover and revitalize the economy after Sandy.



**Rockaway Beach
nourishment program
(top). The Rockaway Ferry
leaving the Beach 108th
Street landing (bottom).**

Sources: Flickr user New York District U.S. Army Corps of Engineers, licensed under Creative Commons; Laura Deckelman.



Homes and businesses along the eastern bayside edge of Rockaway West are particularly at-risk.

A blueprint for future resiliency

The NYRCR Plan for Rockaway West offers a framework and outline for the implementation of the Planning Committee's goals and strategies. The Planning Committee emphasized strategic investments that leverage the vast natural resources of the Rockaway Peninsula to enhance the Community's economic vitality and connectedness. Committee members focused on recommending projects that would protect the Community from flooding, sea level rise, and also strengthen community networks and health care services. The Committee also paid particular attention to populations who were in more isolated neighborhoods during Sandy and who may be at more risk.

Recovery support functions

There are six Recovery Support Functions, established by President Barack Obama in 2011 through the National Disaster Recovery Framework, that structure this NYRCR Plan. These Recovery Support Functions were utilized when developing needs, opportunities, strategies and projects to ensure that a comprehensive approach is reinforced throughout the effort to shape a comprehensive resiliency strategy for the Community.

Strategies and projects

This Plan contains **3 strategies** and **10 Proposed and Featured Projects** to improve the resiliency of Rockaway West. Proposed Projects are projects that the Rockaway West Planning Committee recommends for funding through the NYRCR process. Featured Projects are innovative projects that may require additional funding sources for implementation, and for which the Committee has recommended funding an initial phase of implementation. The Committee prioritized projects that are highly feasible, able to be implemented on a short timeline, and whose benefits could thus be seen within the next few years.





A vision for a Beach 108th Street Ferry Terminal, which can improve coastal protection and catalyze economic development in the area.

The priority strategies and Proposed and Featured Projects are summarized below:

Protect the Community from flooding, surge, and sea level rise

- 1 **Bioswales to improve drainage (Proposed).** This project would create up to 50 bioswales in roadways and sidewalks throughout Rockaway West to collect and manage stormwater.
- 2 **Bayside coastal protection (Featured).** This targeted investment in coastal protection along Beach 88th Street at one of the most vulnerable locations on the bayside of Rockaway West would provide low-cost flood protection benefits in the short term for this portion of the Community.

Strengthen community resiliency

- 3 **Relief center network** (Proposed).** This project would fund the creation of a network of relief centers, to provide safe Recovery spaces and local relief services, and coordinate with emergency management agencies and organizations following an event impacting the Community.

- 4 **Health care service expansion* (Proposed).** This project seeks to attract a strong regional health care provider to expand services to the Rockaway Peninsula.

Catalyze economic revitalization

- 5 **Long-term ferry operations (Proposed).** This project would provide support for ongoing ferry service to Rockaway West, a significant transportation amenity valued widely across the Community.
- 6 **National Grid site redevelopment (Proposed).** This project would support new development at the large National Grid site at Beach 108th Street and Beach Channel Drive, expanding parking and offering an opportunity to revitalize this important corridor and the area surrounding the Rockaway Ferry landing.

- 7 **Beach 108th Street improvements (Proposed).** By improving the public realm of Beach 108th Street, this project would build on proposed efforts to support permanent Rockaway Ferry service and development of the National Grid site to support and revitalize the area.

- 8 **Bus circulator service** (Proposed).** A bus circulator service in Rockaway West would improve access to the transformed new Rockaway Ferry stop, providing improved transportation options while supporting ferry ridership and revenues.

- 9 **Rockaway bike share* (Featured).** This project would create a bike share system on the Rockaway Peninsula to facilitate flexible transportation across the peninsula for visitors and residents.

- 10 **New harbor park (Featured).** This project would expand upon the City's existing plans for an esplanade along Beach Channel Drive by creating an enhanced design for the Harbor Park at Beach 108th Street.

* Project not tied to a specific geographic point

** Project siting shown as a demonstration of concept and can be implemented in multiple locations



Aerial rendering of the Rockaway West Planning Area with Proposed and Featured Projects.

Strategy: Protect the Community from flooding, surge, and sea level rise: 1. Bioswales to improve drainage 2. Bayside coastal protection

Strategy: Strengthen community resiliency: 3. Relief center network 4. Health care service expansion

Strategy: Catalyze economic revitalization: 5. Long-term ferry operations 6. National Grid site redevelopment 7. Beach 108th Street improvements 8. Bus circulator service 9. Rockaway bike share 10. New harbor park

Outline of the plan

The Plan begins with a Community Overview, which provides an orientation to the Community, the critical issues laid bare by Superstorm Sandy, and the Planning Committee's work in the context of ongoing resiliency and Recovery work.

The next section, Assessment of Risk and Needs, describes the diverse assets at risk from future flooding and storms, and uses the Planning Committee and public feedback to catalog those risks. Using the risk assessment tool developed by the NYRCR Program, this section identifies key opportunities for action that support the resiliency strategies and projects proposed by the Planning Committee.

The following section, Reconstruction and Resiliency Strategies, describes strategies developed by the Committee to respond to needs, opportunities, and risks to assets measured through the risk assessment process.

The Proposed and Featured Projects, which are the path to implementing those strategies, are described in more detail in Implementation - Project Profiles.

“It’s a very enlightening process, especially to people who had no community input except going to the beach ... But now you have such a varied group of people that are sitting at a table deciding on what we’re going to do together as a community. I think with projects like NY Rising it’s the glue that’s [going to] stick us together and keep us there.”

– Rockaway West Planning Committee Co-Chair

The final section, Additional Materials, describes additional resiliency recommendations strongly supported by the Community, but which lack an identified source of funding. It also describes the public engagement process in more detail, and provides additional supporting documentation for the Plan.

I. Community overview



A. Geographic scope of NYRCR Plan



View of Rockaway West from 9/11 Tribute Park. Source: Flickr user Scurzuzu, licensed under Creative Commons.

The New York Rising Community Reconstruction Program (NYRCR) Planning Areas were designated by considering multiple factors, including data on damage resulting from Superstorm Sandy (Sandy), Hurricane Irene, and Tropical Storm Lee; local understanding of neighborhood boundaries; areas across the City where assets are most at risk, and where reconstruction or future construction should be encouraged.

For the purposes of the NYRCR Program process, the Rockaway Peninsula was divided into three Planning Areas: Rockaway West, Rockaway East, and Breezy Point. These Communities have collaborated in the NYRCR

planning process and will continue to work toward championing solutions to serve the larger issues facing the Peninsula.

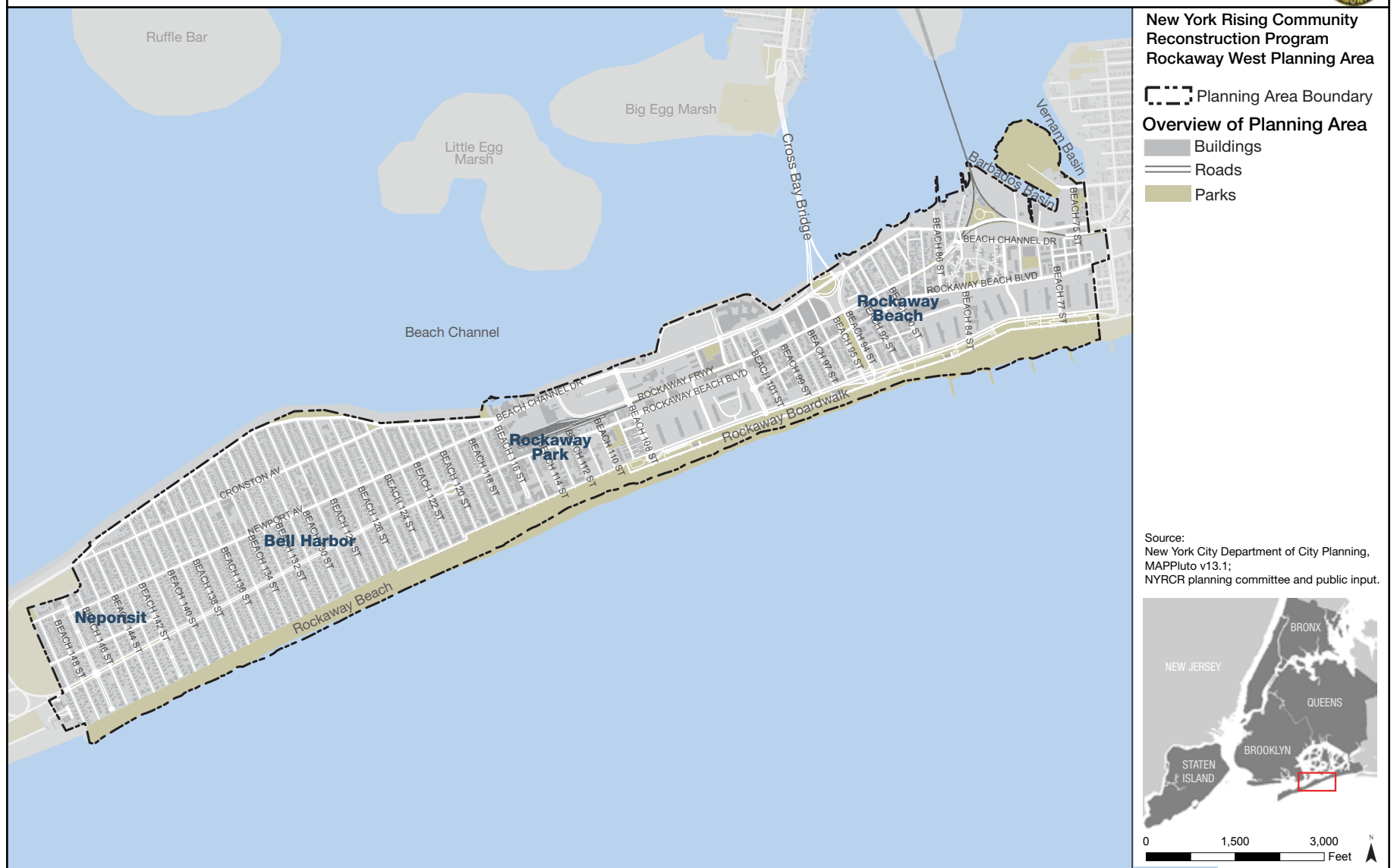
The Rockaway Peninsula is geographically isolated and characteristically different from the rest of New York City. It boasts of residential beach neighborhoods, with small pockets of largely local retail, and proximity to a wealth of natural resources—an anomaly in a City more commonly associated with global commerce and communication. While there are common challenges and issues facing these urban coastal communities—including sea level rise and other social and economic threats related to climate

change over the coming decades, considerable disparities exist among the different communities on the Peninsula. The Rockaway West Planning Area presents unique and critical challenges and opportunities for rebuilding and Recovery.

Rockaway West is made up of four neighborhoods: Neponsit, Belle Harbor, Rockaway Park, and Rockaway Beach (see Rockaway West Planning Area map, Figure I-1). Rockaway West is located at the midsection of the Rockaway Peninsula, bounded by Jacob Riis Park to the west and by Beach 74th Street to the east. The Planning Area includes a large, recreational beach along the Atlantic Ocean to the south and the bayside perimeter is bound primarily by Beach Channel Drive to the north, which is lined with a mix of schools, commercial, parks, housing, and utilities, and the Rockaway Wastewater Treatment Plant (Rockaway WWTP).

New York State has allocated up to \$21 million to Rockaway West in Community Development Block Grant Disaster Recovery (CDBG-DR) funding from the U.S. Department of Housing and Urban Development (HUD) to support this area's resiliency vision and efforts.

Figure I-1: Rockaway West Planning Area



Because of its natural resources, the Rockaway West Community has long served as an escape and summertime destination for New Yorkers. In the early 19th century, the Community developed as a coastal resort town, full of low-rise bungalow homes, community centers, open public spaces, small businesses and the Rockaway Peninsula Playland amusement park. After World War II and through the middle of the 20th century, the introduction of larger roads and bridges and an influx of multi-story residential buildings shifted the nature of the Community, increasing density of the population and the built environment. While the beach has remained a consistent draw and important natural asset to the Community, the physical, social, and economic characteristics of the Community have evolved significantly over the years. Over the past decade, it has enjoyed a resurgence among visitors from the five boroughs and beyond.

Rockaway West is predominantly residential, but includes commercial pockets and numerous natural amenities. Overall, the area is denser than most neighborhoods surrounding Jamaica Bay. According to the 2010 U.S. Census, the area contained approximately 32,000 residents and 14,000 housing units.³

The population of Rockaway West is diverse among many demographics. While incomes vary, the median income in Rockaway West is \$50,924, in line with the citywide average of \$51,000 in 2012. Nearly half of Rockaway West's population is between the ages of 35 and 64. According to the 2010 U.S. Census, over two-thirds of the population in Rockaway West is White (at 69.8%); 19.1% of the population is Black; and 15.7% is of Hispanic origin. Asians constitute 3% of Rockaway West's population. Residents aged 65 and older constitute 15.9% of the population.⁴The Community contains a mix of homeowners and renters; the homeownership rate is 40%, higher than the citywide average, but lower than many other Jamaica Bay communities.⁵

Rockaway West contains a diverse housing stock. Older single-family homes line the streets of Neponsit and Belle Harbor, while Rockaway Beach and Rockaway Park play host to a mix of older single-family homes and mid- and high-rise buildings. Some of the high-rise buildings include regulated Mitchell-Lama towers and a New York City Housing Authority (NYCHA) community, which houses 2,000 residents.



Turn of the century photos of Rockaway West.

Source: New York Public Library Digital Library.

The Planning Area relies heavily on vehicular travel as well as public transit. The Community is serviced by the A and S trains—with stops at Beach 90th, Beach 98th, Beach 105th, and Beach 116th Streets—though direct A train service is limited to peak hours. Community members also rely on a temporary ferry service from Beach 108th Street as a means of commuting. Many commuters take advantage of bus rapid transit, but the service does not connect well to the Planning Area. The Rockaway West area has limited access points to Manhattan and depends heavily on the Marine Parkway-Gil Hodges Memorial Bridge and Cross Bay Bridge for access to the mainland. On the Peninsula, vehicular traffic is limited to two primary east-west thoroughfares: Rockaway Beach Boulevard and Beach Channel Drive. There are currently bike lanes along these main roadways, but they are not protected and road conditions make bicycle navigation challenging.

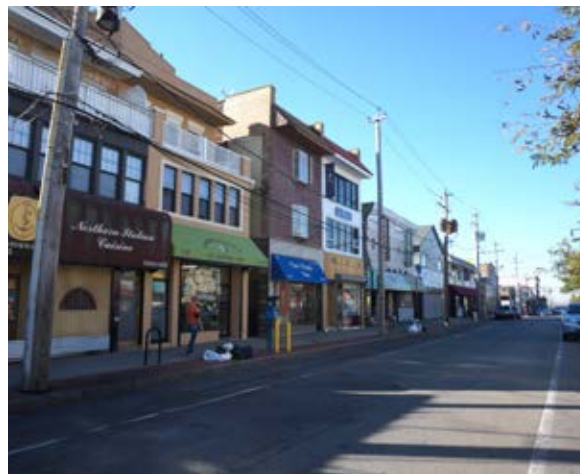
Rockaway West infrastructure is aging and vulnerable. The Rockaway Peninsula has separated storm and sanitary sewer systems operated and maintained by the New York City Department of Environmental Protection (NYC DEP). Stormwater runoff largely flows



An entrance to Rockaway Peninsula Playland, which drew visitors to the Rockaway Peninsula for over 80 years. Source: New York Public Library Digital Library.

into Jamaica Bay and sewage is treated at the Rockaway WWTP in the Planning Area. While the rest of New York City's power is supplied by Consolidated Edison, the Rockaway Peninsula is supplied by the Public Service Electric and Gas Company (PSE&G) Long Island, which took over management and operation of the system at the beginning of 2014. At the time Superstorm Sandy hit, the Peninsula was served by Long Island Power Authority (LIPA) but management of the system transitioned to PSE&G at the beginning of 2014.

Rockaway West offers residents and visitors a series of local shops, restaurants, and other small businesses, but the Community's economic vitality fluctuates seasonally. Retail is primarily concentrated along a few neighborhood commercial corridors. The Beach 116th Street corridor spans the beach to the bay and serves as a small main street lined with small businesses. It is intersected by Beach Channel Drive and Rockaway Beach Boulevard, which play host to small shops interspersed with a grocery



Beach 116th storefronts (top left). Single-family homes (top right). Friends of Rockaway Beach (bottom).

Source: With permission from Joanne Smith (bottom).

store and other larger stores. Rockaway Beach Boulevard from Beach 108th Street to Beach 88th Street consists of retail, services, and dining establishments, which in the years prior to Sandy had been growing; however, in the aftermath of the storm vacant storefronts have become more prevalent. Other smaller retail corridors include Beach 108th Street and Beach 129th Street.

Rockaway West is an area rich in natural resources. The Rockaway Boardwalk and Beach, as well as nearby Fort Tilden and Jacob Riis Park operated by the National Park Service (NPS), are invaluable recreational amenities and important economic drivers that attract visitors from throughout New York City and beyond. At 3.65 million visitors annually, Rockaway Beach is the second-most visited beach in New York City and one of the twenty most popular beaches in the United States.⁶ Jamaica Bay offers additional potential as a natural resource and recreational amenity.



Residents play volleyball on the beach, one of the many recreational activities that shape the nature of the Community (top). A view of the ocean from Jacob Riis Park (bottom). Sources: With permission from Danny Ruscillo, Flickr Forever Smith, licensed under Creative Commons.

B. Description of storm damage

Summary of storm impacts

The combination of high tide, a full moon, and Superstorm Sandy slamming into New York City created a massive surge of water that devastated many of the coastal communities of the Rockaway Peninsula. Wave action from the ocean damaged structures and inundated streets and properties. Waves crashed into homes and businesses, causing widespread damage and leaving the oceanfront bare and more vulnerable. Offshore buoys recorded wave heights of over 30 feet and while slightly reduced at the shoreline, these waves reached record heights, exceeding record waves during Hurricane Irene by one to six feet.⁷ During Hurricane Irene, the bayside storm surge extended two blocks inland in Neponsit, Belle Harbor, and Rockaway Park, as well as the area between Beach Channel High School, Cross Bay Bridge, and the A train line.

During Sandy, waves battered the oceanside but the greatest flood depths were recorded on the bayside of the Peninsula. Although much of the bayside of Rockaway West is somewhat protected by a bulkhead/baywall, it was overtopped during the storm, inundating the neighborhoods of Belle Harbor and Neponsit. The area along Cronston Avenue between 141st and 137th streets as well as Newport Ave between 142nd and 147th

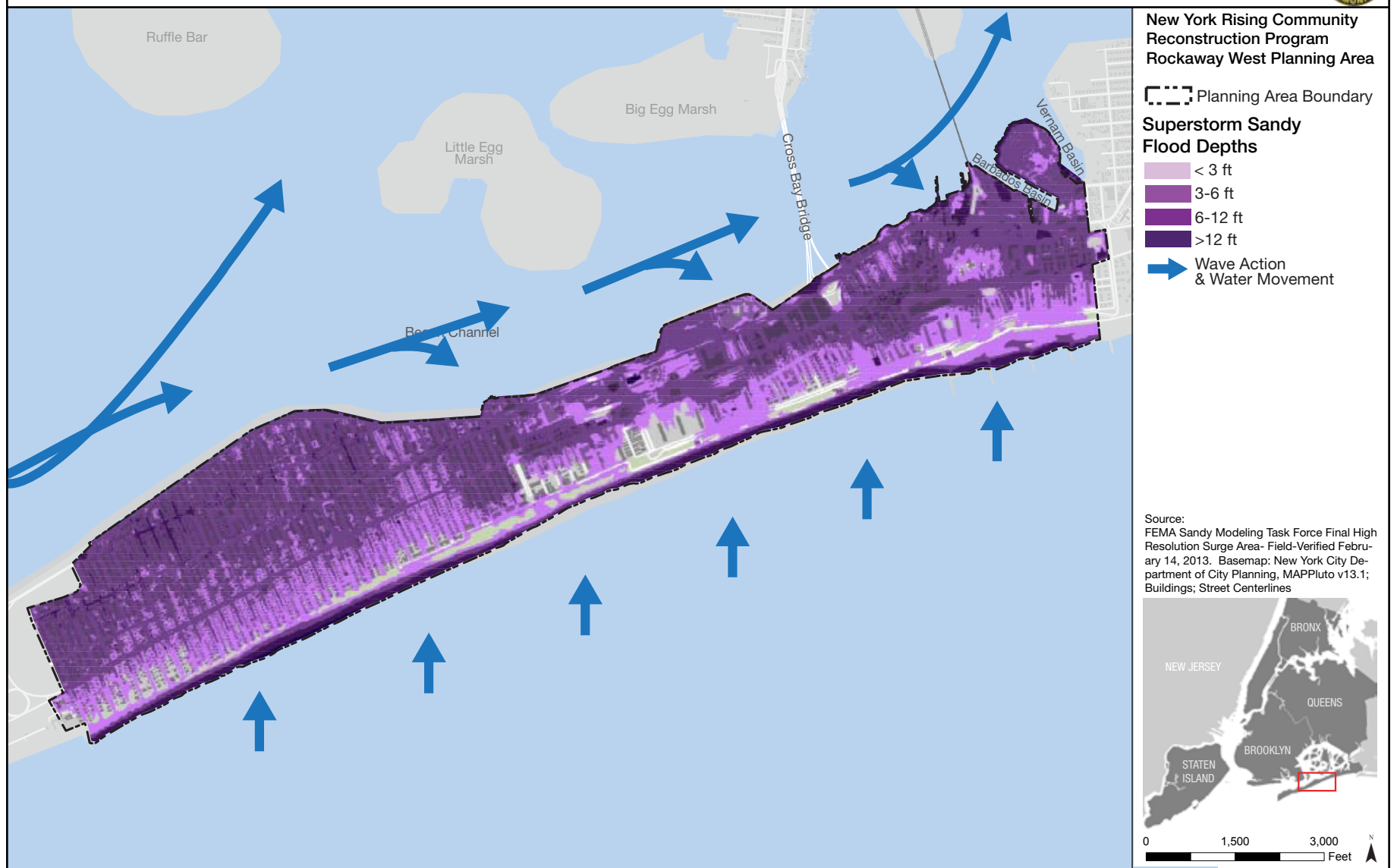


Beach 115th Street in Rockaway Park. Source: Flickr user cgc76, licensed under Creative Commons.

Streets saw some of the greatest flooding depths in Rockaway West—depths of over five feet were reported in these areas. Similar depths were recorded in low-lying areas near the foot of the Cross Bay Bridge and the around the Hammels Houses. A recurring issue, bayside flooding was significantly exacerbated by Sandy.

Superstorm Sandy affected all residents, and had especially dire consequences for vulnerable populations. Rockaway West residents that did not evacuate were stranded on the Peninsula for days. With no immediate access to goods or services, many people were left with limited supplies of food, water, medicine, and warm clothing. Vulnerable populations—residents with physical, mental, or other challenges that

Figure I-2: Superstorm Sandy flood level map



inhibit self-sufficiency—were most likely to be isolated and at serious risk. For example, seniors in multi-family buildings were stranded in their homes without working elevators and with limited access to water, food, and medicine. In addition, health care professionals who normally provide senior care services were unable to reach their job sites. Once the situation became safe, the already-strained community came together to aid these residents, but with great stress, since people did not know where to find loved ones or how to obtain services and supplies.

The beaches and boardwalk, iconic Community amenities, were decimated. Storm surge ripped through the boardwalk's wood structure, pulling sand and other debris into the streets. As the beaches and boardwalk are integral to the Community's identity and serve as a major recreational asset for both residents and visitors, the loss of the boardwalk symbolized the magnitude of the destruction caused by Sandy.

Inundated with Sandy's flood waters, LIPA substations went offline. LIPA was unable to regenerate its grid for several weeks, leaving Rockaway West residents without power for an extended period of time. A significant number of homes were without power substantially longer. Due to electrical damage, many residents



Sandy devastated the A train, homes, and businesses. Sources (clockwise from top left): Flickr user Metropolitan Transportation Authority (Leonard Wiggins), licensed under Creative Commons; Flickr user Melissa Segal, licensed under Creative Commons. With permission from John Cori.



Sandy pushed the boardwalk, sand, and other objects in its wake into neighborhoods. Sources: With permission from Michael Premo/ SandyStoryline.com (right). Flickr user Melissa Segal, licensed under Creative Commons (left).



were not able to turn on their electricity (even though power was restored) until they received certification from an electrician that it was safe, creating a large demand for a relatively short supply of available certified electricians.

Sewage overflow compounded the damage to homes and created an immediate threat to public health beyond the lack of food, water, or heat. The Rockaway WWTP at Beach 108th Street and Beach Channel Drive was inundated and rendered inoperative. Sewage overflow mixed with flood waters and seeped into homes, creating a polluted mix that lingered for days, and in some cases, weeks.

Businesses and large institutions also incurred significant damage. Sandy's storm surge destroyed the walls and windows of buildings and washed away critical inventory. Unable to open for days and weeks after Sandy, businesses suffered financial hardship, contributing to the Community's economic difficulties. Schools experienced serious damage and were unable to reopen for extended periods of time. In addition, flood waters battered Peninsula Hospital, which closed a few months later. The damages rendered repurposing of the site less likely, exacerbating an existing deficit in the Community's access to health care services.

Critical bridges, roadways, and public transportation were severely impacted. The Marine Parkway-Gil Hodges Memorial Bridge and Cross Bay Bridge closed in advance of Superstorm Sandy, and residents who did not evacuate were stranded without services or power for several days until the bridges reopened. Portions of the A train railway between Howard Beach and the Rockaway Peninsula were washed away, leaving riders without subway service. While the City and Metropolitan Transportation Authority (MTA) made accommodations with shuttle and ferry services, full service along the A train was not restored for seven months.

Intra-Peninsula arteries were blocked or damaged as well. Shorefront Parkway, Rockaway Beach Boulevard, and other internal roads were buried in sand. Combined with impaired communication channels, the lack of mobility created dangerous obstacles to vital service and supply distribution. For example, few residents were aware that the Stop & Shop on Beach 74th Street had power and an ample stock of food and water. Further, poor transit connectedness inhibited access to medicine and emergency medical assistance, putting Rockaway West residents at greater risk for serious health issues.

C. Recovering from the storm

In Superstorm Sandy's aftermath, organized and informal community activities supplemented public emergency response efforts. Residents, local churches, and community-based organizations opened their doors and provided supplies while volunteers went door-to-door to help those homebound or isolated in large multi-family buildings. In some cases, volunteers climbed 10 or more flights of stairs to bring food and water to vulnerable residents and check in on health conditions.

Volunteers from all over the City and country poured into the Community to deliver supplies and assist with the Recovery effort. A large relief tent was established by residents at Beach 94th and 95th Street adjacent to Federal Emergency Management Authority (FEMA) operations, providing a large amount of donated supplies. Relief efforts by community members and local organizations supplemented and in some cases substituted for public agency emergency response.

While the need for relief efforts gradually subsided in the months after the storm, issues surrounding rebuilding homes and rehousing displaced residents persist. The Community cites rebuilding as an urgent and ongoing issue. While some homes have recovered from



Residents, local community organizations, and volunteers quickly mobilized relief efforts. Source: With permission from Danny Ruscillo

Superstorm Sandy damage, many houses remain off-limits or are under repair, keeping people out of their homes or living in sub-optimal conditions. Others are in need of mold remediation due to flooding and effluent seepage impacts. Public housing in the eastern portion of Rockaway West was damaged and many of the buildings were still

operating on temporary generators in March 2014. Homeowners and multi-family building owners continue to experience challenges with navigating funding, regulations, and insurance rates. Meanwhile, some homeowners have spent their savings or taken on significant debt in an attempt to return to normal quickly. Expectations of rising



Bay wall repairs after Superstorm Sandy.

flood insurance rates have created additional concerns and uncertainty among homeowners, although new Federal legislation signed into law in March 2014 may serve to slow the effect of rising premiums.

A combined dune and boardwalk system is under construction, led by the City of New York and the U.S. Army Corps of Engineers (USACE). The boardwalk reconstruction has started but will not be completed until the summer of 2017, as the New York City Department of Parks and Recreation (NYC DPR) is rethinking the approach, materials, and programming around this highly

valued community asset. When completed, the reconstructed boardwalk and dunes will serve to harden and strengthen natural protective features along parts of the Peninsula's oceanside, as well as provide a scenic pedestrian and recreational path for residents and visitors.

Long-term plans for strengthening the coastline are underway. USACE is currently leading an emergency beach nourishment project to restore beaches, adding protective design elements that improve their resiliency. By Memorial Day 2014, the length of Rockaway Beach from Beach 19th Street to Beach 149th Street will have a 200-

foot beach and a 16-foot sand dune. In addition, USACE is conducting a longer term study for enhancing coastal protection, including the ocean and Bay edges of the Peninsula, with draft reports due in November 2014 for the oceanside and November 2015 for the Jamaica Bayside.

On the bayside, the New York City Department of Transportation (NYC DOT) and New York City Economic Development Corporation (NYCEDC) are restoring portions of the baywall and bulkhead that were damaged during Superstorm Sandy. However, there are no clear plans at this time to strengthen the baywall.

Because of damage to the A train line, temporary ferry service was put in place between the Rockaway Peninsula and Manhattan, roughly two weeks after the storm hit. The ferry service is popular, but the viability of continued service is uncertain. In early 2014, the City temporarily extended services through the summer and issued a Request for Proposals (RFP) to select a long-term operator. As the service runs only during rush hour on weekdays, community members have expressed frustration with such limited service.

Other infrastructure resiliency measures are also underway. The A train service was restored at the end of May 2013, after the causeway that connects the Peninsula to Howard Beach was repaired. The MTA is investing in a bay wall to stabilize and protect the embankment. City and State agencies are also evaluating other opportunities to bolster transportation to the Peninsula.

At the time Sandy hit, the Peninsula was served by Long Island Power Authority (LIPA) but, while LIPA continues to own all of the equipment, PSE&G serves as management, operation, and the public face of the system at the beginning of 2014. To make the power supply system more resilient, LIPA has identified



Source: With permission from Joanne Smith.

hardening measures for the four substations on the Rockaway Peninsula and has enacted management restructuring actions. Further, New York State has engaged with LIPA to establish plans to ensure improved response and accountability.

Eight million dollars in FEMA funding was awarded to the New York City Department of Environmental Protection (NYC DEP) to repair the Rockaway WWTP's motors, lighting, pumps, electrical and structural equipment, and address other damage from the effects of Superstorm Sandy. NYC DEP has implemented near-term fixes for immediate

problems, including remediation to reduce the strong and persistent odor that emanated from the plant for over a year after Superstorm Sandy. There remain other medium-term problems that will take time to resolve.

Businesses are receiving modest assistance and struggling to bounce back. With help from the NYC Department of Small Business Services, local businesses along the Beach 116th Street corridor formed a merchant association that is actively coordinating with City and Federal agencies to rebuild and promote this retail corridor. This has been helpful for businesses at



While long-term coastal protection is difficult to achieve at the local level, beach nourishment provides some near-term coastal protection. Source: Flickr user New York District U.S. Army Corps of Engineers, licensed under Creative Commons.

Beach 116th Street, but many small and local businesses were damaged by the storm and have been unable to reopen. Madelaine Chocolate Factory, one of the largest employers on the Peninsula, recently put its factory up for sale after struggling with the costs and challenges of rebuilding.

While there has been an influx of effort, support, and funding into Rockaway West, there remains a tremendous amount to do—not just to rebuild, but to revitalize the Community and increase preparedness for future challenges. There are opportunities to build on efforts to date, learn from challenges, and leverage the NYRCR

Program to further catalyze positive change in the Community.

D. Critical issues

Superstorm Sandy exposed a number of critical issues that drove the NYRCR Planning Committee's deliberations.

Complexity of comprehensive coastal protection

With rising sea-levels and increasing frequency of coastal storms, coastal protection is critical to the Community's future but difficult and largely impractical to approach at the local level. Management of coastal storm risks must be coordinated on a regional basis on both the ocean and bay shores. Such management is necessary to address regional risks, integrate natural processes with management actions, and secure adequate environmental outcomes. This comprehensive approach will require the coordination of multiple public and private stakeholders and will come at substantial cost. It will be some time before Rockaway Peninsula communities are able to coordinate and implement a comprehensive risk management approach. And while in the near-term, the Community must implement feasible actions and be prepared to address ongoing risks, a robust examination of sustainable management options, integrated storm defense measures, and community discussion of preferred actions should also be initiated.



Neighborhoods on the eastern bayside of the Planning Area have a mix of edge conditions that makes them particularly vulnerable.

Shoreline and near-shore conditions are critical factors that contribute to the Community's vulnerability. The USACE's work to restore the dunes on the oceanside of the Peninsula is a valuable intervention, but on its own does not constitute a complete shoreline management approach. The Community eagerly anticipates USACE completion of a reformulation plan for storm damage reduction that takes into account

storms, natural processes, and sea level rise. The new plan should provide a sustainable, long-term management approach for the ocean shores that the Community can integrate with other resiliency measures.

On the bayside, the City is repairing portions of the baywall, but deteriorated bulkheads and natural shorelines at the eastern end of

Rockaway West remain vulnerable to flooding and erosion. Increased risk of storm surge in Jamaica Bay means that these barriers are vulnerable to overtopping in major storms, as Sandy showed. The USACE comprehensive plan will address Jamaica Bay vulnerabilities as well, though on a longer timeline than the oceanside. A comprehensive shoreline management approach is needed because the baywalls are insufficient to withstand storm surges while diminishing environmental quality. This approach will be challenging because portions of the shoreline are privately owned. Access to the shoreline, water filtration, and other environmental services, as well as coastal hazards, will have to be addressed in an effective shoreline management program.

Comprehensive environmental risk management is necessarily a long-term endeavor and one that becomes more challenging with sea level rise and other impacts of climate change. These complexities suggest that flood risk will continue to be a concern for the Community, and there are few structural alternatives that can provide satisfactory results on their own. To reduce vulnerability, Rockaway West will need a cooperative effort that utilizes all available management options, including revised coastal and shoreline management and other community resiliency measures.

Figure I-3: 311 Drainage map



Frequent flooding

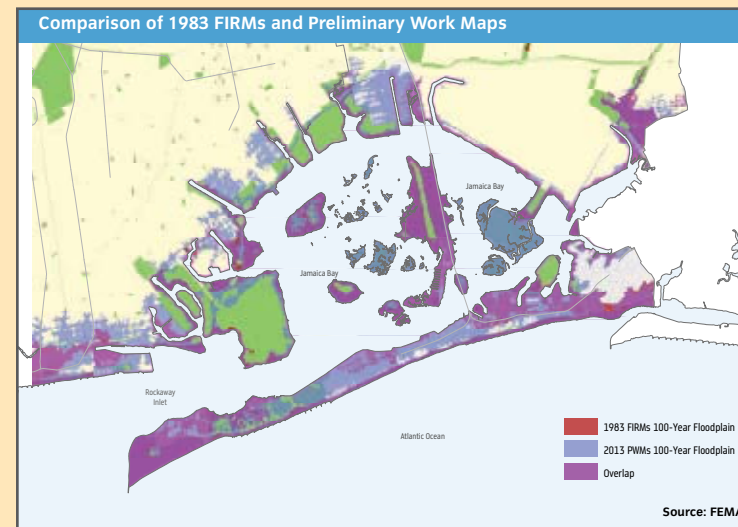
Frequent, albeit less extreme, flooding is a year-round problem that is exacerbated by major storm events. In parts of Rockaway West, recurring flooding and street ponding is the result of tidal activity or rain events rather than

storm surge, and may be worsened by street grading or insufficient stormwater infrastructure. Flooding not only hinders first responders and creates safety risks, but also creates year-round risks, due to health issues associated with stagnant waters—especially in the warm-weather tourist season. Flooding from both extreme

FEMA flood maps and flood risk

The Federal Emergency Management Agency (FEMA) describes its assessment of flood risk through flood maps referred to as Flood Insurance Rate Maps (FIRMs). These maps are used by the National Flood Insurance Program (NFIP) to set flood insurance rates. Before Superstorm Sandy, FEMA had begun a coastal flood study to update FIRMs for portions of New York and New Jersey, using improved methods and data to better reflect coastal flood risk. When Superstorm Sandy hit New York City, the FIRMs in use were based on information from 1983 and inundation extended well beyond what these maps estimated would be the 100-year floodplain.

After Superstorm Sandy, FEMA first released Advisory Base Flood Elevation (ABFE) maps based on the partially completed flood study for certain communities, which were designed to help in rebuilding and Recovery efforts. In December 2013, FEMA released preliminary FIRMs for New York City. The final updated FIRMs are anticipated to be released in 2015. These final FIRMs will guide new Flood Insurance rates for homeowners and businesses in the floodplain. FEMA's flood maps do not take into account future conditions and thus do not factor in potential sea level rise.



Source: NYC Special Initiative for Rebuilding and Resiliency: *A Stronger, More Resilient New York*, FEMA.

National Flood Insurance Program (NFIP)

FEMA developed NFIP in the 1960s to provide homeowners with flood insurance, which was not readily available in the private market. Through NFIP, property owners in participating communities are able to buy subsidized, government-backed insurance to protect against flood losses. The Biggert-Waters Act of 2012 proposed the controversial repeal of subsidies and other restructuring in order to make the program more financially sound. Coupled with the previously mentioned FIRM map adjustments, this repeal would result in substantial premium increases for many policyholders. In a move to bring flood insurance rate relief to coastal communities in the wake of Superstorm Sandy, in March 2014 Congress passed and President Obama signed the Homeowner Flood Insurance Affordability Act into law. The law caps average annual flood insurance premium increases at 15%-18%, and allows subsidies for insurance rates that are based on best available flood maps. It also designates a flood insurance advocate to educate homeowners and policy holders on mitigation measures that can help reduce flood insurance rates, and recognizes among these measures methods for reducing flood risk that provide alternatives to building elevation for residential buildings such as attached homes whose structures cannot be elevated.



Foreground, temporary ferry landing along damaged baywall. Cross Bay Bridge, one of only two bridges to the Peninsula, in the background.

and routine weather damages and degrades the quality of street surfaces, parking lots, and landscaping. It has an overall detrimental impact on important community infrastructure and one that is expensive to continually repair. Delaying or failing to make repairs, meanwhile, contributes negatively to neighborhood character.

Mobility issues

Within the Rockaway Peninsula, transit options are insufficient and at risk during an emergency. Disparate transit networks make intra-Peninsula transit challenging without a vehicle. Even with a vehicle, poor road conditions impair travel. Over land, residents are limited to just two bridges, and the transit journey to and from Manhattan and major employment centers in the area can be very long, due to the limited availability of shuttle service during off-peak hours and a ferry service that is restricted to weekdays.

The ferry remains financially at risk. While it is occasionally derided by some as unjustifiably supported by subsidy, there is no transportation mode that does not require subsidy. The total cost of the ferry to the City of New York averages more than \$30 a trip, exceeding the express bus, which costs \$20 a trip and has a ticket fare two-thirds that amount. Further, unlike other public

transit systems, there are little to no funds to support public or private ferry operations. The City is evaluating options to support the ferry in the long term, but its future is unknown.

Lack of local emergency preparedness and services

Rockaway West residents fared relatively well after Sandy, because residents came together to support one another. But the Community is at risk of encountering difficulties in the future without adequate emergency response preparations that address questions such as: Where are the safest locations? Where can residents find information or help? Where are seniors or other vulnerable populations located and how can they obtain needed assistance? By better preparing both physically and socially for emergencies, Rockaway West residents can avoid facing more serious issues in the future.

In addition, health care services are lacking in the Planning Area, both on an ongoing basis and during emergencies. The closure of Peninsula Hospital put a greater burden on already strained health care services in South Queens. There are no trauma facilities and emergency room services are severely limited. This presents particular challenges on a day-to-day basis during the



Volunteers from the New York City Police Department organize a local food drive. Source: With permission from Danny Ruscillo.

summer, when the area's net population increases and intra-Peninsula transit is burdened. Even more troublesome is the prospect of increased health care needs during large-scale emergency events when the Community's health risks are heightened.



With its local businesses and small scale, dense street facade, Beach 116th Street serves as a main street to Rockaway West.

A local economy hit hard by Superstorm Sandy

Rockaway West is home to predominantly small, locally-owned businesses. Since Sandy, business owners have had to contend with fixing and improving both their homes and their businesses. Sandy wrought significant damage to ground-level retailers, some of whom have not returned, leaving property owners still struggling. There is an imminent risk of vacant buildings and future divestment in the area. Economic revitalization was a need before Sandy, so there is an increased need to support the economy today. Further, because the beaches were ravaged by Sandy, tourism has suffered in the summers since the storm; the long-standing interdependency between the beaches and the local economy has exacerbated economic stagnation.

E. Community vision

The Rockaway West Community has been shaped by its beach geography and a rich connection to nature. The devastation caused by Superstorm Sandy not only exposed the Community's vulnerability to natural events, but also affirmed the strength of its people in the face of adversity. Unified by their common link to the benefits and risks associated with the water, Rockaway West residents mobilized around a shared commitment to building a more resilient community.

The NYRCR Program aimed to engage the entire Community in the reconstruction planning process. Over six months, Planning Committee members engaged residents across the many neighborhoods that make up the Planning Area to gather feedback and develop consensus. The vision and goals established in this Plan reflect the collective voice of this large and diverse Community.



Source: With permission from Joanne Smith.

Rockaway West vision statement

Rockaway West seeks to be **stronger and more resilient**, not only to be better prepared for future natural disasters or large-scale emergencies, but also to **bolster and grow our robust natural, economic, and social ecosystems**.

Short-term goals (2-5 years)

- Address any immediate risks to both the ocean and bay edges
- Rebuild and strengthen damaged homes
- Improve and extend transit service and access to existing infrastructure
- Strengthen emergency preparedness
- Identify and implement short-term improvements to strengthen utilities, communication, and water management
- Address immediate health and social services challenges
- Support commercial Recovery and redevelopment
- Identify short-term projects to improve the boardwalk and expand beachfront and bayside activity

Long-term goals (5-10 years)

- Create hard and soft edges to maximally protect all of the communities in Rockaway West
- Protect and ensure all homes in Rockaway West are made resilient
- Improve transportation infrastructure and connectivity of Rockaway West
- Enable self-sufficiency during and after emergencies
- Create long-term upgrades to existing infrastructure to be a regional model for sustainability, resilience, and energy independence
- Seek sustainable models for health and social service provision for the Community
- Expand broader economic development and economic activity throughout the Community
- Maximize waterfront use and access along the bay and the beach

F. Relationship to regional plans

Rockaway Peninsula overview

Situated on land that originally made up a series of barrier islands and marshland, the three Rockaway Peninsula communities have a similar geomorphology and low elevation.

A good proportion of the land area is located at or just above sea level, making neighborhoods along the shorelines vulnerable to flooding even during normal high tides. The coastline ranges from long, wide beaches with gentle dunes, to soft, marshy edges, to shorelines punctured by inlets and man-made and natural basins.

On the oceanside, the Rockaway Peninsula faces risks due to its extensive unobstructed coastline and the proximity of homes and infrastructure to the water's edge. While much of the coastline contains beaches, many lack extensive natural protective features, such as dunes, and experience regular beach erosion. At the same time, as a barrier island the Rockaway Peninsula provides valuable protection to communities within the bay by reducing surge and wave heights within the bay itself. The beach nourishment and dune-building efforts being undertaken by the USACE help to reduce risk to all communities on the Bay.

Communities along the bayside of the Rockaway Peninsula are at risk. Some

neighborhoods are fronted by open beaches and others are set further away from the water's edge, with much of the bayside bordered by a mix of edges ranging from tidal wetlands to bulkheads, and a baywall to the west, which was overtopped during Superstorm Sandy. While natural protective features and shoreline structures built along the perimeter of the Bay may provide protection against lesser storm events, they are collectively insufficient to protect against the 100-year storm event. Some of the shoreline structures are aging, or inadequately maintained, leaving these communities vulnerable to flooding.

Other challenges in common

Areas of common regional interest extend beyond coastal protection, to health care and transportation.

Like its neighboring NYRCR Communities, the Rockaway West Community is concerned about access to health care. The Communities of South Queens have raised serious concerns as health care providers have closed or consolidated their facilities and the remaining limited providers struggle to meet the demand for quality care. While there are plans in place to develop an ambulatory care facility in the historic courthouse building on Beach Channel Drive and 91th Street, the facility will not offer emergency

or more advanced health care services. The financial viability of health care facilities depends on securing sufficient patient volume. Individual NYRCR Communities do not currently boast proportionate population counts to support new health services on their own. Therefore, the Rockaway West Planning Committee focused on coordinating with Rockaway East, Breezy Point, and Broad Channel to expand health care services, with a particular focus on emergency care.

Many NYRCR neighborhoods also face insufficient transportation and access challenges, especially in an emergency. In multiple locations throughout the Rockaway Peninsula, including Breezy Point, Belle Harbor, and Rockaway Beach, fires were sparked by the interaction of seawater and electrical infrastructure. Fire trucks were unable to reach these areas due to extensive flooding across the Peninsula. Single land-based access routes to communities, such as those serving the Breezy Point and Broad Channel Planning Areas, as well as certain parts of Howard Beach, including bridges and roadways were damaged or flooded, constraining emergency response and hindered evacuation. Several buildings in the Beach experienced fires, which were exacerbated by an impeded emergency response.

Figure I-4: NYRCR Jamaica Bay Regional Working Group



The Rockaway Peninsula also faces regular transportation challenges, which are exacerbated in times of disaster. Cross-Peninsula transportation is difficult; pavement conditions are poor and the transit system is disconnected. Many A train line stations lack Americans with Disabilities Act (ADA) access requirements and the A train line's cross-Peninsula "H" service, put in place after Superstorm Sandy, has been discontinued. Bus routes are circuitous yet do not take residents to key destinations, such as the ferry dock. Travel to South Queens and beyond is also problematic, particularly since bridge tolls make every off-Peninsula car trip expensive. And perhaps most importantly to some in the Community, the Rockaway Ferry has been extended but permanent funding is not secure. The Rockaway West Planning Committee has identified opportunities to address these challenges through cooperation with Rockaway East on a transportation study and other projects, such as creating a bike share program and circulator bus.

As projects move from planning into implementation, Rockaway West will continue to collaborate with its neighbors on the peninsula to leverage resources and develop solutions that address common challenges.

Regional perspectives: Jamaica Bay

From Sea Gate on the western edge of the Southern Brooklyn Peninsula, to South Valley Stream at its headwaters in Nassau County, communities in and around Jamaica Bay suffered enormous damage from Superstorm Sandy. Jamaica Bay—a unique ecosystem in an urban landscape—is famous for its salt marsh islands, intertidal flats, horseshoe crabs, and migratory birds that use the area as a critical refuge during their seasonal travels. Beyond the water, the Bay is surrounded by woodland and forests that host a wide array of wildlife. This dynamic system has attracted people for generations, and many of its surrounding communities are partially defined by their nearness to the Bay. However, this proximity also functioned as a hazard during Superstorm Sandy. At the height of the storm, the Bay swelled and water surged up through a network of creeks and streams, infiltrating neighborhoods and inundating homes, businesses, and roadways.

Shared risk, shared resiliency

Connected hydrologically and ecologically, Jamaica Bay is a unifying feature tying together six NYRCR Planning Areas in New York City: Breezy Point; Rockaway West; Rockaway East; Broad Channel; New and Old Howard Beach;

and Gerritsen Beach/Sheepshead Bay. A seventh Planning Area—the Southern Brooklyn Peninsula Community Planning Area, which includes Brighton Beach, Coney Island, Manhattan Beach, and Sea Gate—is in close proximity at the mouth of Jamaica Bay. The Bay and its tributaries have a far-reaching influence that extends beyond New York City. The Five Towns, which includes the Village of Cedarhurst, Hewlett, Village of Lawrence, Woodmere, Village of Hewlett Neck, Village of Hewlett Harbor, Meadowmere, and Inwood, as well as the South Valley Stream Community Planning Areas in Nassau County, are also impacted by what happens in the Bay. With their connected shoreline, these communities share a unique ecological amenity that requires comprehensive regional coordination.

All of the Jamaica Bay communities suffered significantly during Sandy, some from flooding or surge and some from wave action damage.

According to an assessment conducted by the New York City Department of Buildings (NYC DOB), 37% of the buildings destroyed during Sandy citywide were located in Jamaica Bay.⁸ The storm damaged homes, businesses, beaches, parklands, schools, roadways, and mass transit. The area also endured one of the most extensive and long-lasting power outages in the City.



View from Jamaica Bay to the Gil Hodges Bridge.

Flooding risks are likely to be exacerbated throughout the bay by projected sea level rise associated with climate change. Based on the Federal Emergency Management Agency's (FEMA)'s Preliminary Flood Insurance Rate Maps, the 100-year floodplain in the borough of Queens has expanded by 40% from boundaries established by the 1983 Flood Insurance Rate Maps, and floodplain expansion has been especially dramatic for the Jamaica Bay/South

Queens area, with the number of buildings in the floodplain having risen by 70%.⁹ It is anticipated that this trend will continue, and the low-lying areas surrounding bay communities are likely to continue to experience more frequent flooding and greater flood depths.

There are also ecological factors to consider: Jamaica Bay is a tidal estuary. Though severely degraded over the 19th and 20th centuries, the

bay remains a dynamic ecosystem, providing critical habitat to a variety of species, including a number of protected and threatened birds that inhabit both the beach and bay. Habitat loss and degradation of the bay's chemical, physical, and biological environment has largely been due to human activities; however, over the last two decades, City, State, and Federal policies and activities have yielded dramatic improvements in the bay's water and habitat quality.

In this hydrologically-connected system, projects and interventions in one area of the bay can have ecological and coastal protection ramifications across the estuary. The cumulative impact of individual projects implemented in different locations around the bay can be greater than the sum of their individual impacts.

Planning for Jamaica Bay

As described in the Description of Storm Damages section of this Plan, Superstorm Sandy had a devastating impact on communities, and individual NYRCR Committees have developed strategies to rebuild and become resilient to future storm risks. At the same time, communities in and around Jamaica Bay realize the need for collaboration. Understanding that projects and other actions in one area can have profound impacts across the estuary, these communities have sought to create a unified, collective voice in support of resiliency efforts throughout the bay. Mindful of the communities' call for cooperation, the Governor's Office of Storm Recovery created the Jamaica Bay Regional Working Group (JBRWG), a collection of representatives from the NYRCR communities closest to Jamaica Bay, shown in I-4. The JBRWG views this final plan as the vehicle for its collective voice in support of ongoing and emerging resiliency efforts by stakeholders in Jamaica Bay.

The JBRWG believes that collaboration with agencies active in Jamaica Bay, namely the U.S. Army Corps of Engineers (USACE) and the National Park Service (NPS) is paramount. Through various habitat restoration projects, in addition to coastal protective measures along the Rockaway Peninsula, USACE has long been a committed partner in the sustainability of Jamaica Bay. Moreover, because of its management of the Gateway National Recreation Area, NPS has an ongoing interest as a responsible steward of its federally protected lands.

Lastly, the JBRWG supports the Science and Resiliency Institute at Jamaica Bay, a partnership among academic institutions, government agencies, nongovernmental organizations, and community groups dedicated to the promotion and understanding of resilience in Jamaica Bay and its surrounding communities. Institutions taking part include: Columbia University, Rutgers University, SUNY Stonybrook, Stevens Institute of Technology, Cornell University, CUNY, NASA Goddard Institute for Space Studies, the Wildlife Conservation Society, and New York Sea Grant. The Science and Resiliency Institute at Jamaica Bay was created in response to a RFEI (Request for Expression of Interest) put out by the NPS, City of New York, and Trust for Public Land, with grant funding from the Rockefeller Institute.

The JBRWG supports the following USACE and NPS projects:

- **Breezy Point/Roxbury Long-Term Comprehensive Edge Protection** – This project envisions a system of dunes, berms, marsh restoration, raised roads, floodwalls and baywalls, partially on NPS land, for comprehensive protection of the Breezy Point and Roxbury communities. This would include work at the Cove, as well as the property lines along the cooperative, including Breezy Point Tip.
- **Breezy Point Comprehensive Flood Protection System** – This proposed dune system would provide sustainable, natural flood and erosion protection utilizing the area’s existing natural features. The plan is comprised of an oceanside double dune system and complementary set of bayside flood and erosion protections that are designed to safeguard the Community from future storm events. An application for this project was formally submitted by the State to FEMA on March 20, 2014, through FEMA’s Hazard Mitigation Grant Program (HMGP).
- **Broad Channel Shoreline Protection** – A potential project from the Broad Channel NYRCR committee is a “Resiliency Campus,” a rebuilding program to enhance the resiliency of several important community centers damaged during Sandy. The NPS property line hugs the campus site, the northwest quadrant of the neighborhood, and interventions here would further protect these community assets.
- **Edge Protection for Upper Jamaica Bay** – The JBRWG supports the inclusion of protective measures for communities located in upper Jamaica Bay, including Gerritsen Beach, Sheepshead Bay, and Manhattan Beach, in the USACE East

Rockaway Inlet to Rockaway Inlet Reformulation Study. This would include protections for Plumb Beach and the water body of Sheepshead Bay, which were points of entry for storm surge during Superstorm Sandy.

- **Howard Beach Shoreline Protection** – The New York State Department of Environmental Conservation (NYS DEC) is currently working toward designing and implementing protective strategies on NPS property in lower Spring Creek. The Howard Beach NYRCR committee has also proposed work on NPS property at Upper Spring Creek, Charles Memorial Park, and Shellbank and Hawtree Basins.
- **Rockaway East and West Bay and Coastal Protection** – A system of bay walls, groins, and dunes are being implemented to protect Rockaway West. The JBRWG also supports additional bayside protections including bulkheads and natural solutions at vulnerable locations in Rockaway East, along the western, northern, and eastern shoreline of Arverne, in Sommerville, and in Bayswater. Additionally, Jacob Riis Park, the westernmost boundary of the Rockaway West Planning Area geographic scope, remains NPS property. The JBRWG supports work at this location, through either dunes along the beachfront or berms within the property, and believes the project would ensure protection of the entire community.
- **Surge Barrier at Rockaway Inlet** – The JBRWG supports New York City Special Initiative for Rebuilding and Resiliency’s (SIRR) call for the USACE to initiate an expedited study to examine the feasibility of developing a surge barrier and alternative measures at Rockaway Inlet as part of the previously mentioned Rockaway reformulation study.

Key programs, plans, studies, and projects

Due to the myriad challenges and risks associated with the region, plans and projects to improve resiliency and the overall urban environment existed before Sandy at the Federal, State, regional, and City levels. Attention on the region has only grown since Sandy, as have the number of planned and active projects.

To avoid duplication of plans and to best identify how the NYRCR Program may fill existing gaps, it is essential to understand and assess the scope of, and potential relationships to, existing initiatives. This includes resiliency and Superstorm Sandy Recovery plans, as well as other hazard mitigation, waterfront, infrastructure, and sustainability plans. The analysis and recommendations included in these plans contributed valuable information and ideas to the NYRCR planning process and project definitions.

Key programs, plans, and projects—and their linkage to the Rockaway West Community’s rebuilding and resiliency strategies and projects—are described below. The appendix to this report contains a more detailed description of these and other Federal, State, and local ongoing plans

and projects that are related to rebuilding and resiliency efforts.

Federal Initiatives

U.S. Army Corps of Engineers (USACE) efforts. The USACE is a major player in both coastal protection and ecological restoration efforts within Jamaica Bay and is currently running a number of ongoing studies and projects that could provide resiliency benefits. These include studies that pre-dated Sandy as well as post-Sandy updates to the previous plans and studies. While initiated and led by the Corps, the projects that stem from these studies may have many implementation partners, including multiple State and City agencies.

- **East Rockaway Inlet to Rockaway Inlet (Rockaway Beach)**, often referred to as the Rockaway Reformulation Study. This project was authorized by the Flood Control Act in 1965 and modified by the Water Resource Development Act (WRDA) of 1974. When funded, USACE designed, constructed, and maintained the project from 1977 until 2004 under additional appropriations and WRDA authorizations. Because of the high cost of continually replenishing the eroding shoreline, the USACE was directed

in 2003 to “reformulate” the original plan so that a long term, cost-effective solution to the effects of continued erosion on the Rockaway Peninsula could be identified. Funding for the reformulation was not appropriated for several years, but by 2011, the USACE had identified alternatives. Superstorm Sandy led to the need to revise these alternatives. The Sandy Appropriations Act authorized funding for the reformulation study and reconstruction/re-nourishment of the previously completed ocean beach portions of the project. Phase 1, for which the draft reformulation report is scheduled to be ready by late Spring 2014, looks at beach nourishment and additional erosion control and/or storm damage risk reduction measures on the oceanside of the Rockaway Peninsula. Phase 2, for which the draft reformulation report is expected in November 2015, will investigate flooding on the Jamaica Bayside of the Peninsula and evaluate potential coastal storm risk management measures, including nature-based alternatives. Projects that are recommended by the reformulation phases will require further cooperative teaming agreements and funding appropriations. Under the Reformulation Study, coastal protection measures proposed by

Rockaway West and other communities around the Bay might be considered by the USACE.

- **Rockaway Public Beach.** This is a two-phase project to nourish Rockaway Beach back to its original design profile. The first phase was completed in August 2013 and added more than 500,000 cubic yards of sand to the most eroded portion of Rockaway Beach, between Beach 149th Street and Beach 89th Street. Phase 2 will add another 3,000,000 cubic yards of sand between Beach 149th Street and Beach 19th Street, to be completed by August 2014. New York City has requested that the re-nourished dune meet the 100-year flood elevation.

In addition to the USACE, the US Department of Housing and Urban Development (HUD) has had a very active role in coordinating Sandy Recovery efforts across the region. Primarily, it has provided leadership and oversight in programming CDBG-DR funds for Recovery and resiliency. In addition, it has led a cutting-edge initiative to catalyze development along the coastlines:

- **Rebuild by Design.** In 2013, the Secretary of Housing and Urban Development launched



Conceptual Commercial Corridor Resiliency Project for Rebuild by Design, 2014. Source: HR&A Advisors with Cooper Robertson and Partners.

a design competition to generate innovative approaches to Recovery, rebuilding, and resiliency in the Sandy-impacted region. Several Rebuild by Design efforts have potential benefits to Rockaway West neighborhoods, including a proposal to integrate flood protection and commercial revitalization along and adjacent to the Beach 116th Street corridor.

City and local initiatives

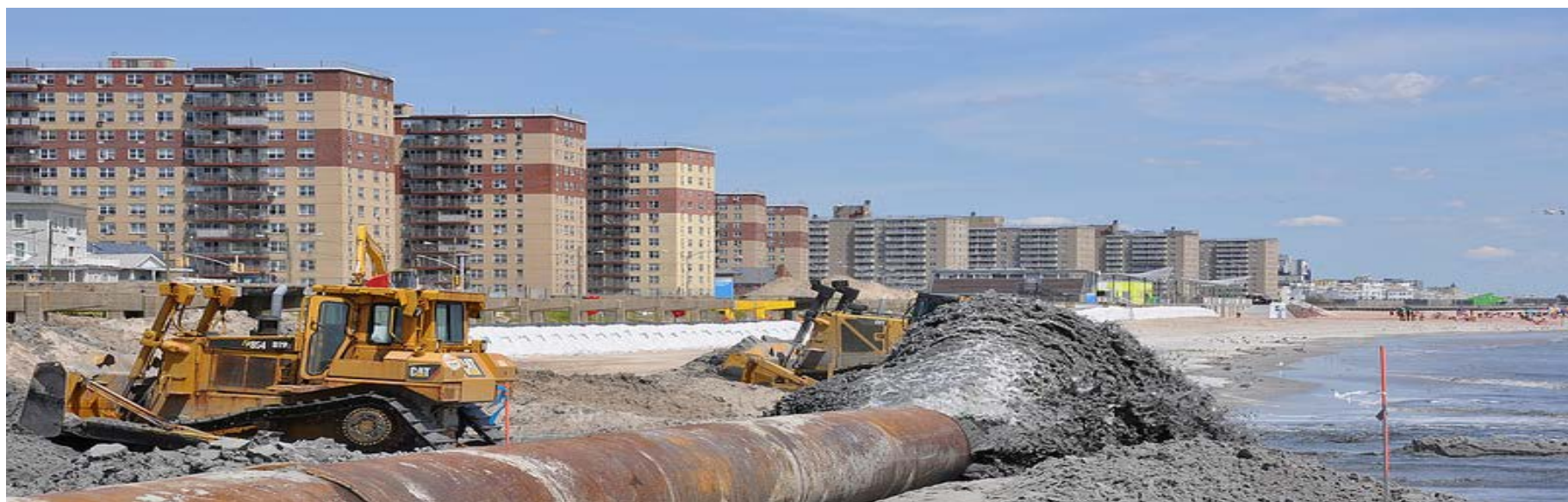
In addition to the Federal initiatives and projects centered on Jamaica Bay, there are a number of New York City-wide initiatives relevant to resiliency planning in Rockaway West. Other City and local initiatives take a specific look at or have projects within Rockaway West.

- **Special Initiative for Rebuilding and Resiliency.** The Special Initiative for Rebuilding and Resiliency (SIRR) was convened by Mayor Bloomberg in December 2012 to assess the damage wrought by Sandy and consider the implications going forward for New York City in light of climate change and sea level rise projections. In June 2013, SIRR released its findings in a comprehensive report, A Stronger, More Resilient New York (SIRR Report), which outlined New York City's plan for rebuilding

post-Sandy and ensuring resiliency into the future. The plan contains actionable recommendations for communities affected by the storm as well as chapters covering citywide issues, such as coastal protection, buildings, insurance, utilities, liquid fuels, health care, transportation, parks, water and wastewater, and other critical networks. For Rockaway West, SIRR proposed working with the USACE to complete existing studies of the Peninsula, rebuild and repair housing units destroyed and substantially

damaged by Sandy, develop a revitalization strategy for Beach 109th Street, along with exploring options to mitigate risk to Jamaica Bay communities through a large-scaled regional intervention, such as a surge barrier. The report and latest updates on implementation can be found on the SIRR website: <http://www.nyc.gov/html/sirr/>.

- **NYC Recovery: Build it Back and Business Resiliency Investment Program** In addition to resiliency, the City has



The U.S. Army Corps of Engineers works to restore dunes on the oceanside of the Peninsula. Sources: Flickr user New York District U.S. Army Corps of Engineers,

launched several initiatives under the NYC Recovery program to help residents across the five boroughs recover from the damage caused by Superstorm Sandy. The “Build it Back” program seeks to assist homeowners, landlords, and tenants whose homes were damaged by the storm. The “Business Resiliency Investment Program” will offer incentives to businesses to invest in improvements to protect against severe weather. Some of these Recovery programs support resiliency investments and will help improve individual homes and businesses in the communities surrounding Jamaica Bay. More information on the NYC Recovery program can be found here: <http://www.nyc.gov/html/Recovery/>.

- **NYC Revised Building Codes:** Particularly relevant to NYRCR Communities are ongoing and potential future updates to the building and zoning code. New York City’s Building Resiliency Task Force identified 33 recommendations to the City Council. Many of these recommendations are still in various states of review, and 16 initiatives have been passed. In addition, the New York City Department of City Planning’s Flood Resiliency Zoning Text Amendment was approved by City Council on October 9,

2013. The amendment removed obstacles to homes that are rebuilding in the flood zone, allowing homes to build to the new standards.

- **NYC Department of Parks and Recreation (NYC DPR) and New York City Economic Development Corporation (NYCEDC) Rockaway Boardwalk Rebuilding project.** NYC DPR and NYCEDC have developed a concept and design for rebuilding the Rockaway Beach boardwalk destroyed by Superstorm Sandy. Resilient elements include siting the reconstructed boardwalk between a sand berm (built by the USACE and anchored with maritime grassland) on the oceanside and a vegetated berm behind the boardwalk, and also an interdunal swale and baffle wall under the boardwalk that will prevent sand migration. Construction will start in spring 2014 and proceed in phases, with the final phase scheduled for completion by Memorial Day 2017. Given the status of the plans for rebuilding the oceanside beach and boardwalk, the Committee focused efforts to protect and enhance recreational assets on the bayside.
- **NYCEDC Bulkhead Repair/Raising.** The SIRR Report recommended a citywide

bulkhead raising program targeted to low-lying neighborhoods at risk of regular tidal flooding on the bayside of the Rockaway Peninsula, Broad Channel, and Howard Beach, among other locations. This program will work in conjunction with a new citywide waterfront inspections program. NYCEDC is the implementation agency. Beach Channel Drive is already undergoing bulkhead repair under this program.

- **NYCEDC Citywide Ferry Study.** Given the success of the East River Ferry’s first two years of service and dramatic development changes on New York City’s waterfront, NYCEDC is developing an updated and expanded Citywide Ferry Study that builds on the recommendations first identified in the 2010 Comprehensive Ferry Study. A preliminary report was published in late 2013 as a precursor to the Final Report that is anticipated for release in 2014. The preliminary report’s findings on economic impacts and potential value capture strategies have relevance for NY Rising Communities considering bolstering ferry service. The report found that residential property values near East River ferry stops in Brooklyn and Queens increased 8% over comparable property values further from



A view of the baywall, Wastewater Treatment Plant, and Rockaway Ferry landing.

the stops; similarly areas near ferry stops realized almost 5% more residential and commercial building space development than areas farther from ferry stops. The report found that ferry routes serving more distant locations provide accessibility benefits but generate higher operating costs requiring greater funding support if they are to maintain fares similar to other transit modes. The study provides valuable information about ferry operations and potential impacts on economic development. These findings influenced the Committee's approach to developing projects around the ferry landing and along Beach 108th Street.

- **New York City Regional Economic Development Council's (NYC REDC) Five-Year Strategy Plan.** This plan entails a comprehensive economic strategy to address and promote poverty prevention/ job training, government fiscal responsibility and infrastructure investment, and balanced investment among all of New York City's businesses. The Council outlines four key objectives to address these principles: improve quality of life: create a pro-growth, pro-jobs environment, invest in the future, and foster innovation and inter-regional cooperation. Specific approaches such as supporting small businesses and neighborhood revitalization align with the goals of NYRCR.
- **NYC DPR Rockaway Parks Conceptual Plan.** NYC DPR is developing a conceptual plan for future improvements to City parks on the Rockaway Peninsula, from the City limit to Beach 149th Street, and from the Bay to the ocean. The Rockaway Parks Plan will incorporate resiliency measures into park improvements and is scheduled for release in spring 2014. Knowledge of NYC DPR's plans for bayside recreation in Rockaway West revealed complementary efforts, such as around Beach 88th Street and Beach 108th Street, where it made sense for the Committee and NYC DPR to join forces to ensure park plans are prioritized in areas of particular importance to economic resiliency or coastal protection,

and that recreational amenities incorporate resiliency measures, such as solar power, green drainage approaches, and raised bayside trails.

- Remediation of Rockaway Park Former Manufactured Gas Plant Site – New York State Department of Environmental Conservation (NYS DEC) and National Grid** The Rockaway Park Former Manufactured Gas Plant (MGP) site Beach Channel Drive and Beach 108th Street. From the late 1870s until 1958, gas for cooking, lighting, heating, and commercial purposes was manufactured at the site. Evidence of by-products that resulted from the manufacturing process were found at the site, and required clean-up and remediation to contain contaminants from further spreading in subsurface soil or groundwater. Remediation measures on the site included excavation of soil to eight feet below grade, installing migration barriers, developing Recovery wells, and capping the site, among other activities. Remediation measures were completed on the site itself in 2012, before Superstorm Sandy hit. The site was used for staging for Sandy Recovery activities, and a portion of the site is currently used for parking for



NYC DPR draft concept for Beach 94th Street presented at the Knights of Columbus in December 2013.

Source: NYCDPR Rockaway Parks Draft Conceptual Plan, March 2014.

the Rockaway Ferry. Off-site remediation activities are still being defined, but will include complete remediation in the City-owned bulkhead area across Beach Channel Drive; the resulting landscaped open space is included in the NYC DPR Rockaway Parks Conceptual Plan as the Beach 108th Esplanade.

- NYC DEP Wastewater Resiliency Plan.** Released in October 2013, this plan

identified resiliency actions for NYC DEP's wastewater treatment plants and pumping stations. The plan identified \$15.1 million in resiliency upgrades for Rockaway WWTP, which occupies a superblock along Beach Channel Drive between Beach 108th and Beach 104th streets. Given the damage experienced as a result of Sandy and the expense to make this plan resilient, the plan notes that NYC DEP is evaluating alternatives for the Rockaway WWTP,

including conversion to a pumping station. Changing the function of the Rockaway WWTP is a long-term effort, but could greatly benefit plans the Committee has identified for economic resiliency along Beach 108th Street and Beach Channel Drive.

- **NYC DCP's Resilient Neighborhoods Initiative** is a series of neighborhood planning studies in support of disaster Recovery. Working closely with communities, NYC DCP will develop locally specific strategies to address Recovery needs, increase resiliency, and support the vitality of neighborhoods in the near and long term. Rockaway West is in the phase I set of neighborhoods to be examined under this initiative, which commences in spring 2014. The projects that the Committee recommends, especially those around Beach 108th Street, will be an important part of a larger neighborhood resiliency approach.
- **Green Infrastructure Program (NYC DEP).** In many parts of New York City, both stormwater and household wastewater flow into a common system, called a combined sewer. In heavy rain events, the system becomes overwhelmed by a mix of excess

stormwater and untreated wastewater discharges directly into the City's waterways at combined sewer outfalls.

NYC DEP's Green Infrastructure Program was created to address water quality impacts that result from combined sewer overflow events. Under this program, NYC DEP and its partner agencies design, construct and maintain a variety of sustainable green infrastructure practices such as green roofs, rain gardens, and right-of-way bioswales on City-owned property such as streets, sidewalks, schools, and public housing. The program also provides grants for green infrastructure projects on private property. Because the Rockaway Peninsula is served by separated sewers the area is not eligible for the NYC DEP Green Infrastructure Program projects or grants. However, the program's structure, standard designs, and its emphasis on funding maintenance, provide guidance and resources for developing a successful community bioswales program.

Based on the analysis of local and regional planning efforts, the following gaps were identified, which shaped the development of projects and recommendations:

- While the SIRR Report identified many initiatives for the Community, it did not identify funding nor implementation steps for many of them. The NYRCR planning effort is an opportunity to move some of the initiatives forward
- Comprehensive coastal protection efforts are underway for the oceanside of Rockaway West, but the opportunity exists to further shape long-term recommendations at a regional scale. While bulkhead repair and long-term planning is underway for the Bayside, little activity has taken place in the eastern portion of Rockaway West
- Resiliency of large-scale wastewater, stormwater, and power system infrastructure is being addressed with both temporary measures and long-term plans. However, neighborhood- or micro-scale power and drainage infrastructure have not been fully examined for potential resiliency benefits
- Bolstering community social services, evacuation planning and protection of vulnerable populations
- Determining funding and priority of Jamaica Bay resiliency projects



Example of a right of way bioswale in Rockaway East off Seagirt Boulevard.

Recovery support functions: a framework for a holistic resiliency plan

Throughout the remainder of the NYRCR Plan, six **Recovery Support Functions** are used to guide the identification of issues, assist in categorizing assets and assessing risk, frame needs and opportunities, and organize resiliency strategies. These functions are derived from FEMA's National Disaster Recovery Framework (NDRF) developed by President Barack Obama in 2011 and will help coordinate this plan with state and federal programs. These Recovery support functions are:



Natural and Cultural Resources

Natural systems can play an important role in resiliency and Recovery. The ability of natural features to withstand disruptive events as well as their ability to mitigate damage are addressed by this function. Cultural resources can play an important role in Recovery through provision of spaces and forums for Recovery.



Community Planning and Capacity Building

This function addresses a community's ability to implement immediate storm Recovery activities and organize long-term resiliency plans. Formal and informal community networks, dedicated emergency education and planning efforts, and experience recovering from past emergency events are characteristics that may enhance this function.

Economic Development



This function addresses the ability for economic and business activities to return to normal. Developing new economic opportunities that result in a sustainable and economically strong community is a component of this function.

Health and Social Services



This function addresses the ability of public health, health care facilities, and essential social services to be restored after a disruptive event.

Housing



The resiliency of a community's housing stock is addressed by this function—including both physical resiliency and financial health and resources.

Infrastructure Systems



This function relates to local and regional transportation, water management, utility systems, and the ability of these to withstand and recover from disruptive events. The economic development and job creation capacity of these systems are also critical to this function.

II. Assessment of risk and needs

Source: Flickr user Roman Iakoubtchik, licensed under Creative Commons

A. Description of community assets and assessment of risk

Assets include places and resources valued by the Rockaway West Community which are important both to the Community's Recovery from Superstorm Sandy (Sandy) and its everyday function. The asset inventory assembles and describes Rockaway West's key assets, emphasizing assets that provide Recovery support functions. The risk assessment evaluates the risk to these assets and describes the potential storm and flood impacts to community functions. Together with the Community vision and critical issues, the asset inventory and risk assessment were used to shape needs and opportunities, inform the development of projects, and evaluate the potential risk reduction and other benefits of Proposed Projects.

A major objective of the asset inventory is to assist in evaluating risk from future storms and flooding. In order to facilitate this evaluation, New York State Department of State (NYS DOS) has developed and mapped three assessment areas (risk areas): Extreme, High, and Moderate. The risk area was identified for each asset.

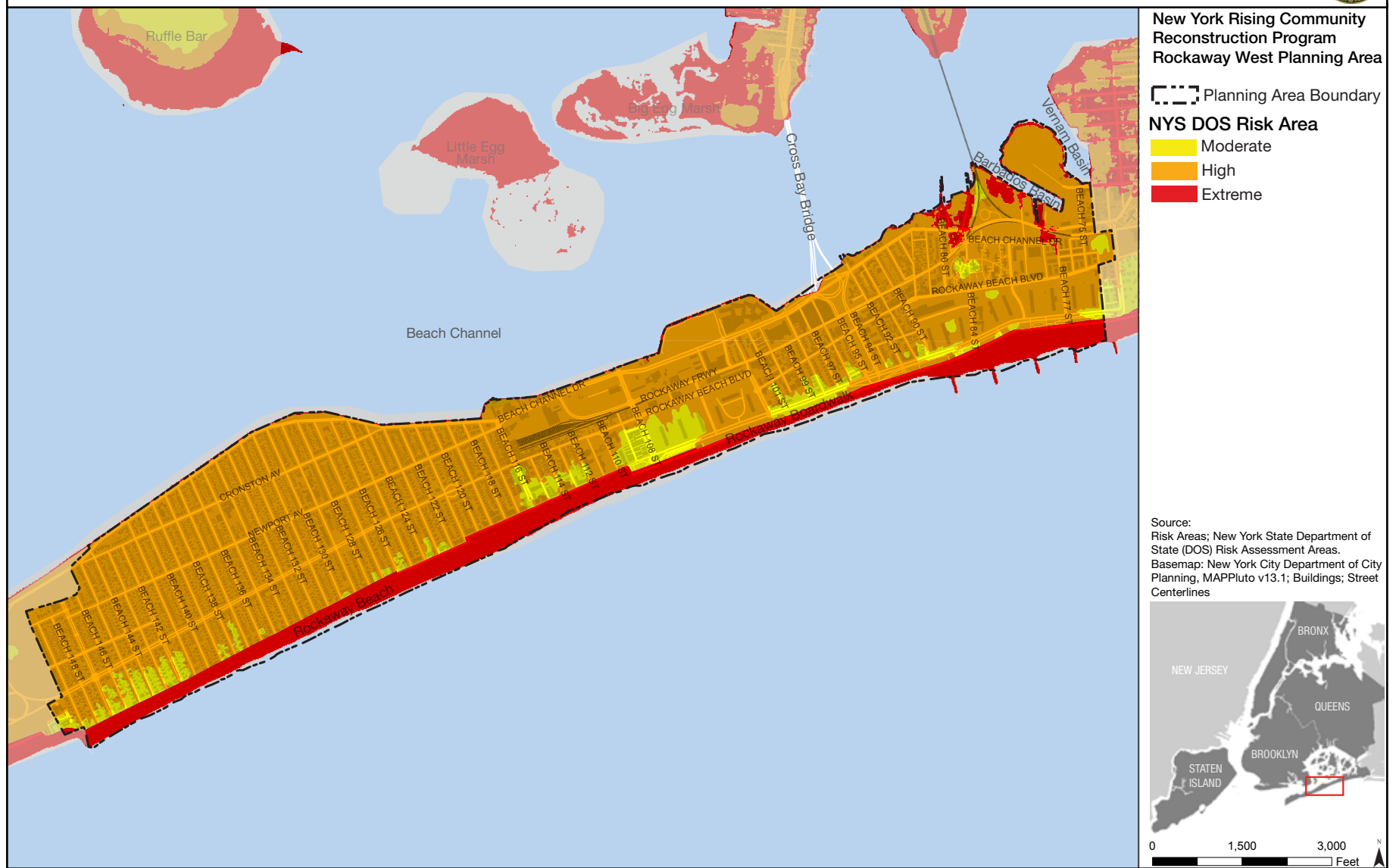
What do the risk areas mean?

NYS DOS, with the assistance of the National Oceanic and Atmospheric Administration (NOAA), mapped geographic areas representing the likelihood for coastal flooding. They identified three risk areas:

- **Extreme:** Areas currently at risk of frequent inundation and vulnerable to erosion and wave action over three feet (FEMA V zone), subject to shallow coastal flooding (within the National Weather Service's shallow coastal flooding advisory threshold), or likely to be inundated in the future due to sea level rise (assumes three feet).
- **High:** Areas outside the extreme risk area that are currently at risk of infrequent inundation (FEMA A zone, meaning there is a 1% annual chance of flooding) or at future risk of shallow coastal flooding with sea level rise (assumes three feet).
- **Moderate:** Areas outside the extreme and high risk areas but currently at moderate risk of inundation from infrequent events (FEMA shaded X zone, meaning there is a 0.2% annual chance of flooding) or at risk of being in the 100 year floodplain with sea level rise (assumes of three feet), and any areas expected to be inundated by a category three hurricane.

A more detailed description of the NYS DOS Risk Assessment Area Mapping Methodology can be found on the NYRCR website, as can a link to an online viewer for the risk assessment area maps, at <http://stormRecovery.ny.gov/community-reconstruction-program>.

Figure II-1: NYS DOS risk areas



The assets identified were also organized by NY Rising Community Reconstruction (NYRCR) asset class: Housing, Economic Development, Health and Social Services, Infrastructure Systems, and Natural and Cultural Resources. The Asset Classes are similar to the six Recovery Support Functions, but differ slightly in order to facilitate use of the NYS DOS risk assessment tool (described in the following section) as the tool is designed to evaluate risk to physical assets but does not evaluate community and capacity building. Any of the assets identified as Health and Social Services in their asset inventory provided important community capacity building functions following Sandy and would be relied upon in future disasters. Further, NYRCR Planning Committee (Committee) members noted that all populations within the Community should be considered vulnerable, due to their shared exposure to risk from flooding and extreme storm events, although certain members of the community face further challenges, due to age, physical or mental handicaps.



The 9/11 Memorial at Tribute Park in Rockaway Park at Beach 116th Street.



Assets were identified through a combination of research and data gathering, and stakeholder and public engagement. The list of assets described drew from extensive public outreach, including Public Engagement Events and outreach through an online interactive community asset map (<http://rockawaywest.nyrisingmap.org>). Both the online maps and the physical maps provided at Public Engagement Events allowed community members to comment on assets and highlight the needs and issues associated with these assets. Maps also allowed community members to add or correct information about assets and to insert missing assets.



Rockaway West's housing stock is very diverse.



Housing assets

In this primarily residential community, housing is the Community's most important asset. A variety of housing stock exists across different Rockaway West neighborhoods, including single-family or small owner-occupied multi-family homes, and large multi-family mid- to high-rise buildings, which includes private market co-op and rental buildings, government regulated co-ops, and public housing. The Belle Harbor and Neponsit neighborhoods are comprised primarily of older single-family homes; 52% of homes were built before 1960, and many are small homes constructed of combustible materials.¹⁰ The Rockaway Park and Rockaway Beach neighborhoods contain an array of single family homes and high and medium-rise buildings, including the NYC Housing Authority (NYCHA) Hammels development.

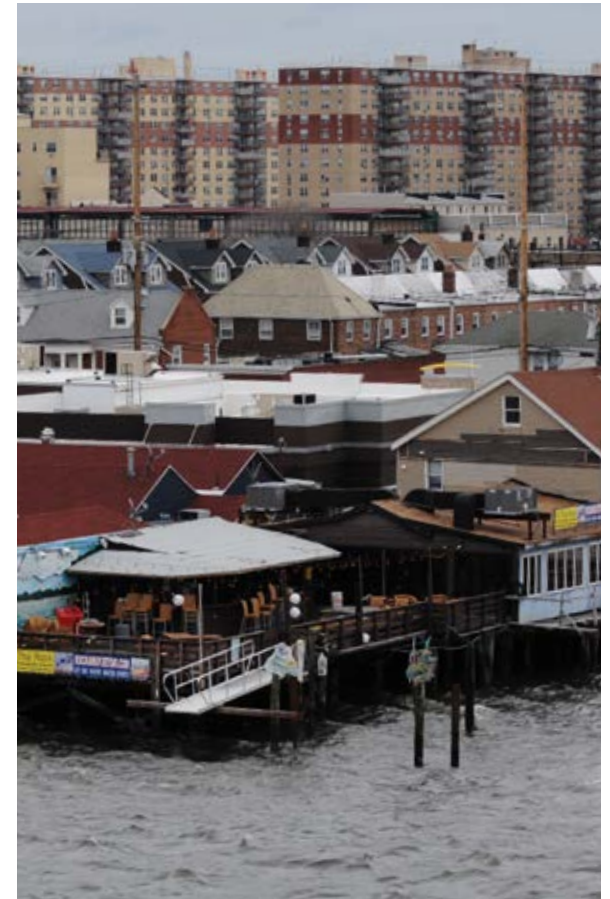
For the Risk Assessment, six story and higher housing was grouped into three locations: (1) Beach 125th Street to Beach 116th Street, (2) Beach 108th Street to Beach 102nd Street, and (3) Beach 90th Street to Beach 74th Street. All other housing was organized into two asset groups: (1) Private Homes in extreme risk areas and (2) Private Homes in high risk areas. These include a mix of single-family, multi-family, and mixed-use housing.



Economic assets

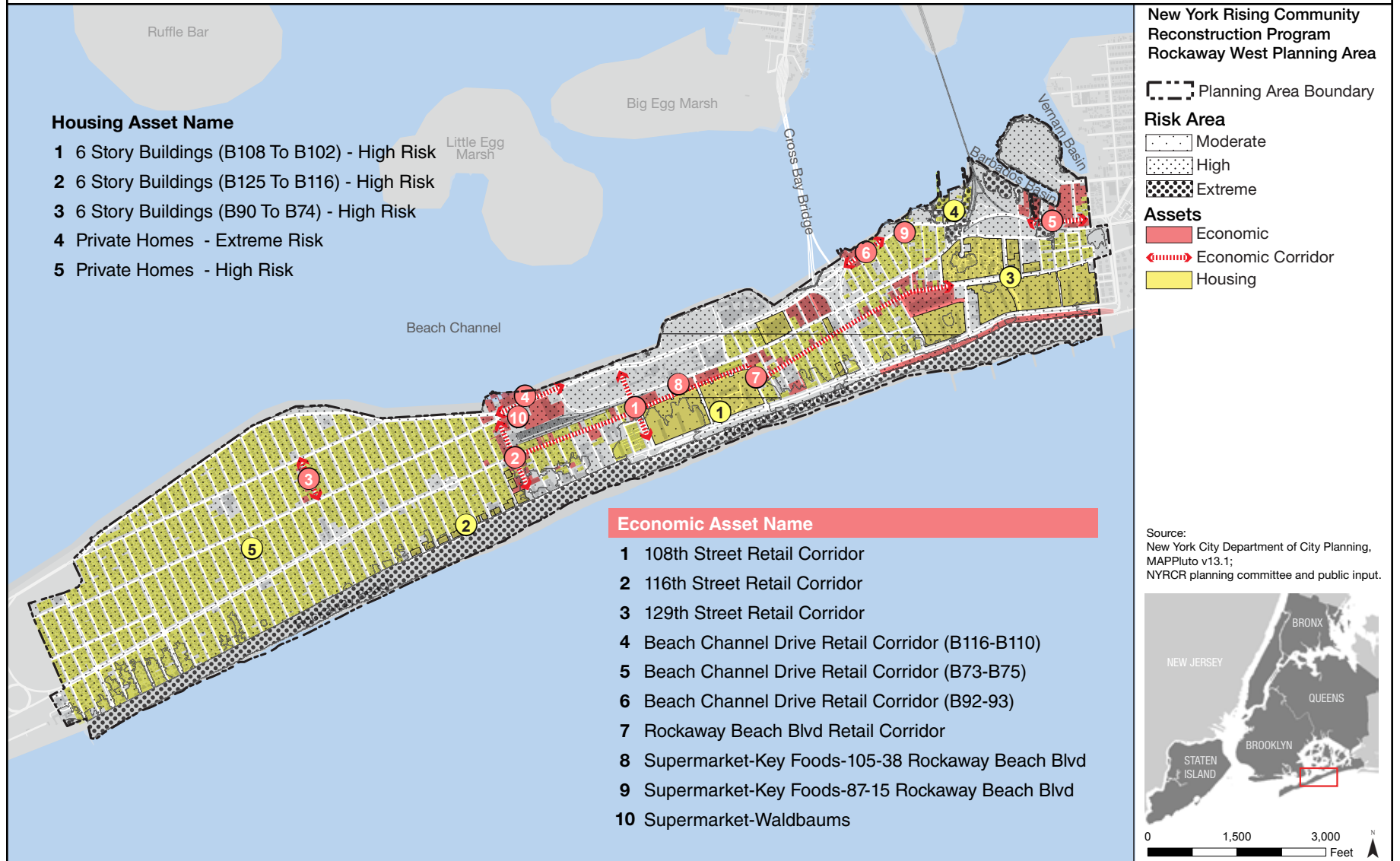
Key economic corridors are located throughout Rockaway West. The Community identified specific commercial assets that provide essential goods and services—especially in an emergency—as a high priority. Important commercial nodes exist along Beach 116th Street and Beach 129th Street, with significant stretches along Rockaway Beach Boulevard and Beach Channel Drive. Beach 116th Street serves as a key commercial corridor in the area with a variety of restaurants and everyday services such as a drugstore, hardware store, and dry cleaner and larger format adjacent retail such as a Waldbaums supermarket. While this strip is the focus of many planning efforts, it still exhibits lingering effects from Sandy, with vacant storefronts and a bank temporarily relocated to the other side of the street. Other stretches of retail include Rockaway Beach Boulevard, notably between Beach 108th and Beach 84th Streets, including the semi-active Dayton Plaza Mall, and Beach 129th Street. While smaller, the one-block business district at Beach 129th Street provides banking, restaurants, and other basic services to Belle Harbor and Neponsit.

As access to supermarkets was critical after Sandy, the Committee identified the Waldbaums and two Key Food locations as important assets.



Restaurants on the Bay sit in front of layers of different types of housing stock.

Figure II-2: Economic and housing assets





Health and social services assets

The Rockaway West Community contains various assets within this category, including schools (K-8 and high schools, public and parochial), emergency response services, and community groups, but does not include many health care services within the boundaries of the Planning Area. The area's emergency response services and schools were identified as priority assets. Rockaway West houses a number of first responder emergency service providers, all of which are important: Fire Department City of New York (FDNY) Engine Company 268/ Ladder Company 137 on Beach 116th Street, the Rockaway Beach Firehouse on Rockaway Beach Boulevard, and the New York Police Department 100th Precinct. The public and private schools are also important, not just for education, but during emergencies.

St. John's Hospital is the only large health facility on the Peninsula and it is located outside of the Planning Area in Far Rockaway. In addition to its distance from the Rockaway West communities, it lacks a trauma center, so residents must travel to Brooklyn and other parts of Queens for many critical health services. An ambulatory center is



St. Francis de Sales Parish in Belle Harbor (top).
FDNY Engine 268th, Ladder 137th in Rockaway Beach (right).

planned for the courthouse on Beach Channel Drive between Beach 91st and Beach 90th Streets, and a "Doctors of the World" free clinic recently opened on Beach 102nd Street. While both the ambulatory care center and the free clinic are important health care assets, neither provide urgent care or emergency services.



Figure II-3: Asset Map—Health & social services





Infrastructure systems assets

Rockaway West includes some of the most significant infrastructure systems on the Peninsula, including the Rockaway Waste Water Treatment Plant (WWTP) and the A train line. The Rockaway WWTP is currently being studied by the New York City Department of Environmental Protection (NYC DEP) for potential repurposing but will continue to be an important asset, because of the service it provides as well as the risk it poses if damaged.

Given its relationship to the mainland, transportation is critical to Rockaway West. This includes the bridges, temporary ferry service, and four Metropolitan Transit Authority (MTA) subway stations, several of which are outside the Planning Area. The subway stations are served by the A train during peak-travel commuting hours and by the Shuttle S train to Broad Channel during all other times. The temporary ferry service is strongly supported and is regarded as a major asset; it is a fast, pleasant, and affordable connection from the Peninsula to Manhattan. However, it is not clear if this service will continue past May 2014. The Cross Bay and Marine Parkway-Gil Hodges Bridges are the only means of vehicular access to Southern Brooklyn



Rockaway Park subway station for the A and S trains at Beach 116th Street.

and Queens, while land-based access to Nassau County is available via Far Rockaway.

The Committee also identified five gas stations in Rockaway West as critical facilities. Fuel for vehicles and generators was crucial after Sandy and will be essential during any future emergency.



Natural and cultural resource assets

The natural and cultural resources of Rockaway West—the beaches, boardwalk, and bay—bring millions of visitors to the Rockaway Peninsula every year and are valued as the defining feature of the Community. Jamaica Bay offers increased recreational potential but suffers from limited access. The Jamaica Bay wetland communities have been compromised over time by development, though dredging and shoreline armoring as well as restoration efforts are underway. While the beach is well-used by surfers and sun dwellers alike, it has potential for expanded recreational options.

In addition to the beach and the bay, the Community has a number of parks, memorials, and other amenities that, while not deemed critical in the face of a life-threatening event, have community significance. Finally, the Community's houses of worship are important and many of them served as valuable emergency Recovery sites after Sandy.

Figure II-4: Infrastructure & natural and cultural



B. Assessment of risk to assets and systems

The vast majority of the Rockaway West Planning Area falls within a high risk area as defined by NYS DOS, with the oceanfront beach and a small area near the A train bridge falling within the extreme risk area. Located on the Rockaway Peninsula on a low-lying, narrow section of land between the Atlantic Ocean and Jamaica Bay, Rockaway West is susceptible to coastal flooding from two sides. Almost all of the Planning Area lies below the Base Flood Elevations currently identified by the Federal Emergency Management Agency (FEMA). In a 100-year storm (a storm with a 1% percent annual chance of occurring) all but a few small high points off of Shorefront Parkway at Beach 108th Street, Beach 116th Street and a few additional blocks at the west end of the Planning Area would be inundated. All of the Planning Area would be flooded in a 500-year event.

Future hazards

Located in the middle of the Rockaway Peninsula, Rockaway West's low elevation leaves it highly exposed to multiple risks from coastal storms. On the Atlantic Oceanside, the Community may be exposed to heavy wave action where beachfront protections fail. The Jamaica Bayside of the Peninsula is at risk of inundation from storm surge. Risk of coastal flooding will continue to increase with rising sea levels. In

Assessing risk

Risk, in this context, is the potential for an asset to be damaged or destroyed in a future storm event. The assessment of risk to assets or systems of assets in a community produced important information to evaluate needs and opportunities and help guide Committee decisions about resiliency strategies and projects. The NYS DOS developed a risk assessment tool that is aimed at understanding flood risk to community functions to support this process. The tool assigns each asset a risk score by evaluating three factors:

- **Hazard:** the likelihood and magnitude of future storm events
- **Exposure:** the local topographic and shoreline conditions that tend may increase or decrease the impact of coastal hazards
- **Vulnerability:** the capacity of an asset to return to service after a storm, taking into account its material strength relative to the coastal hazard as well as its regenerative capacity

Collectively, hazard, exposure, and vulnerability determine the risk that an asset could be damaged or destroyed by a coastal storm event. This analysis identifies which assets within the Community are most at risk from future storms in comparison to other assets. Further, it allows potential projects to be evaluated by their ability to reduce risk to assets. For access to the NYS DOS Risk Assessment Tool and additional information how to use it, see: <http://stormRecovery.ny.gov/resources-0>

addition, while sea level rise and future extreme storms like Sandy could cause devastation, areas of Rockaway West regularly experience ongoing flooding from tidal and stormwater events that lead to more frequent damages.

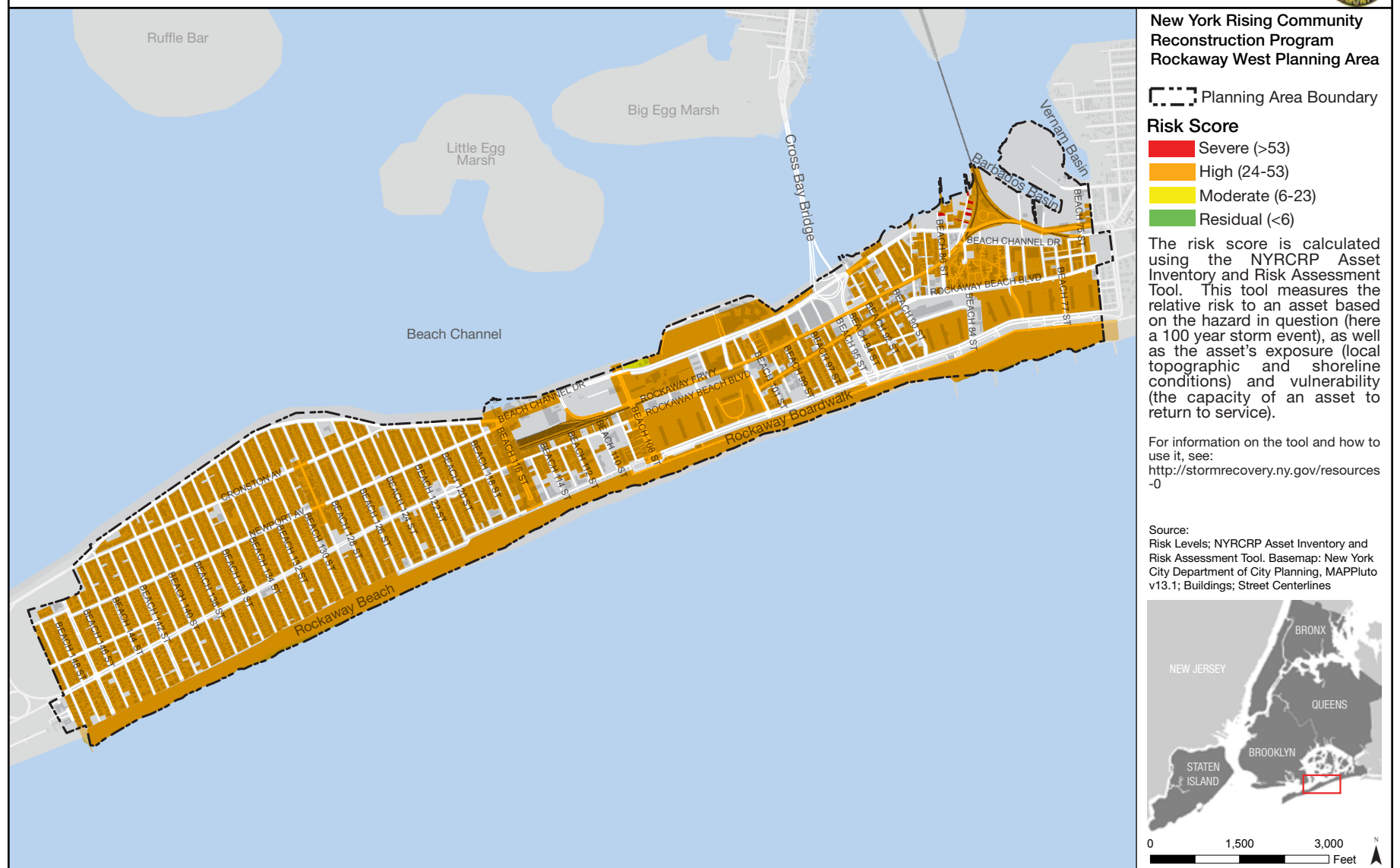
Risk to assets

The assessment of risk to specific assets or systems of assets in a community produces

important information to help guide Committee decisions about projects and priorities.

The majority of the Rockaway West Planning Area lies in extreme and high-risk areas according to the NYS DOS risk analysis. Further, the vast majority (over 90%) of the assets identified in Rockaway West fell within the high risk area. Located on a barrier island, portions of

Figure II-5: Geographic distribution of risk source





Eroding sand dunes. Source: With permission from John Cori

the shoreline are subject to erosion, while other portions of the oceanside continue to receive sand deposits. While the oceanside of the Peninsula is most exposed to the damaging effects of waves and erosion and constitutes most of the extreme risk area in the Community, few key community assets are located in this area. The Rockaway boardwalk and beach are exceptions.

On the other hand, the low lying bayside, with a higher concentration of assets, remains largely at risk from storm surge. The western half of the Planning Area is partially protected from flooding by the baywall, which has been repaired since it was overtopped and damaged during Superstorm Sandy. While the baywall can provide protection from flooding to the neighborhoods of Belle Harbor and Neponsit, it does not reliably protect

against a 100-year storm event, and leaves these residential neighborhoods exposed to flooding from run-around and overtopping.

The eastern bay portion of the Planning Area is more vulnerable as it has either a natural edge or deteriorating bulkhead. This is a condition that leaves multiple assets located along the eastern bay shore of the Planning Area exposed

to inundation, not only from the 100-year event, but also from more frequent storm events. Assets at risk include the Beach Channel Drive retail corridors, the Waldbaums and two Key Food supermarkets, multiple gas stations, and the Rockaway WWTP, as well as a variety of housing assets. The only housing located in the extreme risk area is also located on the bayside of the Peninsula—near the Hammel Houses NYCHA development. This neighborhood is extremely low-lying and regularly suffers from flooding during high tides and minor storm events. High rise buildings in Rockaway Park and Rockaway Beach are also vulnerable, as unprotected basement mechanical systems are extremely susceptible to flood damage, leaving these buildings at critical risk of losing power.

The A train line is the other priority asset most at risk in this Community. The A train line, the central transportation system in the Rockaway Peninsula, was out of service for seven months following Sandy. While the MTA has completed resiliency upgrades to the A train line, this asset remains highly exposed to future flooding.

The vast majority of roadways fall within the “high” risk area and the Cross Bay Bridge and Marine Parkway-Gil Hodges Bridge are the only access points to the rest of New York City. In



The Rockaway Wastewater Treatment Plant on Beach 108th Street.

addition, the low-lying nature of many streets make them susceptible to flooding from heavy rain events, a condition that frequently plagues many areas, but which is particularly acute along Beach 108th Street, Shore Front Parkway, and Beach 88th Streets.

In addition to this localized flooding, the drainage systems—both stormwater and sewer—are highly vulnerable. During Superstorm Sandy, flood waters inundated the Rockaway WWTP from the Bay and the plant was rendered inoperative. Sewage overflow compounded the damage to homes and created an immediate health challenge. While NYC DEP is undertaking a study to determine the future of the plant, both the plant and the surrounding neighborhood remain at risk should Rockaway West be inundated again.

Rockaway West residents were without power for weeks following Superstorm Sandy because Public Service Electric and Gas (PSE&G) substations lost power due to inundation from floodwaters. PSE&G has identified permanent hardening measures for each of the substations so risk is reduced in future storm events.



The beach at Jacob Riis Park (top). Local retail (bottom left and right) are all at risk. Source: Flickr user sukhchander, licensed under Creative Commons. .

Tourism to Rockaway beaches and the local community was also severely affected due to the decimation of the Rockaway boardwalk and the destruction of oceanside businesses. Threats to future tourism remain a concern for many business owners in the Planning Area.

Using the NYS DOS Risk Assessment Tool, the most vulnerable assets with the highest risk score are the private homes along the easternmost bayside of Rockaway West. These assets are at severe risk of being damaged or destroyed in future storms. All other assets have slightly lower scores but are still at high risk of damage.

This risk analysis has been used to inform the definition and prioritization of projects, particularly those that protect assets and socially vulnerable populations from flooding. A subsequent section discusses how the Planning Committee's Community Development Block Grant-Disaster Recovery (CDBG-DR) Proposed and Featured Projects would reduce the risk to the assets identified here. A more detailed description of the Risk Assessment Methodology can be found on the NYRCR website.

Future conditions: dealing with a changing climate

Climate change is a real and significant concern for New York's coastal communities. Two impacts of climate change have the most bearing on the future risk to New York's coastal communities from future storm events and flooding: (1) Sea Level Rise and (2) increased frequency and intensity of storm events. On March 31, 2014, the International Panel on Climate Change (IPCC) released *Climate Change 2014: Impacts, Adaptation and Vulnerability*, reiterating the risk to coastal communities across the globe and assigning a high confidence that risks from extreme weather events and of sea level rise will continue to increase in the future due to climate change. Closer to home, the New York Panel on Climate Change (NPCC) continues to look at the potential risks presented to New York City in light of climate change. In their *Climate Risk Information 2013*, the NPCC made the following projections for 2050:

- Sea Level will increase between 7 and 31 inches with a mid-range projection of 11 to 24 inches.
- The annual chance of today's 100-year storm (which is a 1% chance) will increase to between 1.4 and 5.5% with a mid-range estimate of 1.7 to 3.2%.
- Flood heights associated with a 100-year storm event will increase between .6 and 2.6 feet with a mid-range projection of .9 to 2.0 feet.
- Precipitation (rain/snowfall) will increase by 1 to 15% with a mid-range projection of 5 to 10%.

These projected changes all increase the extent and likelihood of flooding in New York's coastal communities.

C. Assessment of needs and opportunities



A Strengthened edge

Rockaway West’s low elevation leaves it greatly exposed to risk from future storm events and sea level rise; however, some areas are more vulnerable than others.

There are initiatives underway to address both the ocean and bay edges, but more needs to be done, especially on the easternmost coast of the bay. The dunes on the oceanside of the Peninsula are currently being restored by the U.S. Army Corps of Engineers (USACE) and the NYC Department of Parks and Recreation (NYC DPR) is incorporating resiliency measures into its new concessions and reconstructed boardwalk. The Community sees tremendous value in these efforts, but also sees a need to expand this work to focus on preventing erosion, which is already starting to occur along sections of the completed restoration.

The majority of the Bayside is protected from regular storm and flooding events by a baywall, which is currently being rehabilitated by the City. The easternmost edge of the Community is composed of either deteriorated bulkhead or a natural edge and is particularly vulnerable. These areas remain

prone to flooding and dune erosion may advance without the addition of groins on the beach.

Needs: Rockaway West has both near-term and long-term coastal protection needs. In the near-term, its most vulnerable areas must be strengthened in order to reduce immediate risk to residences, businesses, roads, and protect most socially vulnerable populations. In the long-term, a comprehensive coastal protection strategy is needed for the Rockaway Peninsula and Jamaica Bay as a whole, to mitigate the hazards of 100-year storms, other extreme weather events, and sea level rise.

Opportunities: While comprehensive protection is a long-term and expensive endeavor, smaller-scale projects can provide localized protection against regular flooding caused by sea level rise, moon tides, and frequent storm events. These smaller-scale projects are more affordable and can be implemented quickly, offering the Community an opportunity to make targeted investments that will garner immediate results.

One opportunity for a short-term targeted investment is the Bayside neighborhood between the A train crossing and Beach 88th Street, which is the most vulnerable point along this stretch of



The needs of the oceanside are largely being addressed.

the bay and at risk of flooding from regular tidal and storm water events.

Coastal protection measures can consist of both traditionally engineered “gray” infrastructure and nature-based “green” infrastructure, such as wetlands and living shorelines. There are opportunities to incorporate green solutions in the near term. Such improvements would provide co-benefits beyond raising the edge, such as providing needed restoration to the wetlands in Jamaica Bay. Because doing so is in the interest of State and Federal entities, there may be opportunities to leverage programs, funding, and political will.



The bayside, especially east of the Cross Bay Bridge and A train crossing, needs to be better protected.



The Rockaway Freeway is a good example of challenging cross-Peninsula accessibility - zig zagging from west to east, largely under the elevated train.

II-19 Assessment of risk and needs



Improved transportation and accessibility

Accessibility to the Rockaway Peninsula depends on a few key transportation links. During Superstorm Sandy, both the Cross Bay Bridge and Marine Parkway–Gil Hodges Memorial Bridge were out of service and residents did not have alternate means to evacuate or travel to other parts of the Peninsula. The weaknesses in the Rockaway West transportation system are an issue year-round and during emergencies.

Rockaway West is a major destination for summer beachgoers, yet lack of transportation connections may place limits on the number of visitors and their financial contribution to the local economy. From many parts of New York City, a trip via public transportation to the Rockaway Peninsula can take an hour or more. Further, once getting off the A train in Rockaway West, there are few convenient transportation options available to encourage visitors to explore the surrounding area.

After Sandy, the City of New York contracted a temporary weekday-only commuter ferry service running from Beach 108th Street in the Rockaway Peninsula to Brooklyn Army Terminal, Pier 11 in

Lower Manhattan, and East 34th Street in Midtown Manhattan, via a transfer. The ferry has been extended four times, most recently in January 2014, when New York City Mayor Bill de Blasio announced the service would run, with a slightly increased fare, until May 2014 with the option to extend to August. The service will automatically be extended for an additional two months unless ridership declines by more than 50%. During this time, the New York City Economic Development Corporation (NYCEDC) issued a Request for Proposals for a permanent ferry service operator on the Rockaway Peninsula.

Residents of the Rockaway Peninsula highly value the ferry service, elevating it as a major priority for the Rockaway West Planning Committee. It serves as an important resiliency measure by connecting the Community to the rest of New York City, supporting the City's blueway initiative and providing an alternate evacuation and supply delivery option when other transportation options are not available. The ferry currently provides faster point-to-point service to lower Manhattan than the subway or express bus, and is widely perceived by users as a higher-quality transportation experience compared to either of these services. However, the ferry currently

only runs on weekdays, and the Committee feels weekend service could better serve visitors.

Connections to the ferry within Rockaway West could be greatly improved. While the subway stops at Beach 105th and Beach 116th Street and City buses that cross the Peninsula stop nearby, the only way to connect directly to the ferry is via car. Further, the subway and bus schedules are not aligned with the ferry and the frequency is such that the point-to-point time to connect from the ferry to Manhattan is greater than simply staying on one land-based mode.

Currently, the Rockaway Ferry requires the highest total subsidy per capita per ride than any other public transportation system in or near New York City. Further, there is currently no regular government funding source to support or maintain the privately-operated ferry. As such, the long term financial sustainability of the ferry is at risk.

Land transportation also poses challenges: poor road conditions in Rockaway West hinder cross-Peninsula transportation and some residents are dissatisfied with the frequency and service provided by subway and bus lines.

Needs: Rockaway West needs an improved and expanded transportation network for multiple reasons: to improve day-to-day transit for residents, to increase accessibility and mobility for visitors, and also to ensure access in and out of the area during emergencies. All transportation options need to be made more accessible to vulnerable populations to ensure accessibility and enable safe egress during events.

The temporary ferry service appears to be serving some of these needs for the time being, but its future is uncertain. Further, while the ferry provides quick point-to-point access to Manhattan, its impact is limited by a lack of transit connectivity within Rockaway West. Improved transit connections not only would benefit residents, but would also encourage visitors to take the ferry and then venture further into Rockaway West. Finally, the full potential of the ferry is not being realized since it does not operate on the weekends.

In the long term, the Community needs a comprehensive approach to improving Rockaway West's transportation network that includes more flexible, integrated, and enhanced transit options and infrastructure.



There are opportunities to improve Shore Front Parkway.

Opportunities: The Rockaway Ferry presents a major opportunity to make a permanent, substantial improvement to the connectivity between Rockaway West and the rest of the City. The widespread local support for the service, as well as the City's interest in finding a sustainable solution for maintaining it suggest that, with the right amount of support, the ferry could become a permanent amenity for the Community.

There is a great opportunity to improve and sustain the ferry with over \$18 million

Federal and State capital funds set aside to implement more permanent docks and upland improvements. Further, the State currently has a funding program for publically operated ferry services. If the State revises its regulations to allow funding to go to public/private service, there is an opportunity to make the ferry last. The Committee has an opportunity to leverage these investments by establishing NYRCR projects that help the City increase ridership, raise revenues, and maintain the service.



More resilient water management, power, and communications infrastructure

Rockaway West's wastewater, power, and communications infrastructure are vital assets for Recovery after a storm, but also pose some of the area's greatest vulnerabilities. Shore Front Parkway, as an example, has particularly poor drainage, with catch basins and back-flow prevention valves that frequently clog, creating flooding during normal rainfall. Further, key arteries across the Community flood regularly, demonstrating a larger need to evaluate and address the Planning Area's drainage issues.

The Rockaway WWTP on Beach 108th Street lacks the reinforcements needed to ensure it stays functional and safe during an emergency. The plant was damaged during Sandy and has not been fully repaired, making it all the more vulnerable in the near term. There are immediate impacts on the Community if the plant isn't functioning well, most notably a powerful smell that permeates the surrounding area, which includes two schools and homes.

The communication and power systems are vulnerable and were compromised during Superstorm Sandy, leaving many residents

“The morning after the storm, like you wanted to pinch yourself that you could wake yourself up from a nightmare.... [We] have to structure [our] community so that in events like this again, that we've taken some protective measures ...”

– Rockaway West Planning Committee Co-Chair

isolated and disconnected. However, PSE&G has plans to harden each of its substations in the area and the State has engaged in improving the transparency and governance of the service provider.

Needs: Over time, Rockaway West's infrastructure assets need increased investment to ensure they are sustainable and safe. In the short term, the most pressing issues need to be addressed, particularly those that pose serious health and safety risks, including the Rockaway WWTP and chronic ponding along important roads and intersections.

Opportunities: In the short term, the Community has the opportunity to pursue low-cost, easily implementable interventions such as bioswales and permeable pavement to assess drainage issues. The City is continuing to improve and evolve its bioswale strategies and there may

be opportunities to leverage City programs and funding to maximize the benefit to the Community.

In the medium- to long-term, there are opportunities to improve the streets across the Planning Area by working with the City to ensure that all street improvements incorporate improved, smart drainage. For example, the City is currently evaluating the elevation and design of Shore Front Parkway and there are opportunities to advocate for improved drainage.

The City is currently evaluating the future scope and needs of the Rockaway WWTP, including an option to convert it to a transfer station. This presents opportunities to reduce the risk and impact the plant has on the Community, while creating opportunities to develop and improve the corridor along Beach 108th Street and Beach Channel Drive.



Improved emergency preparedness

During Superstorm Sandy, community-based organizations (CBOs) and residents provided substantial local and immediate response and Recovery services at informal, makeshift locations across Rockaway West. Community members organized and went door-to-door to check on residents throughout the area. Despite these significant efforts, many community members still struggled to find critical supplies or basic information. Volunteers who came to help didn't know where vulnerable residents were or whether they had serious needs. The various organizing groups provided what services they could, but did not know what other groups were doing. The Community would have benefited significantly from being more coordinated and better prepared to respond to the devastating effects of the storm.

Needs: To build upon the informal relief system that emerged in Rockaway West in the wake of Superstorm Sandy, Rockaway West needs to establish coordinated community-led emergency preparedness and response plans. The Community also needs to establish safe places for residents to find help and supplies after an event whether during an event on the same scale



Many lessons were learned from Sandy that can be applied in the future.

as Sandy or a smaller shock, such as a blackout or heat alert.

The public identified a number of specific emergency preparedness needs through the NYRCR process. Among the numerous needs in this area, residents cited identifying and preparing common community spaces that can serve as emergency centers as a high priority. They also stressed the importance of making

sure key commercial providers are resilient and able to provide goods and services after an emergency. The Planning Committee specifically noted the following as critical supplies after an event: food, water, medicine, gas, and access to money. Additionally, residents identified a need for multi-family building owners to create and execute emergency plans for their properties, and ensure they are carried out to protect the safety of residents. Overall, a more formalized plan



to reinforce the complementary roles each play in Recovery.



Expand and improve health services

The Rockaway West Community contains a number of social service resources, including schools, libraries, community groups, and City first responders but lacks comprehensive, accessible health care services. With the closure of Peninsula Hospital, the entire Rockaway Peninsula and all of south Queens only has one hospital: St. John's, located near the Mott Avenue commercial hub in Far Rockaway. While the hospital is located near an A train station, it is not easily accessible by residents of Rockaway West if the trains are down or in a larger emergency. Further, research shows that 80% of the time residents of the Community drive past St. John's to go to hospitals in Long Island or mainland Queens.¹¹ Traveling such distances for emergency health services is not a safe or sustainable solution for the Community.

Needs: Rockaway West needs improved and expanded health care services not only for

NYPD 100th Precinct and #1RB Firehouse on Beach 94th Street and Rockaway Boulevard presents a great opportunity to create a relief campus.

needs to be in place that ensures the protection of residents, including the most vulnerable, such as seniors and physically impaired residents.

Opportunities: The Community's experience during and after Superstorm Sandy demonstrated strong local capacity to provide emergency response and Recovery services. There is an opportunity to expand and formalize the roles of citizens and CBOs to provide local on-the-ground

support immediately after an emergency. The New York City Office of Emergency Management (NYC OEM) is evaluating its preparedness procedures and there is an opportunity to work with them to better coordinate relief and response activities.

Additionally, there is an opportunity to take advantage of the clustering of community services such as the police station, fire department, and library near the parking lot at Beach 94th Street,

emergencies, but also for non-emergency conditions. However, with 32,000 residents, Rockaway West and its surrounding areas lack sufficient density to sustain an inpatient hospital.¹²

Opportunities: While Rockaway West lacks the density to make a major new medical facility viable, smaller facilities may be feasible. Residents of Rockaway West and surrounding areas within easy driving distance are estimated to make 9,000 urgent care visits and 12,000 emergency visits annually, which could support a wide range of smaller primary and specialty care facilities.¹³ With this demand, Rockaway West serves as a good, central location to anchor expanded health service providers, especially a stand-alone emergency room. Further, because health service providers prove economically more sustainable when they are clustered, there are opportunities to complement the new ambulatory care facility planned for the former Rockaway courthouse.



The planned ambulatory care center at the old courthouse presents an opportunity to expand health care (top). The National Grid site creates great opportunities for mixed-use development by the ferry landing. (bottom).



Revitalized economy

Businesses along major corridors as well as those dispersed throughout the area suffered damage from Superstorm Sandy and continue to struggle in its aftermath.

Sandy also exposed and in many cases exacerbated vulnerabilities in the Peninsula's economy, including the need for physical revitalization of many areas and limited transportation and accessibility.

On the other hand, the Peninsula's recent gains as a tourist attraction and destination for citywide beachgoers points the way toward the potential for economic revitalization and growth. Capitalizing on the Community's natural assets, commercial and transit corridors, and areas in need of redevelopment could lead to an overall community economic development strategy. Recent and ongoing improvements to the beach and boardwalk need to be complemented by improved transportation to and from, and across, the Peninsula, and revitalization of areas that connect into these assets.

One area of focus surrounds the temporary ferry landing at Beach 108th Street and Beach Channel Drive, a hub of commuter activity since Sandy but one that remains bleak, uninviting and unsafe for pedestrians. Repositioning the National Grid-owned

site (that serves as temporary free parking for Rockaway Ferry riders), the adjacent Rockaway Wastewater Treatment Plant, and Beach 108th Street and Beach Channel Drive to create a critical mass of activity and a more inviting set of places could create a more attractive gateway to the Rockaway Peninsula for ferry-borne visitors on their way to the boardwalk and beach and other parts of the peninsula.

Needs: Small businesses throughout Rockaway West need technical support for resiliency measures. Streetscaping improvements, capital for storefront improvements or building retrofits, and branding and marketing can be leveraged to support existing retail.

Further, as a major beach destination for New York City residents with potential for growth, Rockaway West needs investment to create new inviting places, provide amenities for residents, and welcome and attract visitors.

Opportunities: There are existing citywide programs and services that could be leveraged to support businesses in Rockaway West, including New York City's planned Business Resiliency Investment Program (BRIP) to provide technical and financial assistance to businesses to rebuild, and recent initiatives to use organizational structures and tools

to implement resiliency upgrades for businesses in the commercial corridor at Beach 116th Street, including the formation of the Beach 116th Street Partnership and design efforts through the U.S. Department of Housing and Urban Development (HUD)'s Rebuild by Design process, which has focused attention on the area. This attention can be expanded to a Rockaway West- and Peninsula-wide community economic development strategy focused on key corridors.

The possibility of permanent ferry service at Beach 108th Street, as well as improved land-based transportation, indicates the potential for catalytic and transformative development on this corridor. In particular, the National Grid site offers opportunity for the Community to envision a new center of activity that serves as a gateway to the Peninsula, with open space, attractive retail, mixed-use opportunities and waterfront access built around multi-modal transit connections. While the land area and assets in this location present an opportunity, there is a strong need for public and private investment to anchor activity in this location.

All of these opportunities suggest the possibility of a broader economic development and revitalization strategy for Rockaway West.

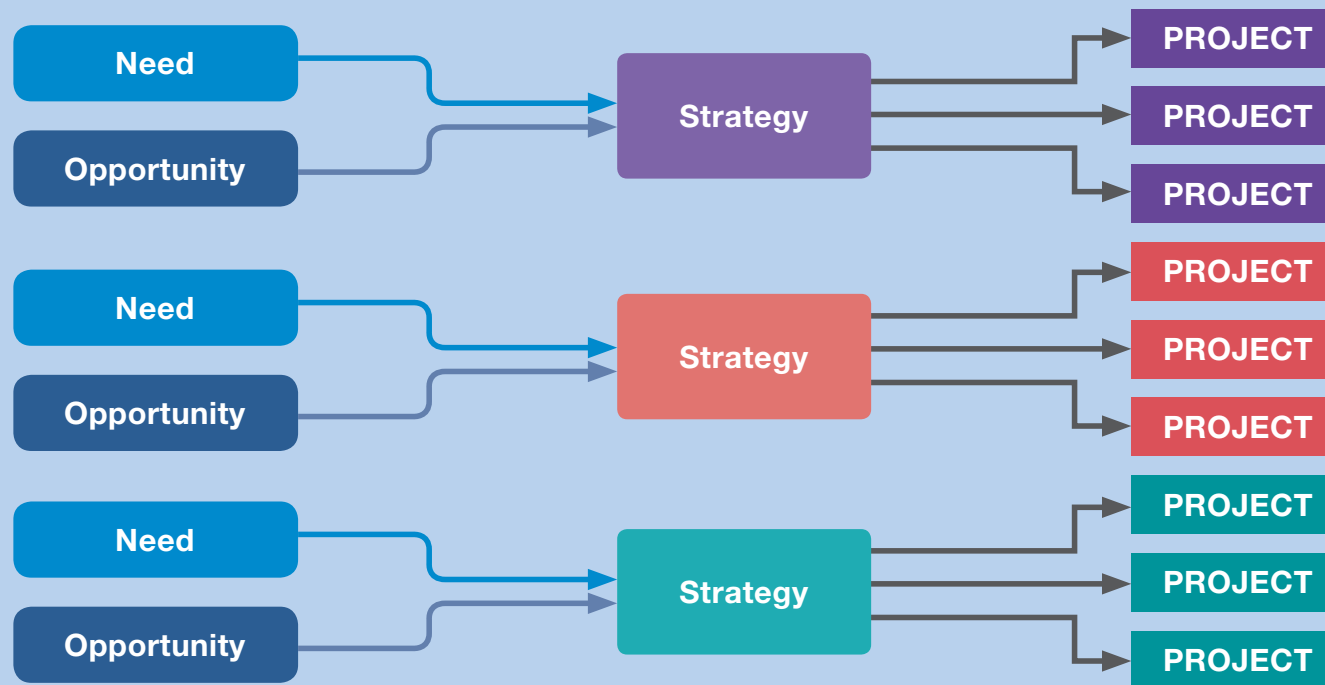
How does identifying needs and opportunities help to define projects?

The projects in this plan were developed through the following Community-based process, starting with identifying assets and risks, as well as needs and opportunities:

Resiliency needs and opportunities were brainstormed through extensive public engagement. **Needs** were discussed in the context of reducing short and long-term risk and increasing the resiliency of assets, systems, and people. **Opportunities** to build off of existing community strengths were also identified.

With a thorough, baseline understanding of the Community's resiliency needs and opportunities, the Committee identified overarching **strategies** to address the most critical needs in the Community, and to take advantage of existing opportunities. Public input guided the refinement of these strategies.

In order to implement strategies, the Committee identified specific **projects**. These projects directly address the needs and opportunities identified at the beginning of the process.



III. Reconstruction and resiliency strategies



Reconstruction and resiliency strategies

Proposed and Featured Projects

Proposed Projects are projects that the Planning Committee recommends to be funded with the Community's NYRCR Community Development Block Grant Disaster Recovery (CDBG- DR) allocation. These are high priority projects that the Committee and Community support for funding because they address key resiliency needs, and provide immediate and/or multidimensional benefits.

Featured Projects are innovative projects for which an initial study or discrete first phase is proposed to be funded by CDBG-DR or another identified funding source, and which may require additional funding sources for full implementation.

The Rockaway West Planning Committee (Committee) represents a diverse and engaged Community whose vision is to become more resilient, while also growing its valuable natural, economic, and social ecosystems. By leveraging existing assets—including beaches, retail corridors, tourist attractions, and strong community capacity building capabilities—the Committee has established a group of strategies and accompanying near-, medium-, and long-term projects that will enhance and expand the health, vitality, and sustainability of Rockaway West neighborhoods.

Extensive Planning Committee deliberation and community outreach generated three strategies for Rockaway West:

- **Protect the Community from flooding, surge, and sea level rise**
- **Strengthen community resiliency**
- **Catalyze economic revitalization**

This section describes these three strategies and the multiple elements that support them. In Section IV, specific Proposed and Featured Projects will be described in more detail. These strategies also establish a framework for growing and enhancing the Community's resiliency initiatives beyond the NY Rising Community Reconstruction (NYRCR) Program.



Protect the Community from flooding, surge, and sea level rise

Rockaway West must pursue short- and long-term, as well as local and regional, strategies for protection at its edge and reduction of risk where these protections are inadequate. Minimizing the effects of storm surge by strengthening waterfront edges and improving stormwater management and drainage are critical to the resiliency of the Community. While Rockaway West currently benefits from a more resilient edge than other Rockaway Peninsula communities, it does not have protection from the 100-year storm. The Committee also recognizes that the area's low-elevation leaves it at risk to future storm events, particularly with sea level rise. The Community emphasized that strengthening the edge against these risks is a top priority. At the same time, the Community is aware that actions need to be carefully considered to avoid degradation of the natural assets that partly define community character and brought community members to settle in the area.

These projects are important first steps toward strengthening the edge and improving drainage, but the Committee is making a number of additional resiliency recommendations that would contribute to a more comprehensive approach. These encompass longer-term and larger-scale initiatives that would require substantial coordination between a number of different actors and stakeholders.

Early on in the planning process, the Committee realized that coastal protection is a long-term and prohibitively expensive regional issue. For this reason, comprehensive 100-year storm protection was not put forward as a near-term Proposed Project, but rather as a recommendation for a comprehensive coastal protection strategy at the regional scale. The Committee recognizes that the U.S. Army Corps of Engineers (USACE), City, State and other partners are in the process of studying resiliency projects throughout Jamaica Bay. Given the experience in Superstorm Sandy and the current vulnerabilities across the Rockaway Peninsula, the Committee urges these agencies to expedite this work. In addition to recommending the USACE consider additional oceanside strategies—including stronger dunes and oceanside jetties—the Committee recommends private property owners work with the USACE, the National Park Service (NPS),



Rockaway Beach residents. Source: With permission from John Cori.

New York City, and other agencies to explore expanding strategies on the bayside.

In the interim, the Community has identified smaller-scale projects that would address areas especially at risk from flooding from sea level rise, moon tides, and more frequent storm events.

In the medium term, the Committee proposes focusing on the most vulnerable and least protected edges of the Community, particularly areas where homes are most at risk. The bay edge from Beach 88th Street east to the A train crossing is currently the only Bay edge in Rockaway West without a wall or consistent protective structure. With intermittent and degrading riprap and bulkhead, combined with soft exposed edges, this area is at high risk

from frequent coastal flooding. Further, there are a number of low-lying vulnerable homes in this area between the edge and Beach Channel Drive.

The Committee recommends designing and implementing a combination of traditionally engineered “gray” and nature-based “green” strategies to enhance this area’s resiliency. Doing so will provide near term protection while also contributing to a larger, long-term regional solution.

The Committee also seeks to minimize the impacts of flooding throughout the Community.

Many areas within Rockaway West are left with large puddles of water at intersections and along curbs after heavy rains. Street flooding occurs throughout Rockaway West, with particular concentration in the eastern portion of the Community. In order to improve health, safety, and overall quality of infrastructure and life in the near term, the Committee proposes initiatives to implement green drainage systems through the most flood-prone sections of Rockaway West.

The Committee emphasized the co-benefits of expanding recreational use of the bay, seeking

both in-water opportunities as well as a connected recreational greenway along the entire bayside edge of the Peninsula. Private property owners need to coordinate to uniformly strengthen the baywall, which is an important step toward implementing comprehensive coastal protection, and likely requires coordination between USACE, NYC Department of Parks and Recreation (NYC DPR), NYC Department of Transportation (NYC DOT), and NYC Economic Development Corporation (NYCEDC). The Community will also need to work with the U.S. National Park Service (NPS) to ensure long-term coordinated protection

Table III.1 Strategy: Protect the Community from flooding, surge, and sea level rise (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Project category	Regional project (Y/N)
Bioswales to improve drainage	This project would create up to 50 bioswales in roadways and sidewalks throughout Rockaway West to collect and manage stormwater.	\$1.5 million	Proposed Project	N
Bayside coastal protection	This bayside protection project is at one of the most vulnerable locations on the bayside of Rockaway West and would provide flood protection benefits in the short-term for an area identified as having strong potential value for the Community.	\$5.6 million	Featured Project	Y

III-3 Reconstruction and resiliency strategies



at the western edge of the Community.

Strengthen community resiliency

The Rockaway West Planning Committee recommends a multi-pronged strategy to improve the Community's social resiliency and emergency preparedness. This would require not only strengthening social networks, systems, and skills, but will also require providing safe, protected physical spaces and backup systems such as off-the-grid power sources. This strategy aims to ensure that local organizations and volunteers can provide on-the-ground critical services and resources during an emergency, as well as to ensure that the Community can return to normal more quickly in the aftermath of an extreme event. More broadly, this strategy aims to support the overall, longer-term health and well-being of community members.

The Rockaway West Planning Committee has identified a series of projects to bolster physical and social capacity and resiliency in the near and long term. The Proposed Project would create a relief center network to serve as the backbone to support this strategy. The network will be created via a Proposed Project that will establish a centrally located relief/communication



Source: With permission from John Cori.

hub and a series of smaller, satellite relief centers. Combined with programming, the hub and satellites will coordinate information, supplies, and assistance after an emergency.

This network would build relationships across local organizations, institutions, and residents and help establish a stronger and more connected collective safety net for the Community. It would inevitably build capacity beyond emergency management, enhancing the knowledge and experience of community-based organizations (CBOs). In addition, the relief center hub should be an integrated element of a broader economic development strategy in Rockaway West, as detailed in the following section. The Rockaway West relief center network can also connect to other community relief centers throughout the Peninsula to strengthen local Recovery capacity across the Rockaway Peninsula.

In addition, the Committee seeks to expand public health services in the Community both for emergency periods and in normal conditions. To address the lack of urgent and emergency care services in Rockaway West, the Committee recommends a competitive process to seek an operator for a stand-alone emergency room and other medical services in a central



Source: With permission from Noreen Ellis

location. The ultimate outcome would ensure ongoing sustainability, quality, and health across the immediate and extended South Queens communities. Discussions at NYRCR Planning Committee and public meetings in Rockaway East, Breezy Point, and Broad Channel reflect a similar shared desire for regional coordination to achieve a sustainable health care solution.

Throughout the Planning process, the Planning Committee emphasized the need to protect Rockaway West's building stock from extreme

events. Recognizing early on that the CDBG-DR funding allocation was not sufficient to Cover rebuilding and resiliency upgrades for all homeowners and businesses in Rockaway West, the Committee agreed the best way to protect vulnerable buildings is through enhanced coastal protection, as outlined in the coastal protection strategy.

In addition, the Committee recommends that the City or State expand homeowner and business Recovery programs. Many Community

members expressed the need for education and counseling services to help homeowners fully understand Recovery programs, regulations, processes, insurance, and financial options and trade-offs. Likewise, the Community supports the idea of a technical assistance program for homeowners and building owners to help them implement resiliency measures such as behavioral change, moving mechanicals, or elevating a building. Further, Rockaway West would benefit from increased access to capital to help pursue resiliency measures. While there is universal interest in grant opportunities, capital in the form of low-cost loans would also have a

significant impact on the Community's ability to protect important physical assets that contribute to its financial and economic stability.

Additional recommendations can further solidify the resiliency of Rockaway West, such as investing in alternative energy sources across the Community (e.g., solar for back-up power in emergencies) or the development of an emergency local power generation system.

This could also involve coordinating with Public Service Electric and Gas (PSE&G) to strengthen/heighten utility poles and harden substations.

Other recommendations include increasing emergency preparedness planning, outreach, and coordination, such as the requirement that multi-family buildings implement preparedness measures, including developing evacuation plans and emergency back-up power, or the development of emergency transportation plans.

Together, these interventions would enhance the ability of the Rockaway West Community to recover from an emergency, while also strengthening community capacity to provide health and social services throughout the year.

Table III.2 :Strategy: Strengthen community resiliency (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Project category	Regional project (Y/N)
Relief center network	This project would fund the creation of a network of relief centers, to house the coordination of relief services following a disaster.	\$6–9 million	Proposed Project	N
Health care service expansion	The Proposed Project would attract a strong regional health care provider to expand services to the Rockaway Peninsula.	\$1.5 million	Proposed Project	Y



Catalyze economic revitalization

The Rockaway West Committee seeks a comprehensive strategy for economic resiliency that will support local businesses, revitalize declining areas, and improve transportation and accessibility. These efforts will help attract more visitors and draw more investment, which in turn will catalyze local economic growth. Improved economic resiliency will also help the Community respond to and recover more quickly after an emergency.

The Planning Committee seeks to capitalize on natural assets, existing commercial and transit corridors, and areas ripe for development to establish a connected “green” economic and community development strategy. This vision established a series of landscaped bay-to-beach corridors that promote nature-based resiliency solutions along key arteries and connects them with a band of activated edge strategies along the bay and beach. Drawing on the City’s work to rebuild and expand parks and recreational opportunities along the ocean, boardwalk, and Shore Front Parkway, the Committee explored ideas that plug into those plans to achieve a Peninsula-wide vision.



Retail along Beach 116th Street at the intersection of Rockaway Beach Boulevard.



Retail along Rockaway Beach Boulevard.

First, the Committee proposes an active-use greenway and parks system along the length of the bay. This green belt could be built upon expanded baywalls and other protective systems and could also introduce retail and recreational use of the bay with elements such as piers, docks, kayak launches, and space for vendors or restaurants at publicly-accessible corridor connections.

Next, the Committee proposes investment and revitalization of three key corridors—Beach 116th Street, Beach 108th Street, and Beach

94th Street/Cross Bay Boulevard. With a large concentration of small businesses damaged by Sandy, Beach 116th Street has benefited from a series of dedicated Recovery and resiliency programs to date. Assuming that existing plans for Beach 116th Street will come to fruition and support the Committee's larger vision for the area, the Planning Committee focused on plans for the other two corridors.

The New York City Department of Parks and Recreation (NYC DPR) is exploring options for the large open parking lots and feeder roads along Cross Bay Boulevard and Beach 94th Street. The Planning Committee fully endorses investing in this corridor and envisions this area serving as an inviting gateway to the Community from the Cross Bay Bridge. It could also house the formal relief center hub in an emergency, much like it did during Superstorm Sandy on a temporary basis.

To achieve this vision, the Committee recommends significantly expanding the public green space by reducing the parking footprint without reducing the number of parking spaces. For example, a parking garage could be built in the lot closest to the bridge and elevated train, adjacent to like-sized multi-story buildings. The lot could accommodate locals and seasonal visitors and could also serve

as elevated storage for cars and emergency vehicles during a storm. The Committee suggests the open green space include enhanced drainage elements, such as bioswales or rain gardens, as well as passive use amenities such as picnic tables and peaceful seating areas.

Further, the Committee identified this open area as a prime location for a community relief campus, which would host a bolstered physical location for the coordination and distribution of supplies and information during an extreme event. The large open space would provide an assembly area and space to organize volunteers, supplies, and equipment. This central location is also near to the police and fire department and provides convenient access to the Cross Bay Bridge for evacuation. The Queens Library, which served many communities after Superstorm Sandy, is actively expanding its role as an information hub which could provide emergency information services to the Rockaway West Community.

Finally, the Committee proposed revitalizing the corridor from the ferry landing down Beach 108th Street to the beach. Residents view the ferry as one of the most important Community assets and seeks strategies to invest in the ferry

service and supporting infrastructure to ensure its long-term sustainability and viability. Further, the Committee envisions converting Beach 108th Street into a gateway to the Community from the ferry and the Beach 105th subway stop. This would anchor economic, recreational, and transit assets at the intersection of Beach Channel Drive and Beach 108th Street, and create a transformed green, welcoming corridor from the bay to the beach. The NYRCR plan proposes a series of projects to support this vision, but the overall long-term concept includes all of the following pieces.

First, the development of the vacant National Grid site as mixed use, including activating the street with ground level retail or public uses and building a parking structure to replace and expand parking. The concept assumes that the Rockaway WWTP may be converted to a different function that occupies a smaller footprint, which would allow its corner adjacent to Beach 108th Street, across from the National Grid site, to be developed as a supporting anchor. Additional opportunities could also be explored in the underdeveloped lots and parking areas along Rockaway Freeway and Beach 108th Street. Further, finding a way to connect the Beach 105th Street subway station to the ferry and expanded retail offers additional potential for economic development.



This large space at Beach 94th Street/Cross Bay Bridge could double as a relief campus and one of three bay to beach greenways.

The concept also includes the creation of a permanent ferry dock and landing with amenities including retail, finding ways to subsidize ferry operations with any of the aforementioned development projects. This could include reconfiguring Beach Channel Drive, pulling it further into the current National Grid site (to expand the park) and adding a roundabout as a ferry drop-off, and slowing traffic for a safer pedestrian experience. A bike share program or intra-Peninsular bus circulator could be developed

to connect more people to the ferry and better enable cross-Peninsula accessibility. Along with improving the streetscape and drainage along Beach 108th Street a pier or other amenity could be developed at the end of Beach 108th Street to draw people from the ferry to the beach.

Additional improvements could include connecting the bayside with a greenway from Beach 116th Street (at the 9/11 Memorial), behind Beach Channel High School, to the area under the Cross



There are opportunities to attract more visitors to the Rockaway Peninsula. Beach jiu-jitsu competition (left), Movie night in Rockaway (right). Source: With permission from Danny Ruscillo & Noreen Ellis

Bay Bridge; creating a harbor park along the bay from approximately Wainwright Court to the High School; connecting this strategy to a vision for a more prominent gateway to the ocean at Beach 94th/95th Streets.

Overall, this expansive bay to beach “green” strategy will support, expand, and attract retail and other businesses, improve and secure the ferry, provide greater amenities, and create a more inviting experience for visitors and residents. In addition the

Committee suggests a number of complementary ideas that would support the overall economic vitality of Rockaway West. The Committee recommends conducting a transportation study to evaluate all options to improve and expand transit, including removing tolls on bridges, creating a bus rapid transit route, and constructing more efficient cross-Peninsula roadways. The Committee also proposes improving road networks for better cross-Peninsula transportation; removing tolls on Cross Bay Bridge and the Marine Parkway-Gil Hodges Memorial Bridge; and funding an A train switch to allow for direct East-West commuting. The Committee suggests working with the City

to create a long-term Beach 108th Street plan that improves streetscaping in conjunction with changes to the Rockaway Wastewater Treatment Plant site.

The Committee also supports additional projects and recommendations to promote recreation and tourism, such as developing more year-round attractions (e.g., water park, concert space), expanding recreational opportunities on the bay, such as boating or kayaking.

Additional economic resiliency ideas include expanding tax incentive zones; supporting the Beach 116th Street Partnership in its commercial revitalization and promotion activities; creating a business-to-business program to spur commercial activity across the Peninsula; promoting unified store fronts and street scape improvements; supporting a pilot technical assistance and auditing program for small business resiliency; providing grants to merchant entities for district/corridor resiliency improvements; and shared capital. By connecting with existing citywide programs or initiatives, together these commercial programs can reach more businesses at a larger scale than could be afforded by a local program.

Table III.3: Strategy: Catalyze economic revitalization (proposed and featured projects)

Project name	Short project description	Estimated cost	Project category	Regional plan (Y/N)
Long-term ferry operations	This project would provide operating support to help ensure permanent ferry service to Rockaway West, a major new transportation amenity valued widely across the Community.	\$7 million	Proposed Project	N
National Grid site redevelopment	This project would incentivize the redevelopment of the National Grid site, which offers a valuable opportunity to revitalize Beach 108th Street and the area surrounding the Rockaway Ferry landing.	\$2–3 million	Proposed Project	N
Beach 108th Street improvements	By improving the public realm of Beach 108th Street, this project would build on proposed efforts to support permanent Rockaway Ferry service and development of the National Grid site to revitalize the area and help develop a unique sense of place for the corridor.	\$8.2 million	Proposed Project	N
Bus circulator service	Create a free limited-stop bus circulator that would better connect residents and visitors to the beach, ferry, and local businesses.	\$850,000	Proposed Project	Y
Rockaway bike share	This project would create a bike share system on the Rockaway Peninsula to facilitate sustainable transportation across the Peninsula for visitors and residents.	\$900,000–1.5 million	Featured Project	Y
New harbor park	This project would expand upon the City's existing plans for an esplanade along Beach Channel Drive by funding an enhanced design for harbor park at Beach 108th Street.	\$8–12 million	Featured Project	N

IV. Implementation—project profiles



Overview of Proposed and Featured Projects

The Proposed and Featured Projects on the following pages are those projects that the Committee, with input from the Community, has either prioritized for funding through its \$21.3 million allocation of CDBG-DR or has identified funding through additional sources. This section describes each project and the potential costs and benefits that would result from each project if funded.¹⁴

Protect the Community from flooding, surge, and sea level rise

- 1 Bioswales to improve drainage
- 2 Bayside coastal protection

Strengthen Community resiliency

- 3 Relief center network*
- 4 Health care service expansion*

Catalyze economic revitalization

- 5 Long-term ferry operations
- 6 National Grid site redevelopment
- 7 Beach 108th Street improvements
- 8 Bus circulator service*
- 9 Rockaway bike share*
- 10 New harbor park

*Project location to be determined.

Strategy: Protect the Community from flooding, surge, and sea level rise: 1. Bioswales to improve drainage 2. Bayside coastal protection

Strategy: Strengthen community resiliency: 3. Relief center network 4. Health care service expansion

Strategy: Catalyze economic revitalization: 5. Long-term ferry operations 6. National Grid site redevelopment 7. Beach 108th Street improvements 8. Bus circulator service 9. Rockaway bike share 10. New harbor park



Project Overview

Recovery Support Functions



Infrastructure



Natural & Cultural Resources

Cost
\$1.5M

Health & Social Benefits

MEDIUM

Economic Benefits

LOW

Risk Reduction

MEDIUM

Timeline (years)



STRATEGY: PROTECT THE COMMUNITY FROM FLOODING, SURGE, AND SEA LEVEL RISE

Bioswales to improve stormwater drainage

Proposed Project

This project would create up to 50 bioswales in roadways and sidewalks throughout Rockaway West to collect and manage stormwater.

Project description

Bioswales are planted areas that collect stormwater, diverting it from flooding streets via a curb cut and keeping it out of the stormwater sewer system. The stormwater is collected by an engineered sandy soil on the top and crushed stone layer at the bottom. Stormwater nourishes plants in the bioswales or is absorbed into the ground underneath the bioswales. Constructing bioswales in locations with good soil permeability would allow storm water to infiltrate, thereby reducing localized ponding.

After heavy rain, many areas in Rockaway West are left with large puddles of water at intersections and along curbs. Analysis of New York City 311 system data shows that complaints about street flooding come from throughout Rockaway West, with a concentration in low-lying areas in the eastern portion of the Community. The Committee

has raised particular concerns about ponding along Shore Front Parkway, Beach 108th Street, Beach 88th Street, Beach 87th Street, and Beach 86th Street, although the issue is persistent across the Peninsula, including up through Belle Harbor and into the 120s.

Because much of Rockaway West is paved with impermeable materials, water is unable to infiltrate into the ground, causing flooding and ponding in the street when the stormwater sewer system becomes overwhelmed. These drainage issues cause problems on a regular basis and are particularly acute during extreme weather events, adding to risks and health hazards in an emergency.

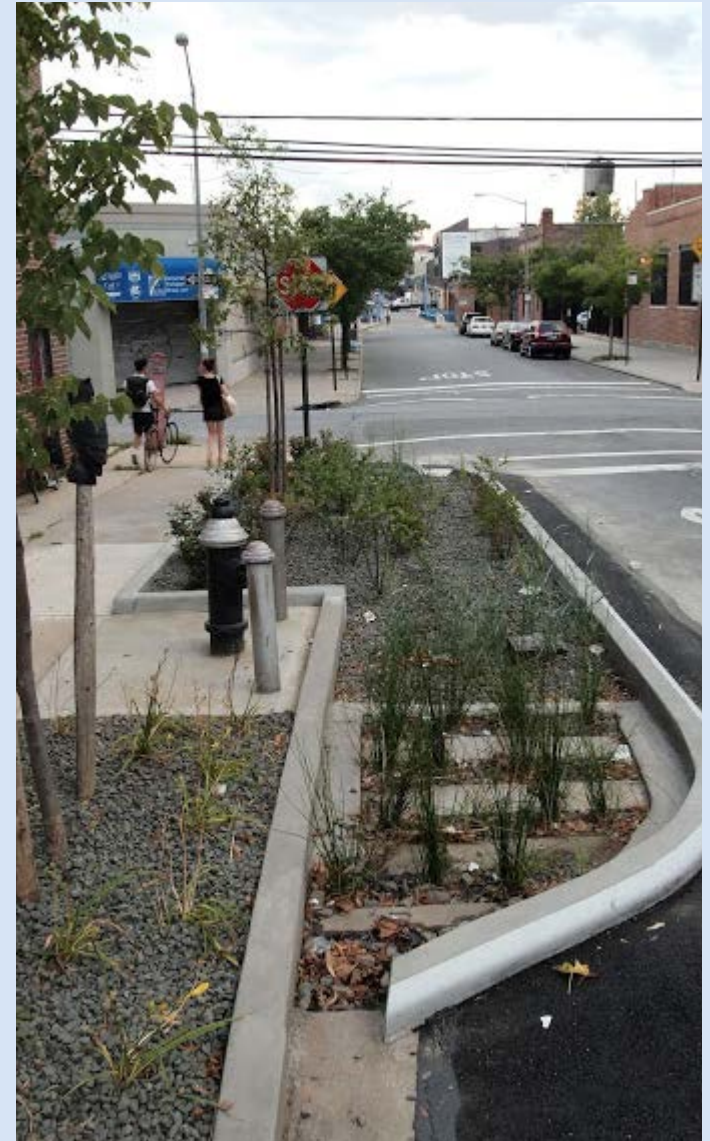
The Rockaway West Planning Committee proposes a project to implement drainage improvements in critical areas in the Community. The Committee suggests implementing

lower-cost surface solutions through bioswales, which provide the co-benefit of greening and beautifying the streetscape. This proposal aligns with the Committee's larger strategies to bolster economic and social resiliency, especially along the Beach 108th Street corridor.

In New York City, the term right-of-way (ROW) bioswale is used to describe planted areas in the roadway or sidewalk that are designed to collect and manage stormwater. In addition, the New York City Department of Parks and Recreation's (NYC DPR) Rockaway Parks Conceptual Plan offers an opportunity to incorporate drainage measures that can provide protection from ongoing localized ponding that follows rainy weather.

The Rockaway West Planning Committee (Committee) recommends developing for approximately 50 ROW bioswales throughout Rockaway West. Based on analysis of 311 street flooding complaints and community feedback, several locations have been identified for potential placement of bioswales:

- Beach 108th Street
- Vicinity of Shore Front Parkway (corresponding with NYC DPR plans for reconfiguring this parkway)
- Vicinity of Beach 94th/95th Street (corresponding with NYC DPR plans for reconfiguring these roadways)
- Vicinity of Beach 88th Street Park (corresponding with NYC DPR plans for park drainage)
- Other locations to be identified



A typical New York City right of way bioswale in the Gowanus area of Brooklyn. Source: Kurt Martig

Before bioswales can be constructed, preliminary technical work is required, including (but not limited to) site borings to understand underlying soil composition and infiltration capacity; siting analysis to ensure proper placement of bioswales to effectively capture runoff; and development of a bioswale standard to apply to high groundwater areas like Rockaway West.

Additionally, a reserve fund for on-going maintenance would have to be established, and maintenance partners identified for each bioswale or group of bioswales.

Cost
\$1.5 MILLION

The cost estimate assumes that a Rockaway West Community-wide bioswale project would be developed to implement up to 50 bioswales under a single contract. This contract would include siting, limited geotechnical investigation, demolition of existing sidewalks or asphalt, all applicable environmental review and permitting, and construction and planting of bioswales as per NYC DEP bioswale standards. Cost also assumes that the NYC DEP standard (15' x 5' x 5') ROW bioswale can be modified for the high groundwater conditions of the Rockaway Peninsula.

The conceptual-level cost estimate was developed based on current unit pricing and typical soft cost assumptions. Cost estimates would continue to be refined as more information is developed about the project.

Benefits
Health and social benefits



By reducing standing water in low-lying areas of Rockaway West, the Proposed Project may reduce potential for mosquito breeding and consequent adverse health effects for residents. Standing water on roadways can also create safety issues, particularly in winter when freezing is a concern. Reducing standing water would create a safer environment and would enhance the aesthetics of the physical environment of the surrounding neighborhood, making the Community more attractive to residents and businesses.

Economic benefits



By reducing ponding, the project would reduce wear and tear on city roadways, especially in winter when pooling water freezes and damages roadway pavement through expansion and contraction.

Cost-benefit analysis

The Community would benefit from this Proposed Project several times a year, whenever heavy rain is experienced and better stormwater drainage results. It would also benefit the Community after major storms by ensuring faster stormwater drainage. Reducing standing water in the Community would have consequent health, safety and aesthetic benefits. These benefits to the Community justify the estimated cost of the project.

Risk reduction

MEDIUM

This project would reduce the frequency and intensity of flooding from rain events and the resultant damaging effects on property and infrastructure. While not as catastrophic as coastal storm events, stormwater flooding regularly puts community assets at risk to minor flood damage. While they would not create significant flood reduction in the case of a 100-year coastal storm event, they would enable more efficient and effective drainage following storm events, thus aiding in more rapid Recovery and potentially reducing the length of time that floodwaters remain.

Timeframe for implementation



Once approved, and assuming a straightforward permitting process, this short-term project would require approximately 1 to 2 years to design, review, permit, and construct.

Regulatory requirements

Review and/or permitting by City and State agencies is anticipated for this project. Environmental review is prescribed by the New York State Environmental Quality Review (NYS SEQRA) Act and the New York City Environmental Quality Review (NYC CEQR) process. Project implementation may require permits from New York State Department of Environmental Conservation (NYS DEC), New York State Department of State (NYS DOS), New York City Department of City Planning (NYC DCP), NYC Department of Parks and Recreation (NYC DPR), New York City Department of Transportation (NYC DOT), and New York City Department of Buildings (NYC DOB).

Jurisdiction

The details of the project are to be determined, but it is probable that bioswales would be located within the public right-of-way or on public property under the jurisdiction of New York City.

Project Overview

Recovery Support Functions



Infrastructure



Natural & Cultural Resources

Cost
\$5.6M

Environmental Benefits

MEDIUM

Economic Benefits

LOW

Risk Reduction

MEDIUM

Timeline (years)



STRATEGY: PROTECT THE COMMUNITY FROM FLOODING, SURGE, AND SEA LEVEL RISE

Bayside coastal protection

Featured Project

This bayside coastal protection project would provide flood protection benefits in the short-term for an area identified as most at-risk in the Community.

Project description

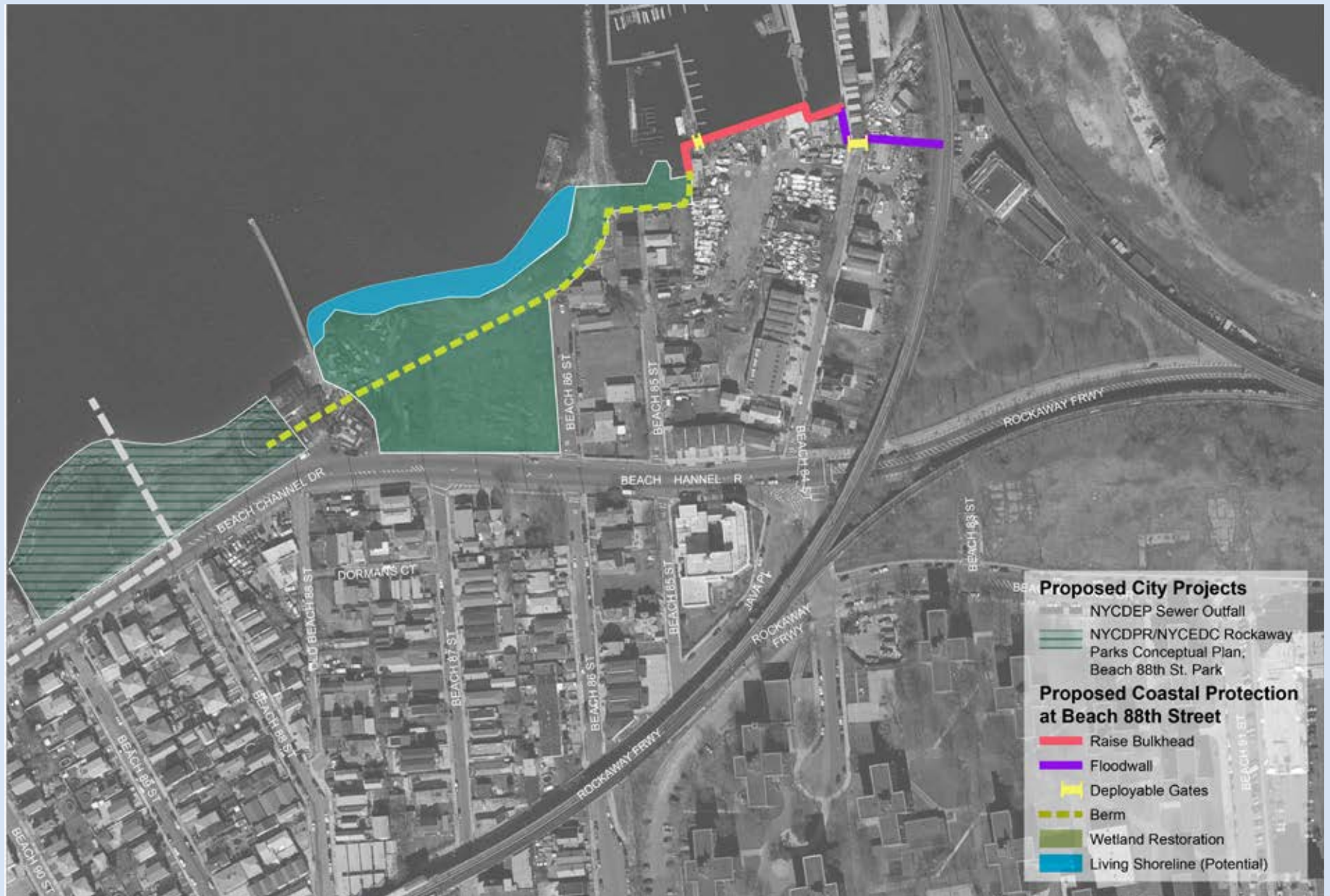
As discussed previously, Rockaway West’s low elevation leaves it greatly exposed to risk, although some areas are more exposed than others. The U.S. Army Corps of Engineers (USACE) is conducting emergency beach replenishment on the oceanside, and much of the baywall is currently being rehabilitated by the City. However, the easternmost edge of the Community has a deteriorated bulkhead and natural edges and is particularly vulnerable.

The Rockaway West Planning Committee (Committee) has identified an opportunity to undertake a low-cost targeted coastal protection project along the bay. The bayside neighborhood between the A train crossing and Beach 88th Street is particularly at risk, while at the same time, it has recently been the recipient of a number of City investments, including two development projects and a NYC Department of Parks and Recreation (NYC DPR) capital project. Additionally, in its Rockaway Parks Conceptual Plan, NYC DPR proposes developing a park

at Beach 88th Street. Thus, it seems to be a prime site for priority investment.

This Featured Project requires a combination of six protective measures based on the existing conditions and land use of the shoreline. It includes:

- Restoring approximately 2.5 acres of wetlands between Old Beach 88th Street and the marina located just east of Beach 85th Street
- Constructing a berm on publicly owned and vacant land between Old Beach 88th Street and the marina. (The berm would be approximately 950 feet long and would tie into the protective measure to the east.)
- Raising and repairing approximately 350 feet of existing bulkhead that currently run from the marina to Beach 84th Street
- Installing deployable floodgates or ramps at the



marina dock that would serve as protection in the event of a storm while still allowing for continued access to the bay under normal weather conditions

- Connecting a 4-foot high floodwall to the bulkhead at Beach 84th Street and running it approximately 200 feet east until the A train Crossing.
- Installing a deployable floodgate or floodwall at the Beach 84th Street Pier to allow continued access to residences, while providing protection in the event of a storm

Together, these projects could provide protection against approximately 6 or 7 feet of surge depending on storm conditions, as well as providing protection against more frequent flooding events in the area. In addition, the project enhances local recreational opportunities by tying wetland restoration and berm construction into the proposed NYC DPR Beach 88th Street Park, creating a bayside greenway from Beach 89th Street to Beach 85th Street.

Cost

\$5.6 MILLION

The cost estimate assumes sheet pile seawall, existing bulkhead repair and raising a berm, 2.5 acres of wetland restoration and two deployable walls.

The conceptual-level cost estimate was developed based on current unit pricing and typical soft cost assumptions. Cost estimates would continue to be refined as more information is developed about the project.

Benefits

Environmental benefits

MEDIUM

The project would restore approximately 2.5 acres of wetlands, which would include maritime and upland habitat for Jamaica Bay wildlife.

Economic benefits

LOW

Protecting the Community along this bayside strip would also help to preserve or increase land and home values, which are otherwise threatened by regular flooding and the risk of damage.



Unprotected edge in Rockaway West.



Houses and businesses along the most vulnerable section of Rockaway West.

Cost-benefit analysis

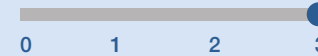
Constructing this combination of wetland restoration, berm creation, bulkhead repair or raising, and deployable floodgates is a first step towards a critical and comprehensive bayside coastal protection strategy in Rockaway West. This set of coastal protection projects would protect an especially vulnerable area at Beach 88th Street against the effects of 10-year storm events. These benefits to the Community justify the estimated cost of the project.

Risk reduction

MEDIUM

The Featured Project would protect this neighborhood against more frequent flooding from lesser storm events, sea-level rise, and high tides. Together, these measures would protect against up to approximately 6 to 7 feet of surge, or a 10-year storm event. In addition, it may provide wave attenuation benefits, thus decreasing the exposure of surrounding assets to wave action. Even though the project does not protect against a 100-year storm event, the addition of these shore defenses reduces the exposure of key assets, including private homes in extreme and high risk areas between Beach 83rd Street and Beach 88th Street on the bay. Analysis using the NYS DOS Risk Assessment Tool suggests that assets protected by this project would see a 25% reduction in their risk score in a 10-year storm event.

Timeframe for implementation



Once approved, and assuming a straightforward permitting process, this short-term project would require approximately 3 to 5 years to design, review, permit, and construct.

Regulatory requirements

Review and/or permitting by City and State agencies is anticipated for this project. Environmental review is prescribed by the New York State Environmental Quality Review (SEQR) Act and the New York City Environmental Quality Review (NYC CEQR) process. Project implementation may require permits from New York State Department of Environmental Conservation (NYS DEC), New York State Department of State (NYS DOS), New York City Department of City Planning (NYC DCP), NYC Department of Parks and Recreation (NYC DPR), New York City Department of Transportation (NYC DOT), New York City Department of Buildings (NYC DOB) and the U.S. Army Corps of Engineers (USACE).

Jurisdiction

This project falls within New York City jurisdiction on the upland portion, and within NYS DEC and USACE jurisdiction for the in-water portion.

Project Overview

Recovery Support Functions



Health & Social Services



Community Planning & Capacity Building

Cost

\$6–9M

Health & Social Benefits

HIGH

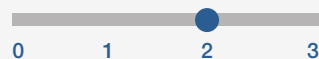
Economic Benefits

MEDIUM

Risk Reduction

HIGH

Timeline (years)



STRATEGY: STRENGTHEN COMMUNITY RESILIENCY

Relief center network

Proposed Project

This project would fund the creation of a network of relief centers, to house the coordination of relief services following a disaster.

Project description

This project would fund the creation of a network of relief centers to provide and coordinate local relief services and supplies following a disaster, such as provision of food, water, power, basic medical services, and information. The project would provide funding to community facilities and organizations for construction and building hardening. It would also support staffing costs to develop and manage resiliency plans and programs.

Relief centers would leverage the local knowledge and trusted relationships of existing community-based organizations (CBOs) to provide essential information to residents and businesses; coordinate community-based emergency health and social services; and help evaluate community needs and efficiently distribute resources.

The proposed relief center network would be a “hub” and “satellite” model. The hub would be a large, centrally located

community space where logistics, communications, and supplies could be managed and distributed. It would serve as a local contact for government agencies and first responders and would coordinate with smaller satellite locations throughout the Community serving as additional, localized distribution centers. The hub would also ensure that local emergency plans are in place to support vulnerable populations.

The array of services that could be provided across the hub and satellites include the following:

- Access to food, water, power, and basic supplies
- Information about both citywide emergency response activities and local efforts
- Non-urgent medical services (first aid, mental health, etc.)



Residents and volunteers help with cleanup and distribution efforts post-Sandy. Source: Flickr user Restore_the_Rock, licensed under Creative Commons..

- Special services for seniors or other vulnerable populations

Because emergencies are unpredictable and irregular events, relief centers should be housed within existing buildings and organizations that provide year-round community services. A relief center hub should meet the following physical requirements, based on best practices as well as Rockaway West Planning Committee (Committee) discussions:

- Location outside of the floodplain or in a flood-proof structure
- Reliable source of power and heat/cooling
- Proximity to an evacuation route
- Proximity to vulnerable populations and commercial centers
- Reinforced building structure
- Potable water system
- Restrooms (ideally with showers)
- Parking lot or other large outdoor assembly area
- Large space on ground floor
- ADA-accessibility

This project would fund capital improvements to help the hub meet these physical requirements, including flood-proofing and back-up power.

Satellite locations do not need to meet all of the physical requirements as the hub, but should be physically distributed across the Community so that all residents can access one within walking distance. Ideally satellites would also be bolstered with flood-proofing and back-up power in order to support the relief center network following acute events.

Selection of sites and participating organizations would occur through a competitive process based on analysis of existing efforts in the Community, organizational capacity, facility capacity, proposed services, and potential to provide a cohesive network of support in conjunction with other selected sites.

Based on needs identified by the Committee, ideal relief center host organizations for both hub and satellite sites would exhibit the following characteristics:

- A history of community engagement and strong community ties
- Regular community programming and capacity to provide emergency programming
- Demonstrated ability to conduct outreach to vulnerable populations
- Capacity to provide a selection of social and/or health services
- A long-term occupancy agreement or ownership of the building



Sandy volunteers distribute free food and beverages. Source: With permission from Danny Ruscillo.

- A business continuity plan
- Financial stability

Embedded within the hub host organization would be a program manager. To ensure rapid response and effective coordination during an emergency, the program manager would coordinate with satellite sites and NYC Office of Emergency Management (OEM). The program manager would also manage disaster preparedness-related programming, which could include trainings and practice drills, “know your neighbor” events, and outreach to vulnerable populations. The center can also host events such as Community Emergency Response Team (CERT) or Ready New York trainings.

This program management capacity may be supported initially with Community Development Block Grants-Disaster Recovery (CDBG-DR) funds for a part-time resource for up to 2 years to design programs, oversee resiliency capital investments, build community and organizational capacity, and coordinate activities across the network. After 2 years, the hub organization would be responsible for maintaining and supporting these services on an ongoing basis.

Cost

\$6–\$9 MILLION

The \$6 million to \$9 million cost would Cover two hubs and—depending on the scale and needs of the buildings or organizations—a series of satellite locations.

Relief centers would require funding to Cover two types of expenses: capital and operational.

- Capital would be utilized to harden existing buildings. Key costs for facility improvements could include: flood-proofing if the building is located in the floodplain, back-up communications equipment, and back-up power.
- Operating support would help build host organization’s capacity to support a part-time program manager to provide year-round emergency programming and to deploy and coordinate resources during an emergency.

Estimates based on generic building types suggest that this allocation could fund capital upgrades and operational costs of one to two hubs and four to six satellite sites. Based on a rough estimate, a relief center hub with 12,000 square feet of usable space in the floodplain could cost approximately \$1.4 to \$1.6 million. A satellite site in a 7,000 square foot facility could cost \$900,000 to \$1.1 million. These estimates assume fairly substantial flood-proofing and costly solar power; exact costs would vary widely depending on how many facilities are selected, the physical characteristics of those buildings and sites, and the programming planned for each site.

The annual cost of the program manager and emergency preparedness programming could range from \$20,000 to \$60,000, for a total project cost of \$40,000 to \$120,000 over the course of two years, depending on the needs of the Community. Satellite sites might also receive a discretionary amount of funding for programming. All interested parties would respond to a competitive solicitation with a proposal for their respective needs and scope.

After two years, each participating organization would be responsible for supporting the program as well as building maintenance costs. It should also be noted that the operation of relief centers could require the purchase of supplies including medical supplies, extended shelf-life food, water, blankets, walkie-talkies, ham radios, surge protectors, or gasoline. Participating organizations would need to identify alternative funding sources for these items.

Benefits

Health and social benefits

HIGH

For the entire Community, formalizing a network of relief centers would reduce the health and safety risks associated with a disaster or event. Specifically, the relief centers would reduce the risk of:

- Sickness or discomfort related to lack of access to basic medical supplies, food, water, heat, and other necessities
- Emotional or psychological distress
- Displacement of children, relatives, and friends who might need to relocate to receive services
- Inaction or misdirected action due to confused or lacking information across the Community

Vulnerable populations such as seniors and physically impaired residents stand to benefit the most, given that they are most likely to need assistance, yet least likely to have reliable and convenient access to critical supplies and services.

The program would also strengthen the overall social resiliency of Rockaway West by building not only emergency preparedness capacity but also ongoing relationships and collaboration.



Volunteers distribute supplies at YANA Occupy Sandy. Source: Flickr user Melissa Segal, licensed under Creative Commons.

Economic benefits

MEDIUM

The relief center network would support a part-time program manager plan and build organizational capacity over the course of two years. Hardening community centers would also create a small number of temporary jobs for construction and installation of resiliency building improvements. These jobs should be sourced locally to ensure investment in the Community.

Additionally, by protecting an at-risk New York City community, an emergency relief center supports thriving neighborhoods, which helps improve quality of life, a strategy in line with the New York City Regional Economic Development Council's Strategic Plan.

The relief center network would benefit NYC OEM and other local government agencies, likely supporting effective resource allocations by these agencies by enabling them to respond to emergency events more efficiently with fewer resources going to coordination efforts.

Cost-benefit analysis

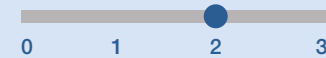
A Rockaway West relief center network would provide numerous public benefits to the Community in the event of a disaster, including reducing overall risk to the well-being of residents—especially vulnerable populations. The reduced vulnerability of all Rockaway West residents justifies the relatively modest per capita cost of implementing this project. The benefits of the network would be sustainable beyond the two-year CBDG-DR funding period so long as the partnering organizations dedicate modest resources to maintain emergency equipment and update emergency plans. There are no apparent negative externalities associated with the Proposed Project. In addition, a year-round co-benefit to the Community would be the increased capacity and coordination among CBOs participating in the network.

Risk reduction

HIGH

The relief center network would reduce risk to Rockaway West residents by providing safe havens in an emergency ensuring accessible back-up power, a centralized source for information, social and support services, and more secure emergency and Recovery services. Further, investment in a relief center network would reduce the vulnerability of the organizations and community centers participating in the program.

Timeframe for implementation



Once the project has been formally initiated, it would take approximately one to two years to implement.

Project implementation would begin with a competitive bidding process that would invite local organizations meeting established criteria to apply to participate. Organizations would submit proposals with an estimated resiliency capital scope and cost as well as a proposed approach to resiliency programming. The proposal and selection process would take approximately 3 to 6 months.

Once participating organizations have been identified, organizations would create detailed plans to implement programming and capital improvements. Depending on the scope of the work, and taking into account the seasonality of construction, the capital improvement construction phase could take 6 to 12 months. Programming can be implemented in a shorter time, ideally 3 to 6 months after the program manager is on board.

The key issues that could most dramatically affect the timeframe are: the length and format of the selection process and the construction challenges that may emerge with installing back-up power, flood-proofing, or other capital improvements.

Regulatory requirements

It is anticipated that no regulatory review would be needed for the execution of this project, though all capital investments would be required to meet building codes and obtain building permits, including any modifications to construction in a flood zone. Because the sites would provide relief and not function as formal shelters or evacuation centers they would not be required to meet FEMA regulations.

It would be beneficial for the local CBOs to consult with NYC OEM as they launch the program and seek ongoing communications and coordination with NYC OEM on citywide emergency preparedness efforts. Local CBOs would also benefit from coordinating with other city agencies or local programs to bolster information and programming over time.

Jurisdiction

The relief center network would be located in Rockaway West and would fall under the jurisdiction of New York City laws. Because the sites provide relief and do not function as formal shelters or evacuation centers they would not be held to FEMA regulations.

Project Overview

Recovery Support Functions



Health & Social Services

Cost
\$1.5M

Health & Social Benefits
HIGH

Economic Benefits
LOW

Risk Reduction
HIGH

Timeline (years)
0 1 2 3

STRATEGY: STRENGTHEN COMMUNITY RESILIENCY

Health care service expansion

Proposed Project

The Proposed Project seeks to attract a strong regional health care provider to expand services to the Rockaway Peninsula.

Project description

The Rockaway West Community suffers from insufficient health care services, especially emergency and urgent care. This requires residents to travel long distances to reach help in an emergency, resulting in potentially life-threatening circumstances given the geographic isolation of the Peninsula. While the population of Rockaway West is insufficient to support a new inpatient hospital on the Peninsula, analysis shows that the population may be large enough to make a wide range of smaller or specialty care facilities, such as an urgent care center or a free-standing emergency department, financially viable.¹⁵ Further, the NYRCR Communities of Rockaway East, Breezy Point, and Broad Channel also lack sufficient services and would support a centrally located facility.

The Proposed Project seeks to attract a strong regional health care provider or developer to expand services in the

Rockaway Peninsula, with a particular focus on emergency services. Because there are compelling economic reasons to cluster providers, and because the Community lacks in multiple types of care, the project could support the development of a new health care campus or facility. In addition to a free-standing emergency department, the campus could support urgent care, diagnostic and treatment services, and physician services.

For this project, the Community would invite interested parties to propose approaches to expanding and sustaining health care services on the Peninsula. The Community would then contribute funding toward the best proposal to help create the facility. The Rockaway East NYRCR Planning Committee also supports this project and will match funding with Rockaway West to contribute to the development.



This project aims to attract more health care service providers to the Peninsula, especially increased emergency services.
Source: Flickr user MilitaryHealth, licensed under Creative Commons.



Students learn basic emergency procedures. permission from
Danny Ruscillo & Noreen Ellis

Cost

\$1.5 MILLION

The \$1.5 million cost would Cover any financial gaps inherent in developing a health care facility or campus. The potential use of the funding is flexible and can support building resiliency improvements, provision of working capital, or partial rehabilitation of an existing building.

Rockaway East is also contributing \$1.5 million to this project, bringing the total subsidy to \$3 million.

Benefits

Health and social benefits

HIGH

By improving the Community's access to critical health services, this project would reduce the health and safety risks associated with a significant event. Specifically, the health care facility or campus could reduce the risk of sickness, discomfort, injury, or death related to lack of access to medical help during an extreme event as well as on a regular basis, especially for vulnerable populations.

By providing additional health care services, this project could complement the City's current plans to develop an ambulatory facility at the site of the old courthouse in Rockaway West.

Economic benefits

LOW

If this project results in a medical campus, it will produce a number of new permanent health care jobs within the Community.

Capital expenses associated with the development of the new health care campus or facility, including installation of resiliency measures, would create a modest number of temporary construction jobs. However, the number of construction jobs cannot yet be estimated without a more specific definitions of the potential site and building typology.

Cost-benefit analysis

Developing a health care campus or facility would reduce the overall vulnerability of residents and provide critical health services.

This project would not only benefit residents in the immediate aftermath of emergency events, but also improve the capacity of the Rockaway West Community to provide key services year-round. At an estimated cost of \$1.5 million, this project could provide services that could benefit all residents of the Rockaway Peninsula and beyond.

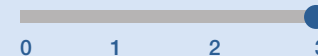
There are no apparent negative externalities associated with the Proposed Project.

Risk reduction

HIGH

Developing a health care campus would reduce overall health risk to the Community by providing critical first response services to residents of Rockaway West. This includes reducing risk during large scale emergencies, as well as responding to individual medical issues year-round.

Timeframe for implementation



Once the project has been formally initiated, it would take approximately 2 to 4 years to select the site, identify an anchor health care provider, find the third party developer, secure regulatory approvals, design, and construct. The key issues that could most dramatically affect the timeframe are any challenges associated with the Certificate of Need (CON)— the ability to identify and secure a qualified anchor provider— the challenges of generating third-party developer interest in the Request for Proposals (RFP) and providing adequate financial subsidy if needed, and specific construction requirements.

Regulatory requirements

This project may be subject to State review and approval and may require environmental review depending on the location. Potential reviews that are likely to be required include:

- CON filing
- Local zoning/planning board filing
- Facility Guidelines Institute (FGI) Guidelines
- NYC Department of Buildings filing
- Department of Environmental Protection filing (based on location of site)
- Environmental Impact Survey/State Environmental Quality Review Act
- Phase 1 Environmental Site Assessment
- Environmental Protection Agency Stormwater Pollution Prevention Plan

Depending on the site location and what environmental studies are needed, the initial phase of approvals could take up to 12 months. Once completed the facility would be subject to the following typical inspections:

- NYC Department of Health final inspection
- NYC Department of Buildings Final Inspection for Certificate of Occupancy

- The New York City Department of Health and Mental Hygiene (NYC DOHMH) is currently considering updates to CON regulations regarding free-standing emergency departments which would impact the execution of this project.

Jurisdiction

The Proposed Project would be in Rockaway West and would therefore fall under the jurisdiction of New York City.

Project Overview

Recovery Support Functions



Cost
\$7M

Economic Benefits



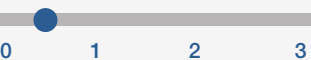
Environmental Benefits



Risk Reduction



Timeline (years)



STRATEGY: CATALYZE ECONOMIC REVITALIZATION

Long-term ferry operations

Proposed Project

This project would provide operating support to help ensure permanent ferry service to Rockaway West, a major new transportation amenity valued widely across the Community.

Project description

New York City has demonstrated through its recent Rockaway Ferry Request for Proposals (RFP) that it hopes to find solutions to sustain the ferry over the long term. However, current funding challenges, low ridership, and high operating costs put a permanent ferry at risk.

This project would contribute NYRCR funding as a stop-gap measure to maintain ferry service while the City and State work to find a more permanent financing solution. Because the City has capital to develop piers and upland improvements, this project aims to off-set the cost of ferry operations for the City. The Committee would also like to see the service extended to weekends to maximize the beneficial effects of the ferry service on the local economy

– not only bringing in more tourists, but also by charging them higher fares and increasing revenue.

Cost
\$7 MILLION

The current annual subsidy to the existing ferry service is approximately \$6.4 million. A \$7 million allocation of CDBG-DR funding would provide approximately half of the subsidy required for two years, or the total subsidy for one year. Additional subsidy would go toward running



Conceptual rendering of ferry landing with related improvements.

limited weekend service. Based on the considerations outlined above, this is the most direct way for NYRCR to support ferry operations and is worth

New York City is seeking support to make these ferries available for operating assistance through New York State Department of Transportation's (NYS DOT) Statewide Mass Transportation Operating Assistance program (STOA). Privately-operated ferries were made ineligible for this funding in the mid-1990s, and the only ferry service currently eligible for state assistance is the Staten Island Ferry. Now that public entities are contracting with private operators to provide a public service, the City is seeking a legislative change to widen funding eligibility to these public-private ferry services. Making public/private ferries eligible for STOA funding would have a significant impact on the operational subsidy required from the City and would compel a strong argument for Federal investments.

Benefits

Economic benefits

MEDIUM

Ferry service can spur new local economic development, a factor driving the National Grid Development Proposed Project adjacent to the ferry landing. According to the NYCEDC Citywide Ferry Study (2013), the East River Ferry, established in 2010, had a clear impact on development within 1/4 mile of the ferry stop. Within these areas, residential square footage increased by 7%, while retail space grew by 4%, over the course of three years. Housing values in Brooklyn and Queens within 1/8 mile of

the ferry stops grew by 8% during the same time period.¹⁶

Because the ferry currently provides faster point-to-point service to Lower Manhattan than subway or express bus, and is widely perceived by users as a higher-quality transportation experience, it is likely to add significant value to the area. It can also facilitate attraction of visitors to the area.

This project advances the NYC Regional Economic Development Plan's goal of improving transportation and connecting the city to its suburbs and the regional economy. While Rockaway West is not technically a suburb of New York City, it is distant from the City's major employment hubs.

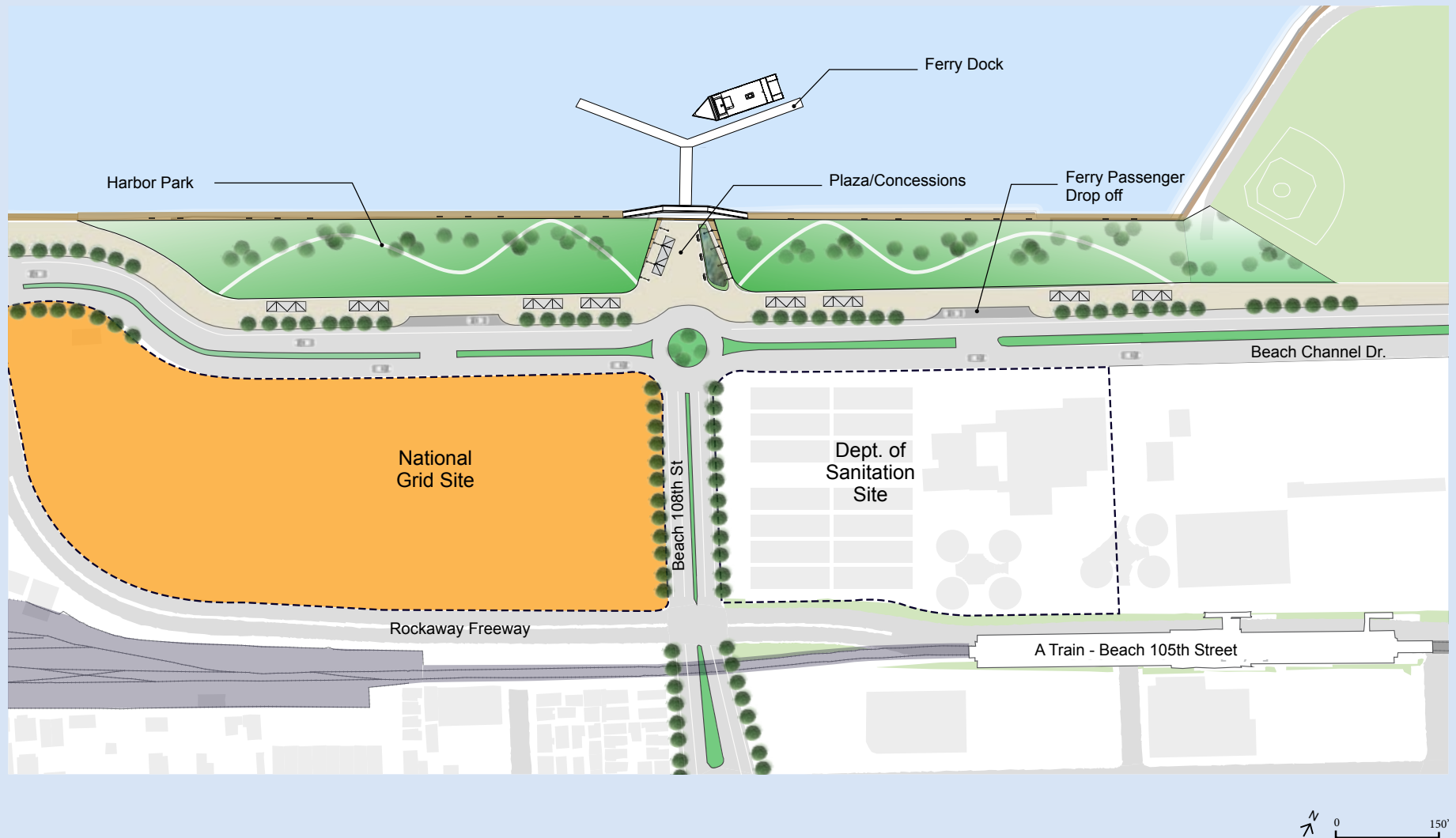
Environmental benefits

LOW

The ferry may lessen the dependence on cars for commuting purposes, a small step that is part of a larger shift towards diversifying transit options that minimize the impacts on the environment that are contributing to climate change.

Cost-benefit analysis

This project is a central component of a larger economic development vision for the Rockaway Peninsula. Beyond the Committee, this is a project which, as framed here with the additional weekend service, has broad public support, as evidenced by the recent petition that drew over 1,000 signatures in support. By potentially catalyzing



Conceptual plan of multiple NYRCR Rockaway West projects, including support for ferry operations, a harbor park, redevelopment of the National Grid site, and improving Beach 108th Street.



Current ferry landing at Beach 108th Street.

new development, attracting new visitors, facilitating commutes, and serving as a potential transportation alternative for evacuation and delivery of supplies in the aftermath of an emergency, this project provides a wide array of benefits. In this light, the benefits of this project greatly outweigh its costs.

Risk reduction

MEDIUM

In many emergency situations over the last 10 years, ferries have proven themselves an effective evacuation and supply delivery option. As seen during Sandy, mobility is severely constrained when subway service and gasoline are both unavailable. Ferries are less susceptible to long-term outages from a storm because they require very

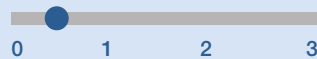
little hard, fixed infrastructure. Thus, the ferry may serve a critical function in the immediate aftermath of the next emergency.

The temporary weekday commuter ferry service has also become an important symbolic resiliency measure by connecting the Community to the rest of New York City.

Jurisdiction

Ferry operations in New York City fall under the jurisdiction of a number of different entities, including the USACE, NYS DEC, NYS DOT and NYC DOT.

Timeframe for implementation



As this project is contingent on a number of elements and policy decisions, barriers to implementation exist. However, once approved, implementation is straightforward.

Regulatory requirements

As discussed in the 2010 Citywide Comprehensive Ferry Study (2010), there are a number of regulatory requirements that involve coordination with City, State, and Federal agencies. The New York State Department of Environmental Conservation (NYS DEC) is responsible for approving ferry facility permits, the U.S. Army Corps of Engineers (USACE) is responsible for approving in-water permits, the New York State Department of Transportation (NYS DOT) is responsible for operator licensing, and the New York City Department of Transportation (NYC DOT) is responsible for the granting of landing licenses. This project may also require Coastal Zone Management (CZM) consistency concurrence from New York State Department of State (NYS DOS).

Project Overview

Recovery Support Functions



Cost
\$2–3M

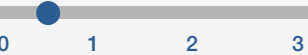
Economic Benefits



Risk Reduction



Timeline (years)



STRATEGY: CATALYZE ECONOMIC REVITALIZATION

National Grid site redevelopment

Proposed Project

This project would support the redevelopment of the National Grid site, which offers a valuable opportunity to revitalize Beach 108th Street and the area surrounding the Rockaway Ferry landing.

Project description

The National Grid site at Beach 108th Street and Beach Channel Drive currently provides valuable parking for ferry riders, but is a largely underutilized 250,000 square foot parcel of land across the street from the existing ferry landing. Given its size and central location, the site presents great opportunities for any number of mixed-use developments that could significantly enhance the Community. National Grid, Community Board 14, and the City have been in an ongoing dialog about the future of the site, but no plans have been finalized.

This project would contribute NYRCR funding toward the development of a resilient mixed use site that bolsters the ferry and contributes to the overall local economy. The project would provide a source of gap financing to attract high quality, resilient designs and proposals.

The ample space on this site allows for flexibility in program and design. The Committee has identified a conceptual mixed-use program for the site, including flood-proofed ground-floor retail with residential uses above the floodplain, as well as potential facilities for health care services or other institutions. The Committee agreed that it is critical to keep and expand parking as part of the development so replacing and increasing the current parking capacity would be a requirement. Because parking is important and could generate profit to feed into the ferry, the Committee sized the scope of the project to contribute to the construction of a large multi-story parking garage as part of the larger design.

Because of its size, the project also offers opportunities to redesign the bay interface and pedestrian experience along several blocks of Beach Channel Drive. For example, to improve the efficiency of traffic, allow for ferry drop-off,



The current National Grid site offers potential for development.

and make for a safer, more pleasant pedestrian space, a roundabout could be cut into the site. Further, Beach Channel Drive could be re-routed onto the National Grid site to create a much grander esplanade park along the bay, creating room for an elevated, protective berm, which could double as a green way along the bay.

The resulting large-scale development would provide a new anchor for Beach 108th Street on the bayside and, in conjunction with a new ferry terminal, harbor park, and 108th street improvements, catalyze local economic growth, and solidify the Rockaway Peninsula as a welcoming destination for residents throughout New York City.

As the largest undeveloped bayside land in Rockaway West, there exists a unique opportunity to build out the land and infrastructure around the Beach 108th Street dock to improve the area and increase density of use. The outcomes of doing so could be many, including: increasing ferry ridership and therefore direct revenues; indirectly reducing ferry operating costs by finding creative ways to generate revenue on the site and revert it to the ferry; and adding new business or industry to the Community to expand the overall economy. After reviewing potential development scenarios and benefits, the Committee identified no practicable alternatives to the National Grid site due to its size, feasibility, and proximity to the 108th Street corridor and ferry landing.

Cost

\$2–\$3 MILLION

The cost of this project includes \$2 to \$3 million in gap financing to leverage private sector investment for a capital intensive project that creates a high-quality mixed-use development achieving the economic and social benefits the Committee envisions.

Benefits

Economic benefits

MEDIUM

Once complete, this project would begin the transformation of an empty temporary parking parcel into an asset for the Community and an anchor development for the Beach 108th Street corridor. The number of jobs created would depend on the final program, but would include temporary construction jobs. In total this project has the potential to be a major catalytic project for both Rockaway West and the Peninsula as whole.

Cost-benefit analysis

This project has not only direct financial benefits for the Rockaway Ferry, but can also serve as a catalyst for much broader economic development in its vicinity. This project would fulfill a long-held Community desire to see this site revitalized and would facilitate a drastic transformation of a vacant site and eyesore into a major community asset. As evidenced by the similar work



The current site is used for a variety of purposes, largely parking for ferry riders. There are currently no permanent structures on the large lot.

undertaken by the Community Board, this is a project that has significant public support, especially when connected to the ferry through a shared parking structure or other means of support. The benefits to the Community justify the estimated cost of the project.

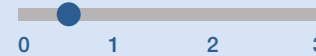
Risk reduction

LOW

This project offers no direct protection from storm surge or wind; however, the development would contain a parking structure with sections elevated above the Base Flood Elevation. This would provide an area for storage of important items to be used in Recovery, such as emergency vehicles. In addition, any residential units

would be elevated, establishing best practices for new models of resilient housing on the Peninsula.

Timeframe for implementation



As this project is contingent on a number of elements, including site disposition, and policy decisions, barriers to implementation exist. However, once approved, implementation is straightforward.

Regulatory requirements

This project may be subject to State review and approval and may require environmental review. Potential reviews that are likely to be required include:

- Local zoning/planning board filing
- NYC Department of Buildings filing
- Department of Environmental Protection filing (based on location of site)
- Environmental Impact Survey/State Environmental Quality Review Act
- Phase 1 Environmental Site Assessment
- Environmental Protection Agency Stormwater Pollution Prevention Plan

Depending on the site location and what environmental studies are needed, the initial phase of approvals could take up to 12 months. Once completed the facility would be subject to the following typical inspections:

- NYC Department of Health final inspection
- NYC Department of Buildings Final Inspection for Certificate of Occupancy

Jurisdiction

This project falls within the jurisdiction of New York City.

Project Overview

Recovery Support Functions



Cost
\$8.2M

Economic Benefits



Health & Social Benefits



Risk Reduction



Timeline (years)



STRATEGY: CATALYZE ECONOMIC REVITALIZATION

Beach 108th streetscape improvements

Proposed Project

By improving the public realm of Beach 108th Street, this project would build on proposed efforts to support permanent Rockaway Ferry service and development of the National Grid site to revitalize the area and help develop a unique sense of place for the corridor.

Project description

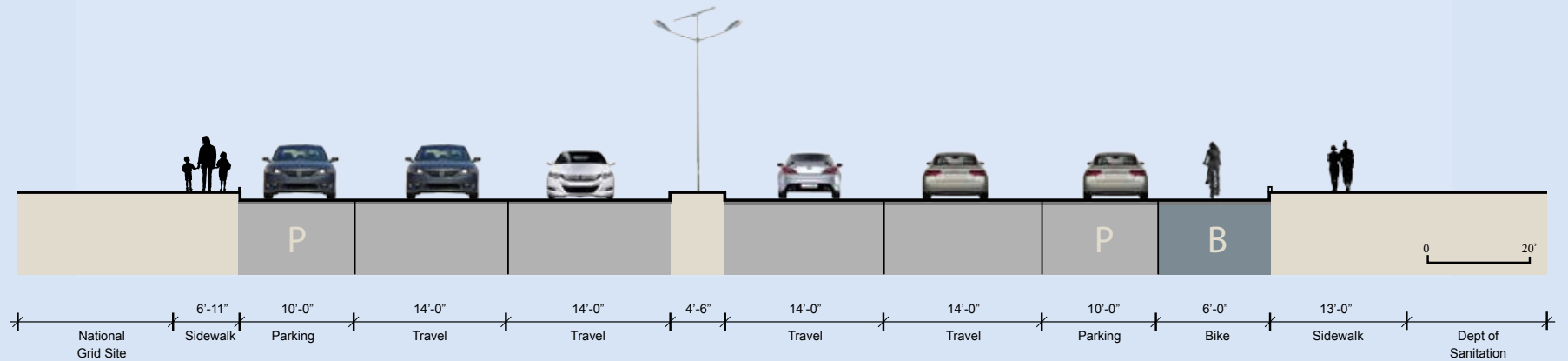
While it is at the disembarkation point for the Rockaway Ferry, Beach 108th Street is an uninviting and bleak passageway. Flanked by vacant lots and running underneath the elevated A train, it does not provide a welcoming experience to ferry passengers.

Nevertheless, because of the Rockaway Ferry, Beach 108th Street is seeing increased foot traffic. Given the short distance from the ferry to the beach, the unique experience of both a bay and ocean within walking distance of each other, and the potential for redevelopment of the adjacent National Grid site, Beach 108th Street may have redevelopment potential as a new hub of community and

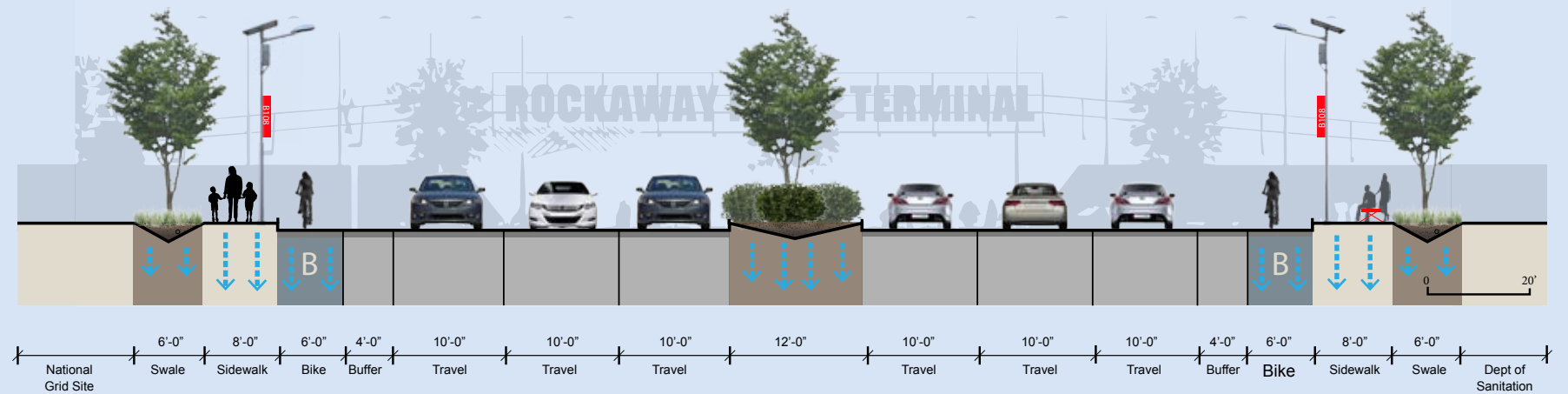
visitor activity. A more attractive streetscape could draw visitors further into the neighborhood and provide a more beautiful landscape for residents.

Improving the Beach 108th Street streetscape will have intrinsic benefits by upgrading the pedestrian experience of the corridor and contributing a unique sense of place to the beach-going experience. It is also one part of a larger strategy to build on the opportunity provided by the Rockaway Ferry to strengthen and promote a more resilient Rockaway West economy. The larger strategy also includes supporting long-term ferry operations, redeveloping the National Grid site, building Beach 108th Street Harbor Park, creating a community-wide bioswale

EXISTING



PROPOSED



program, and supporting a bus circulator to bring residents and visitors to and from the ferry.

These improvements would have a broad impact on the Community. The small retail corridor on Beach 116th Street is being energized through the recently-created merchants association as well as potential projects identified through the U.S. Housing and Urban Development (HUD) Rebuild By Design competition. The NYC Department of Parks and Recreation Conceptual Plan envisions Beach 94/95th Street as the prime gateway to the boardwalk for drivers. Together, these complementary efforts on parallel streets would work together to create a series of corridors and better-defined hierarchy of streets from the Bay to the beach.

The Proposed Project would overhaul the streetscape of Beach 108th Street, from the ferry landing at Beach Channel Drive to the beach at Shore Front Parkway. Investing in the physical improvement of this corridor would improve economic resiliency and create a safer and more inviting atmosphere for both residents and businesses.

Streetscape elements would be anchored by resiliency measures. Natural elements, known as bioswales, would both green the streets and address ongoing ponding that occurs at several intersections by capturing stormwater runoff. Similarly, permeable materials on the sidewalks and roadway would allow stormwater to infiltrate directly into the ground, and highly efficient LED streetlights with resilient means of backup power, such as small solar panels or wind turbines, would be installed.

The scope and approach of a streetscaping program is variable, but would likely include reconfiguring the existing right of way to make room for:

- Permeable sidewalks on both sides
- Permeable and protected bike lane in both directions
- Two travel lanes and a parking lane in each direction
- A generous landscaped median along the entire corridor with landscaping that can also serve to alleviate drainage issues
- Street trees
- Benches
- Bike racks and bike share stations
- Resilient renewable energy-powered street lighting
- Wayfinding elements directing users from ferry to beach and vice versa
- Bioswales (funded through another Proposed Project)

These elements would create a more pleasant pedestrian experience, increase transportation options, improve drainage after both common and extreme storm events, and provide a non-grid backup lighting source during an emergency. Non-grid light sources would facilitate a variety of other Recovery and relief efforts, as well as support public safety.



View from the intersection of Beach 108th Street and Beach Channel Drive to the beach.

Cost

\$8.2 MILLION

The cost estimate assumes 3,000 linear feet of streetscaping work between Beach Channel Drive and Shore Front Parkway. Elements include excavation and removal of existing roadway and sidewalk, creation of new roadway and sidewalk (including typical asphalt

for travel lanes and permeable materials for bike lanes, parking lanes, and sidewalks), landscaping and tree pits, and street furniture such as benches, bike racks, and trash receptacles. The conceptual-level cost estimate was developed based on current unit pricing and typical soft cost assumptions.

Additionally, funding for ongoing maintenance would have to be identified separately.



Aerial view of Beach 108th Street from the Bay to the beach

Benefits

Economic benefits

HIGH

A higher quality gateway streetscape experience would help to solidify the identity of Beach 108th Street, and improve the quality of retail that is attracted to the area, bringing revenue to local businesses. This Proposed Project is in line with the primary objective of the NYC Regional Economic Development Council's Strategic Plan (2013) to "Create a Pro-Growth, Pro-Jobs environment" and support small businesses.

Health and social benefits

MEDIUM

Stormwater drainage would be moderately improved through the installation of permeable roadway and sidewalk materials (as well as bioswales, funded under a separate Proposed Project), which would reduce the negative health and aesthetic impacts of standing water.

The improved resiliency of the street lighting would increase safety and security along the Beach 108th Street corridor ensuring that the area is consistently well lit.

Promotion of mass-transit, pedestrian improvement and bike sharing has health and environmental benefits. A reliable ferry service coupled with an inviting pedestrian experience encourages people to travel without relying on their cars. This can be a small step towards

diversifying transit options that minimize automobile use and associated impacts on the environment that are contributing to climate change.

Cost-benefit analysis

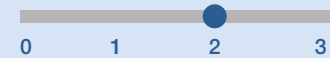
This project has been prioritized by the Rockaway West Planning Committee as an important element in establishing a distinctive identity of the Beach 108th Street ferry-landing corridor and to improve its ability to fully meet the local retail demand. By leveraging recreational, economic development, and resiliency co-benefits, the benefits of this project outweigh the costs.

Risk reduction

MEDIUM

In order to create a better bay-to-beach connection and strengthen the resiliency of the Beach Channel Drive and Beach 108th Street, this streetscaping project would ensure street lights work on backup power if the main grid is out of service. The lack of power in the Rockaway Peninsula during Superstorm Sandy hindered the ability of businesses to reopen, and forced the City to focus efforts on short-term fixes, such as setting up generator-powered street lights. Having resilient, non-grid light sources would facilitate a variety of other Recovery and relief efforts, as well as support public safety.

Timeframe for implementation



Once approved, and assuming a straightforward permitting process, this short-term Project would require approximately 1 to 2 years to design, review, permit, and construct.

Regulatory requirements

Review and/or permitting by City and State agencies is anticipated for this project. Environmental review is prescribed by the New York State Environmental Quality Review (NYS SEQR) Act and the New York City Environmental Quality Review (NYC CEQR) process. Project implementation may require permits from New York State Department of Environmental Conservation (NYS DEC), New York State Department of State (NYS DOS), New York City Department of City Planning (NYC DCP), NYC Department of Parks and Recreation (NYC DPR), New York City Department of Transportation (NYC DOT), and New York City Department of Buildings (NYC DOB), and/or the U.S. Army Corps of Engineers (USACE).

Jurisdiction

The project would be located within public property under the jurisdiction of New York City.

Project Overview

Recovery Support Functions



Economic Development

Cost
\$850,000

Economic Benefits

MEDIUM

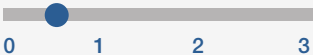
Economic Benefits

LOW

Risk Reduction

LOW

Timeline (years)



STRATEGY: CATALYZE ECONOMIC REVITALIZATION

Bus circulator service

Proposed Project

Create a free limited-stop bus circulator that would better connect residents and visitors to the beach, ferry, and local businesses.

Project description

The Rockaway West Planning Committee has recommended extending permanent ferry service at Beach 108th Street as a major priority for NYRCR and overall community resiliency. However, as the current service is not financially sustainable over the long term, the Committee proposes ways to help the City bolster ridership, increase revenues, and maintain the service. One constraint on ferry ridership is the lack of transit connectivity between the ferry and the rest of Rockaway West. Travel by car is currently the most convenient way to connect to the ferry, which likely deters both residents and visitors from using the service.

There are opportunities to create a bus circulator to better connect residents on the east side of the Rockaway Peninsula to the ferry at Beach 108th Street. By increasing connectivity,

a bus circulator could also spur economic development by connecting more people to local businesses and services.

The project would pilot a free, limited-stop privately owned circulator bus that would operate across the Peninsula, from Far Rockaway to Rockaway Beach, running between the Mott Avenue A train station/LIRR, the Beach 108th Street temporary Ferry Landing, and the Rockaway Beach Boardwalk at Beach 19th Street. The exact route and service would be determined based on a study of ferry schedules, ridership, and potential routes.

By providing an operating subsidy and supportive infrastructure, this project, combined with the bike share project, can boost ferry ridership and stimulate economic activity in the area surrounding the ferry landing. Further, it would expand residents' transit options across the Peninsula.



A bus circulator would serve to better connect residents and visitors. Source: Wikimedia Commons author Adam E. Moreira photo licensed under Creative Commons_Jitney-bus circulator

Cost

\$850,000

The cost of this service includes hiring an operator to carry out the following responsibilities:

- Running a bus service 365 days a year
- Running a bus service 10 hours a day (e.g., 8:00AM–6:00PM)
- Making an East to West run that terminates at the ferry terminal once an hour
- Making a North to South run that terminates at the beach once every twenty minutes

Additionally, this cost includes capital money for stops, which Covers the following:

- Three enhanced stations, including signage and a rest area
- 10 sign-only stations

The operations of the bus circulator could be subsidized for two years. After this pilot, ridership levels and financial sustainability would drive the decision of whether or not to continue service. If an operating subsidy is needed, an alternative funding source would be needed.

Benefits

Economic benefits

MEDIUM

The primary objectives of the Rockaway Ferry/Beach circulator are: (1) to increase ridership and help to create a more sustainable service for the ferry, which is itself a powerful economic development project, and (2) to enhance the Rockaway West economy by improving the connection between transit hubs, the beach, and the rest of the Peninsula. This service, in conjunction with the ferry, can be an economic engine that would drive visitors to and across the Rockaway Peninsula.

Environmental benefits

LOW

The circulator bus would slightly lessen dependency on cars for short trips, a small step towards diversifying transit options and reducing impacts on the environment that contribute to climate change.

Cost-benefit analysis

The cost of the Proposed Project is relatively low, and is designed as a pilot project in order to gauge its effectiveness in circulating visitors and driving the ferry ridership. As such the potential economic benefits from its implementation could be substantial if the pilot is successful.

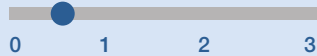
Risk reduction

LOW



While the Project would not directly impact risk reduction, it can help to contribute to the long term-sustainability of the ferry at Beach 108th Street, a particularly resilient mode of transit that can provide support for evacuation and Recovery.

Timeframe for implementation



The Project does not face any major barriers to implementation and could be implemented in 6 months.

Regulatory requirements

New York City Department of Transportation (NYC DOT) approval for sign installation would be necessary. The normal regulatory requirements for bus operators would apply

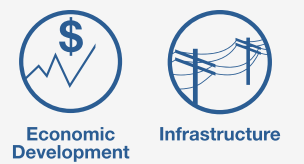
Coordination with NYC DOT would be necessary.

Jurisdiction

The Proposed Project would be in Rockaway West and would fall under the jurisdiction of New York City.

Project Overview

Recovery Support Functions



Cost
\$900,000–1.5M

Economic Benefits
MEDIUM

Environmental Benefits
MEDIUM

Risk Reduction
LOW



STRATEGY: CATALYZE ECONOMIC REVITALIZATION

Rockaway bike share

Featured Project

This project would create a bike share system on the Rockaway Peninsula to facilitate sustainable transportation across the Peninsula for visitors and residents.

Project description

The Rockaway West Planning Committee (Committee) has recommended extending permanent ferry service at Beach 108th Street as a community resiliency priority. However, as the current service is not financially sustainable over the long term, the Committee proposes ways to help the City bolster ridership, increase revenues, and maintain the service. A bike share program, combined with the proposed bus circulator, can help boost ridership of the ferry and bring greater revenue to support it.

Currently, the Rockaway Peninsula do not have a coordinated bike share service, though strong interest exists. New Yorkers in Manhattan and Brooklyn have quickly adopted and celebrated the NYC Bike Share Program (Citi Bike). The system’s monthly trip totals are comparable to those of London’s successful system, even with higher prices and 2,000 fewer bikes in operation.

There may be opportunities to learn from that model to build a Rockaway Peninsula-specific program.

This Project would institute a bike share system on the Rockaway Peninsula to improve intra-Peninsula connectivity, bringing more visitors throughout Rockaway West and allowing residents to more easily access amenities such as the beach, bay, and mass transit stations without reliance on a car. Ideally this project would be implemented across the Peninsula without consideration of the Rockaway East and West boundaries.

A bike share program would be most beneficial if it reaches across the entire Peninsula and stations should be distributed from Far Rockaway to Beach 116th or Jacob Riis Park. It would be important for stations to follow bike paths along key transit lanes as well as to connect to bay and beach locations.



Bike share programs can help diversify transit options. Source: Flickr user Steven Vance, licensed under Creative Commons.



Bike share users tour the neighborhood. Flickr user Richard Masoner_Cyclicious_3, licensed under Creative Commons

Creating a Rockaway-specific program would offer an opportunity to create a locally run business which hires locally and creates a 'Rockaway' brand.

Cost

\$900,000–\$1.5 MILLION

Infrastructure costs for instituting a bike share system are low, and the cost of operations is dependent on the model chosen. For an independent bike share system that would be exclusive to the Rockaway Peninsula, a ten dock, 100 bike system costs approximately \$3 million to install, operate, and maintain over 2 years. This service would require approximately \$750,000 annually after this 2-year period to operate and maintain, for which alternative funding sources would need to be secured.

Funding for this program could be obtained should there be a municipal policy decision to support bike share with public funding, as is done in most cities.

Economic benefits

MEDIUM

Currently, most visitors to the Rockaway beaches arrive by subway or car and do not venture far from the transit stops and beach. A bike share system would allow visitors to more easily explore the Peninsula, letting visitors stay longer and spend more at local businesses. It would also benefit the ferry by creating connectivity between different transit modes, and by allowing visitors taking the ferry to venture farther into the Rockaway Peninsula, encouraging them to stay longer and spend more. This helps support small businesses, a primary objective of the New York City Regional Economic Development Council's Strategic Plan.

Environmental benefits

MEDIUM

A bike share encourages people to use bikes as a means of traveling short distances, lessening their dependence on cars. Further, it would create more users for the Jamaica Bay Greenway, which encourages the expansion of safe bike routes. This can be a small step towards diversifying transit options that minimize automobile use and associated impacts on the environment that are contributing to climate change.

Cost-benefit analysis

This project is a fairly low-cost capital project, with benefits that, combined with other projects, help achieve multiple goals. While it is not a traditional resiliency project, its

response to needed transit redundancies, as well as its economic and health benefits justify the cost.

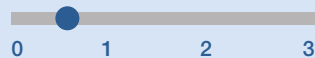
Risk reduction

LOW

While bike share would not actively reduce the risk to the homes or residents of Rockaway West, it would help facilitate mobilization and Recovery efforts after a storm event. After Superstorm Sandy, with the subway system out of operation, mobility was severely hindered; there were hour-long lines for the transit options that were running, such as express buses and ferries.

As reported in Businessweek in November 2012, “‘When an earthquake rattled [Washington, D.C.] and left many commuters looking for a way around snarled traffic, Capital Bikeshare experienced a 34% increase in trips per day.’ Paul DeMaio, founder of the system, said ‘that they had just a few bikes that were kept beyond 24 hours. People were respectful of the service, and they were able to use the service to get home to their loved ones.’”¹⁷

Timeframe for implementation



This project faces no major barrier to implementation and

could be implemented in 6 months.

Regulatory requirements

The normal regulatory requirements for bike share station siting required approval through NYC Department of Transportation (NYC DOT).

Jurisdiction

This project is within New York City.

Project Overview

Recovery Support Functions



Economic Development



Natural & Cultural Resources

Cost
\$8–12M

Economic Benefits

MEDIUM

Environmental Benefits

MEDIUM

Health & Social Benefits

MEDIUM

Risk Reduction

MEDIUM

Timeline (years)



STRATEGY: CATALYZE ECONOMIC REVITALIZATION

New harbor park

Featured Project

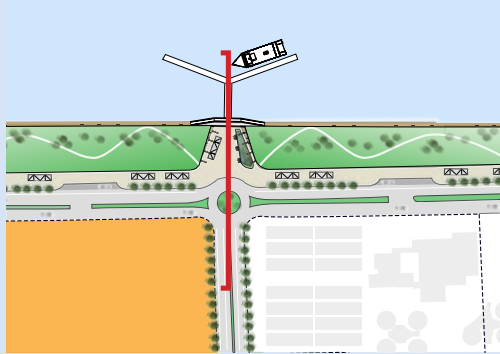
This project would expand upon the City’s existing plans for an esplanade along Beach Channel Drive by funding an enhanced design for harbor park at Beach 108th Street.

From Beach Channel Drive, Rockaway West enjoys dramatic views of Jamaica Bay, the Cross Bay Bridge, and the communities across the water. But the current condition of Beach Channel Drive is anything but inviting, with a chain link fence, a meager sidewalk, scruffy landscaping, litter, and a crumbling bulkhead preventing meaningful interaction with the bay.

As part of its Rockaway Parks Conceptual Plan, the New York City Department of Parks and Recreation (NYC DPR) has identified the development of an esplanade along the water adjacent to Beach Channel Drive, between Wainwright Court and Beach 108th Street. The esplanade as currently envisioned would include a restored bulkhead (implemented separately), a railing, a walkway, seating, a landscape buffer, and a sidewalk.

Creating a Harbor Park at Beach 108th Street is one part of a larger strategy to build on the opportunity provided by the Rockaway Ferry to strengthen and promote a more resilient Rockaway West economy. The larger strategy also includes supporting long-term ferry operations, redeveloping the National Grid site, improving the Beach 108th Streetscape, creating a community-wide bioswale program, and supporting a bus circulator to bring residents and visitors to and from the ferry.

The Rockaway West Planning Committee (Committee) recommends expansion of the City’s esplanade concept to a grander Harbor Park at Beach 108th Street. The Committee recommends enhancing the amenities in the park, building out additional park and retail space along the ferry dock, and adding a greenway path, starting at the 9/11 Memorial park at Beach 116th Street and extending



0 30'



This section demonstrates how the harbor park and a reimagined Beach Channel Drive could enhance the ferry.



Current state of bayside by the ferry.

east to connect with the existing pathway at Cross Bay Bridge.

Building off of the existing NYC DPR Rockaway Parks Conceptual Plan, this project would build a high-quality bayside park that mixes hard and soft edges as the first phase of a larger project that better connects the Community to the Bay and supports a long-term vision for Beach 108th Street as the gateway to the Rockaway Peninsula from the ferry. Hard edges include walls and bulkheads, while softer edges include a more natural slope that extends into the water. The project could include the realignment of Beach Channel drive to the south in the vicinity of Beach 108th Street to create a larger area for the Harbor Park at the ferry landing area. It would also include a roundabout that would integrate a passenger pick-up and drop off. The Park area is expected to include pedestrian/fishing piers, landscaping, and a boat launch tied in with the ferry.

Cost

\$8–\$12 MILLION

This project is estimated to cost between \$8 and \$12 million as compared to similarly-scaled waterfront park/esplanade projects throughout the City, but a refinement of the project and its costs are ongoing. As a part of remediation of the National Grid site, National Grid has agreed to fund portions of this park. This plan would build off of this and include the expansion of the park into what

is currently Beach Channel Drive, which would then be relocated into the Grid site.

The Committee sees this park as a high priority and recommends moving forward with the Parks and National Grid funding plan, adding the additional amenities described above.

Benefits

Economic benefits

MEDIUM

The proposed Harbor Park is a key piece in an overall economic resiliency strategy for the Beach 108th Street Corridor. By developing the Beach 108th Street corridor, the Rockaway West community aims to increase ridership and generate real estate value that can help sustain the ferry long-term. This project provides an opportunity for the committee to enhance existing park plans to create a destination along Jamaica Bay and add in elements that improve the resiliency of the park area.

Health and social benefits

MEDIUM

The Harbor Park would provide additional recreational opportunities to the Rockaway West Community.

Environmental benefits

MEDIUM

The Harbor Park would replace the existing impermeable roadway and sidewalk with softer landscaped areas, and would incorporate green stormwater management elements, such as permeable materials and bioswales or rain gardens. By doing so, the project would have a net effect of reducing stormwater runoff into the Bay.

Landscaping using native species may be incorporated into the Harbor Park design, providing habitat for Jamaica Bay wildlife.

Cost-benefit analysis

This project is a key part of an overall economic redevelopment and resiliency strategy for Beach 108th Street. It would provide recreational benefits and would be designed as a resilient park. These benefits justify the cost of the project.

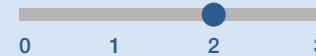
Risk reduction

MEDIUM

While the final elements of the project must still be defined, risk reduction would inform the design. Park elements

would be designed to be floodable, with resilient materials and landscaping incorporated into the concept.

Timeframe for implementation



Once approved, and assuming a straightforward permitting process, this short-term project would require approximately 1 to 2 years to design, review, permit, and construct.

Regulatory requirements

Review and/or permitting by City and State agencies is anticipated for this project. Environmental review is prescribed by the New York State Environmental Quality Review (NYS SEQR) Act and the New York City Environmental Quality Review (NYC CEQR) process. Project implementation may require permits from New York State Department of Environmental Conservation (NYS DEC), New York State Department of State (NYS DOS), New York City Department of City Planning (NYC DCP), NYC Department of Parks and Recreation (NYC DPR), New York City Department of Transportation (NYC DOT), and New York City Department of Buildings (NYC DOB), and/or the U.S. Army Corps of Engineers (USACE).

Jurisdiction

The project would be located within public property under the jurisdiction of New York City.

V. Additional materials



Source: Flickr user Sukhchander, licensed under Creative Commons

A. Additional resiliency recommendations

The Proposed and Featured Projects discussed in the previous section were selected by the Planning Committee in order to address some of the most critical needs in Rockaway West. However, these projects were selected out of a much broader list of actions after lengthy discussion by the Planning Committee. While funding is not yet secured for these projects, the Committee strongly recommends and supports the implementation of the Additional Resiliency Recommendations detailed below.

Table V.1: Additional resiliency recommendations

Strategy	Project name	Short project description	Regional project (Y/N)	Estimated cost
Protect the community from flooding, surge, and sea level rise	Expand upon existing ocean edge protection	The Planning Committee recommends working with relevant government agencies to build up and expand upon existing ocean edge strengthening projects such as additional, stronger dunes, ocean side jetties, and possibly flood walls	Y	\$25+ million
Protect the community from flooding, surge, and sea level rise	Strengthen the baywall	The Planning Committee recommends working with government agencies and private owners to uniformly strengthen the baywall	N	\$1-\$25 million
Protect the community from flooding, surge, and sea level rise	Develop Jamaica Bay surge protection strategy	The Planning Committee recommends that the City or State locate a surge barrier in west of the bay in location that minimizes impact on surrounding communities and recreational co-benefits	Y	\$25+ million
Strengthen community resiliency	Develop an emergency local power generation system	The Planning Committee recommends that PSE&G develop an emergency, off-grid, local power generation system which could be deployed in the wake of a storm	N	\$1-\$25 million

Table V.1: Additional resiliency recommendations

Strategy	Project name	Short project description	Regional project (Y/N)	Estimated cost
Strengthen community resiliency	Strengthen/heighten utility poles and harden substations	The Planning Committee recommends that PSE&G strengthens utility infrastructure (poles and wires/brackets/terminals) throughout Rockaways, particularly in areas with high trees or subject to high winds. Poles should be designed to withstand sustained 200mph winds	N	\$1-\$25 million
Strengthen community resiliency	Create alternative energy sources across the Community (e.g., wind for back-up power in emergencies)	The Planning Committee recommends that PSE&G explore offshore wind as a long-term idea, tidal/hydroelectric power, an exploring the installation of large-scale generators throughout the peninsula	N	\$25+ million
Strengthen community resiliency	Work with the City to create long-term strategy for wastewater treatment plant	The Planning Committee recommends agencies identify an alternative for the wastewater treatment plant (which could include conversion to pumping station, upgrading to a more modern facility, or reducing the footprint of under-capacity facility)	Y	\$1-\$25 million

Table V.1: Additional resiliency recommendations

Strategy	Project name	Short project description	Regional project (Y/N)	Estimated cost
Catalyze economic revitalization	Conduct study to assess peninsula transportation needs and propose potential solutions	<p>Conduct a study of the area's short- and long-term transportation needs, with the scope of the study to potentially include:</p> <ul style="list-style-type: none"> - Frequency of subway service - Options for extended or improved connection to ferry service - Potential sites for ferry landings, which may include options at former Edgemere landfill at 59th Street - where there is an existing pier - or direct connection (land or water) to 108th Street - Need for additional bike lanes, including a dedicated safe east-west bike route. Study options for bike connections, ideally separated, under the elevated train needs to be very safe and should take into account the complete interaction of transit modes along these corridors (bike, ped, and motor vehicles) - Options for Select Bus Service to Brooklyn and Queens - Improved road conditions to improve cross-peninsula access, both east-west and north-south 	Y	<\$500,000
Catalyze economic revitalization	Improve road networks to enhance cross-peninsula transportation and provide increased protection where feasible	The Planning Committee recommends conducting a pavement maintenance analysis, studying road construction and maintenance methods (improve drainage), and examining the raising of main roads	Y	\$25+ million

Table V.1: Additional resiliency recommendations

Strategy	Project name	Short project description	Regional project (Y/N)	Estimated cost
Catalyze economic revitalization	Remove tolls on Cross Bay Bridge and Gil Hodges Memorial Bridge	The Planning Committee recommends MTA removes bridge tolls permanently or during holidays (Memorial Day/Labor Day)	Y	No cost
Catalyze economic revitalization	Fund A train switch to allow for direct east-west commuting	The Planning Committee recommends the construction of an A train switch to allow for direct east-west commuting	Y	\$1-\$25 million
Catalyze economic revitalization	Create business-to-business program to bolster commercial activity across the Peninsula	The Planning Committee recommends creating a program that is administered by a community organization, to better facilitate cross-Peninsula communications and connections for businesses	Y	<\$500,000
Catalyze economic revitalization	Expand recreational opportunities on the Bay, such as boating or kayaking	The Planning Committee recommends expanding recreational opportunities on the bay, such as boating or kayaking, with a focus on recreational opportunities below 88th street.	N	\$1-\$25 million
Catalyze economic revitalization	Support pilot technical assistance and auditing program for small business resiliency	The Planning Committee recommends the piloting of a technical assistance and auditing program for resiliency. Assistance should include: information and guidance on insurance and SBA loans; technical support to help business owners identify and apply for grants	Y	\$1-\$25 million
Catalyze economic revitalization	Provide grants to merchant entities for district/corridor resiliency improvements; shared capital	Create matching grant program for corridor-scaled resiliency improvements such as deployable floodwalls	Y	\$1-\$25 million

Table V.1: Additional resiliency recommendations

Strategy	Project name	Short project description	Regional project (Y/N)	Estimated cost
Catalyze economic revitalization	Support Beach 116th Street partnership	The planning committee recommends increasing the capacity of the Beach 116th Street partnership as a first step towards improving management entities on the Peninsula	N	\$1-\$25 million
Catalyze economic revitalization	Expand zones for tax incentives	The Planning Committee recommends expanding zones for tax incentives	Y	N/A
Catalyze economic revitalization	Promote unified storefronts and streetscape improvements for business corridor	The Planning Committee recommends identifying funds for an organization to promote unified store fronts and street scape improvements for business corridors	Y	\$1-\$25 million
Strengthen community resiliency	Establish requirements for multi-family building owners to create and communicate emergency plans and ensure safety of residents	The Planning Committee recommends regulatory changes to ensure multi-family buildings are prepared for emergencies, with backup power supply and other measures in place	Y	N/A
Strengthen community resiliency	Designate emergency transportation plans	The Planning Committee recommends designating pick-up locations for evacuation by bus and perhaps establishing a dedicated evacuation plan and service provider for vulnerable populations	N	N/A
Strengthen community resiliency	Strengthen resiliency and emergency-response capacity of local community based organizations	The Planning Committee recommends that the city, state, and foundations help to build up the capacity of local non-profits to ensure overall resiliency and build community social capital	Y	\$1-\$25 million

B. Master table of projects

Table V.2: Master table of projects

Strategy	Project name	Short project description	Estimated cost	Project category	Regional project (Y/N)
Protect the community from flooding, surge, and sea level rise	Bioswales to improve drainage	This project will create up to 50 bioswales in roadways and sidewalks throughout Rockaway West to collect and manage stormwater.	\$1.5 million	Proposed project	N
	Bayside coastal protection	This bay side protection project is at one of the most vulnerable locations on the bay side of Rockaway West and would provide flood protection benefits in the short-term for an area identified as having strong potential value for the Community.	\$5.6 million	Featured project	Y
Strengthen community resiliency	Relief center network	This project would fund the creation of a network of relief centers, to house the coordination of relief services following a disaster.	\$6–\$9 million	Proposed project	N
	Healthcare service expansion	The proposed project seeks to attract a strong regional healthcare provider to expand services to the Rockaways.	\$1.5 million	Proposed project	Y

Table V.2: Master table of projects

Strategy	Project name	Short project description	Estimated cost	Project category	Regional project (Y/N)
Catalyze economic revitalization	Long-term ferry operations	This project would provide operating support to help ensure permanent ferry service to Rockaway West, a major new transportation amenity valued widely across the community.	\$7 million	Proposed project	N
	National Grid site redevelopment	This project would incentivize the redevelopment of the National Grid site, which offers a valuable opportunity to revitalize Beach 108th Street and the area surrounding the Rockaway Ferry landing.	\$2–\$3 million	Proposed project	N
	Beach 108 th Street improvements	By improving the public realm of Beach 108th Street, this project would build on proposed efforts to support permanent Rockaway Ferry service and development of the National Grid site to revitalize the area and help develop a unique sense of place for the corridor.	\$8.2 million	Proposed project	N
	Bus circulator service	Create a free limited-stop bus circulator that would better connect residents and visitors to the beach, ferry, and local businesses.	\$850,000	Proposed project	Y
	Rockaway bike share	This project would create a bike share system on the Rockaway Peninsula to facilitate sustainable transportation across the Peninsula for visitors and residents.	\$900,000–\$1.5 million	Featured project	Y

Table V.2: Master table of projects

Strategy	Project name	Short project description	Estimated cost	Project category	Regional project (Y/N)
Catalyze economic revitalization	New Harbor Park	This project will expand upon the City's existing plans for an esplanade along Beach Channel Drive by funding an enhanced design for harbor park at Beach 108th Street.	\$8–\$12 million	Featured project	N

C. Public engagement process

Public Engagement

Public engagement has been central to all phases of development of the Rockaway West NY Rising Community Reconstruction (NYRCR) Plan. NYRCR was designed to be a community-driven process. The Rockaway West Planning Committee, consisting of representatives of the Community, held public engagement events and Planning Committee Meetings over the course of seven months to solicit substantial public feedback. In total more than 150 residents, including Committee members, elected officials, and professionals, participated in Rockaway West NYRCR events. The Planning Committee utilized the Community guidance and feedback to identify assets, needs, strategies, and ultimately, the projects that are recommended for funding in the NYRCR Plan. Continuous public engagement has ensured that the NYRCR Plan reflects the Community's priorities for rebuilding and resiliency.

Planning Committee

The Rockaway West NYRCR Planning Committee Members and Co-Chairs were voluntary contributors, selected for their community leadership and ability to represent different constituents within the Planning Area. The

Planning Committee held 9 Planning Committee Meetings over the course of a 7-month planning process. Planning Committee members dedicated countless hours to the NYRCR Program, including by attending monthly—and sometimes biweekly meetings—and reaching out to engage the broader community in discussions about the future of the Rockaway West.

Community members and members of the public also attended and contributed during Planning Committee Meetings. During some meetings, Planning Committee members split into break-out groups to provide a space for more focused discussions on specific projects. All Planning Committee Meetings were announced publicly on the NYRCR website and were open to the public.



Public Engagement Event #1 presentation

Meetings were held at Community facilities in the Rockaway West NYRCR Planning Area. Most meetings took place at the Knights of Columbus, and a few at Martin de Porres High School.

Planning Committee meetings addressed all topics Covered in this Plan; specific tasks and discussions held at the meetings included: identification of community assets, assessment of needs and opportunities, formalization of reconstruction and resiliency strategies, creation of the proposed and Featured Projects. The Planning Committee spearheaded the community outreach strategy, identifying avenues for outreach to the Planning Area's diverse population and solicited public feedback.

Public Engagement Events

Public Meetings were designed to be highly interactive and maximize community feedback. Three public engagement events were held prior to the submission of the NYRCR Plan. The Planning Committee selected community-based venues with accessibility and proximity to targeted stakeholders, such as Martin De Porres High School and the Rockaway Beach Surf Club. At each public meeting, the Planning Committee provided general information about the NYRCR process; presented outcomes and information



Public Engagement Event #1; residents discuss critical assets.

gathered to date; and solicited feedback through dynamic discussions and interactive displays. Following each Public Engagement Event, community feedback was aggregated and analyzed in order to guide discussion during Planning Committee meetings.

Public Engagement Event #1 (October 2013)

Program Scope; Goals, and Timeline; Feedback on Vision; Community Assets; and Needs and

Opportunities

Public Engagement Event #1, held at Martin De Porres High School, showcased the NYRCR program scope and presented the Planning Committee's assessment of Community assets and needs and opportunities. The Public Engagement Event began with a formal presentation that introduced NYRCR and the program's objectives to the Community. Following the presentation, an open house style

event was held in which Planning Committee members invited Community input on a number of topics including identification of assets, needs, opportunities, and goals as featured on the display boards. While the public engaged in conversation around the display boards, they were invited to take part in interactive exercises by placing stickers and notes on feedback boards. This feedback mechanism created a documented record of community discussion from the Public Engagement Event for the Planning Committee to use during future meetings.

Public Engagement Event #2 (November 2013)

Contents of Draft Conceptual Plan; Gathering feedback on Strategies and Projects

Public Engagement Event #2 solicited public responses to potential strategies selected by the Planning Committee. The meeting utilized the same location and a similar format to Public Engagement Event #1 and included an introductory presentation followed by breakout stations. Planning Committee members staffed the breakout stations that displayed the potential strategies. The public was again invited to gather around the boards, engage with the Planning Committee members in conversation, and offer their feedback with stickers and written



Public Engagement Event #3; public attendees review project proposals.

notes placed on feedback boards. Community members' comments provided powerful guidance to the Planning Committee on the types of projects to pursue that address the Rockaway West Community's greatest priorities and concerns and substantially shaped project development going forward.

Public Engagement Event #3 (February/March 2014)

Presentation of proposed and Featured Projects, and additional resiliency recommendations; Gathering feedback on Strategies and Projects

The third Public Engagement provided a critical opportunity for the Planning Committee to share the Proposed and Featured Projects



Public Engagement Event #3; public attendees review project proposals.

with the Community and obtain feedback on these projects. The Rockaway West Planning Committee organized a weekend long open house at the Rockaway Beach Surf Club, complete with cookies emblazoned with the NY Rising logo, courtesy of the Co-Chair, to coincide with the Queens County St. Patrick's Day Parade on March 1, 2014. Planning Committee members felt strongly that aligning the Public Engagement

Event with such a major community event would help attract a larger number of participants. Planning Committee Members distributed outreach material at the parade and introduced parade watchers with NYRCR. This event was successful in achieving the Committee's goal in reaching a broader audience than had been attending the meetings to date.

Public Engagement Event #3 featured the Proposed Projects in an open-house setting; community members filtered in-and-out of the event, engaged with the material in lively discussion with fellow community members at their own leisure, and shared their opinions on the feedback boards. Upon entering the Public Engagement Event, each Community member was given fake money in \$1 million bills adding up to \$21.3 million, representing the CDBG-DR funding set aside to fund eligible projects identified by the Rockaway West NYRCR Plan. After reviewing the project boards, Community members were invited to "vote with their dollars" on Proposed Projects at the voting table, which prompted lively debate over how to spend the allocations. Several members of the public came back more than once over the weekend to further review project boards and cast their final votes. The total allocation per Proposed Project was tallied and shared at the next Planning Committee meeting to inform deliberations and final voting on the Proposed Projects.

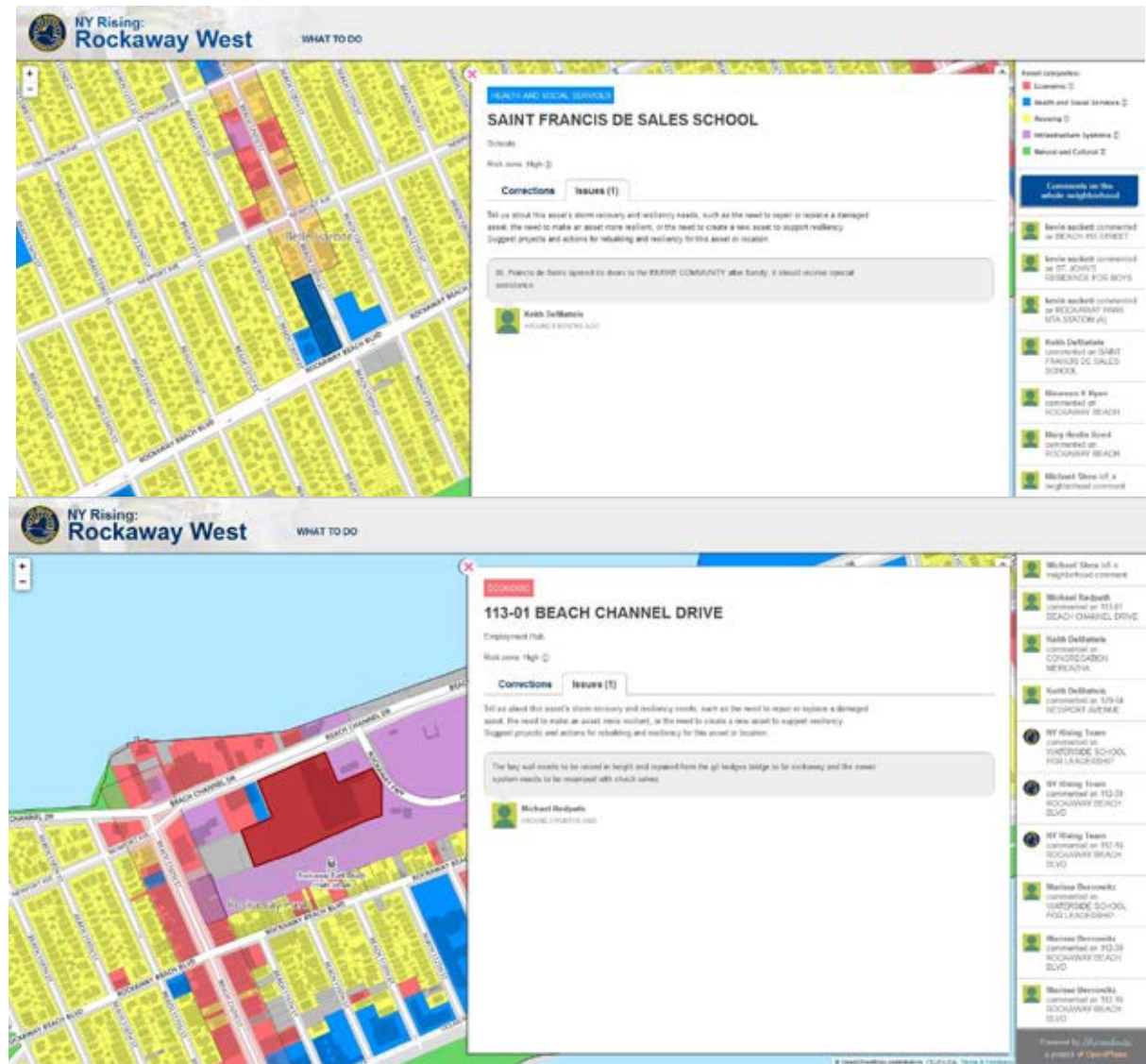
Public Engagement Event #4 (April 2014 or TBD)

Presentation of Final Plan; Announcement of projects

Public Engagement Event #4 will take place by May 2014 and conclude the Public Engagement Event series. At the Public Engagement Event, the Planning Committee will present the Proposed Projects and the NYRCR Plan to the public.

Public Engagement Event outreach

The Planning Committee spearheaded outreach for Public Engagement meetings. Planning Committee members leveraged community distribution channels to distribute emails and printed material – palm cards, flyers, and storefront posters – with Public Engagement meeting information. Distribution channels included Community Boards, local businesses, community centers and organizations, local elected officials, and word-of-mouth. The Planning Committee also selected local publications for online and print advertisement campaigns. In addition, the printed outreach materials for Public Meeting #1 and #2 were translated into Spanish, Polish, and Russian.



Online engagement and social media outreach

The NYRCR website, located at www.stormrecover.ny.gov/nyrcr, served as a valuable public resource. The Rockaway West NYRCR page is located at <http://stormRecovery.ny.gov/nyrcr/community/rockaway-west> and featured announcements, meeting dates and locations, and materials produced by the Planning Committee throughout the process. The NYRCR website also directed visitors to the NYRCR Facebook page (located at <https://www.facebook.com/NYStormRecovery>) and Twitter account (@NYStormRecovery). Communities were also able to submit comments through the NYRCR website and by emailing info@stormRecovery.ny.gov.

A customized interactive online public engagement was generated for the Community through an online Interactive Community Map located at <http://nyrisingmap.org/>. The Community Map allowed users to confirm specific physical and cultural assets significant to Rockaway West, identify Recovery and resiliency needs, and suggest rebuilding and resiliency initiatives. The Planning Committee distributed flyers and conducted outreach to promote the Interactive Community Map. Public comments on

the map were summarized and presented to the Planning Committee and utilized as an additional feedback metric.

D. Community asset inventory

The list of Rockaway West assets assessed using the NY Rising Risk Assessment Tool below includes the priority assets identified by the Rockaway West Planning Committee as located within the extreme and high-risk zones. Moderate risk assets were not included in the assessment, with the exception of the Marine Parkway-Gil Hodges Bridge. All of the assets identified were categorized as having high community value.

Table V.3: Risk assessment tool
Meaning of Risk Scores

Severe (>70)	
High (24-53)	
Moderate (6-23)	
Residual (<6)	

Asset Information							Landscape Attributes							Risk Assessment			
Asset	Risk Area	Asset Class	Asset Sub-category	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion	Waterline	Shore Defenses	Protective Vegetation	Dunes	Barrier Island or Filled Wetland	Landscape Attribute Score ("Yes" = +0.5)	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
108TH STREET RETAIL CORRIDOR	High	Economic	Downtown Center	Yes	No	High	No	No	Yes	Yes	Yes	Yes	2	3	3.00	4	36
116TH STREET RETAIL CORRIDOR	High	Economic	Downtown Center	Yes	No	High	No	No	Yes	Yes	Yes	Yes	2	3	3.00	4	36
129TH STREET RETAIL CORRIDOR	High	Economic	Downtown Center	Yes	No	High	No	No	Yes	Yes	Yes	Yes	2	3	3.00	4	36
BEACH CHANNEL DRIVE RETAIL CORRIDOR (B116-B110)	High	Economic	Downtown Center	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
BEACH CHANNEL DRIVE RETAIL CORRIDOR (B73-B75)	High	Economic	Downtown Center	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
BEACH CHANNEL DRIVE RETAIL CORRIDOR (B92-93)	High	Economic	Downtown Center	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
ROCKAWAY BEACH BLVD RETAIL CORRIDOR	High	Economic	Downtown Center	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
SUPERMARKET-KEY FOODS-105-38 ROCKAWAY BEACH BLVD	High	Economic	Large Business	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
SUPERMARKET-KEY FOODS-87-15 ROCKAWAY BEACH BLVD	High	Economic	Large Business	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
SUPERMARKET-WALDBAUMS	High	Economic	Large Business	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
FDNY ENG 268TH, LAD 137TH	High	Health and Social Services	Emergency Operations / Response	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
NYPD 100ST PRECINCT	High	Health and Social Services	Emergency Operations / Response	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
ROCKAWAY BEACH FIREHOUSE	High	Health and Social Services	Emergency Operations / Response	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
BEACH CHANNEL HIGH SCHOOL	High	Health and Social Services	Schools	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
MARTIN DE PORRES HIGH SCHOOL	High	Health and Social Services	Schools	Yes	No	High	Yes	No	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
PS 183 DR RICHARD R GREEN	High	Health and Social Services	Schools	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32

Meaning of Risk Scores

Severe (>70)	
High (24-53)	
Moderate (6-23)	
Residual (<6)	

Asset Information							Landscape Attributes							Risk Assessment			
Asset	Risk Area	Asset Class	Asset Sub-category	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion	Waterline	Shore Defenses	Protective Vegetation	Dunes	Barrier Island or Filled Wetland	Landscape Attribute Score ("Yes" = +0.5)	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
PS 323 SCHOLARS' ACADEMY	High	Health and Social Services	Schools	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
PS/MS 114 BELLE HARBOR	High	Health and Social Services	Schools	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
SAINT FRANCIS DE SALES SCHOOL	High	Health and Social Services	Schools	Yes	No, Locally Significant	High	Yes	Yes	Yes	Yes	Yes	Yes	3	3	4.00	3	36
6 STORY BUILDINGS (B106 TO B102) - HIGH RISK	High	Housing	Multi-Family Residence	Yes	No	High	Yes	No	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
6 STORY BUILDINGS (B125 TO B116) - HIGH RISK	High	Housing	Multi-Family Residence	Yes	No	High	Yes	No	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
6 STORY BUILDINGS (B90 TO B74) - HIGH RISK	High	Housing	Multi-Family Residence	Yes	No	High	Yes	No	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
PRIVATE HOMES - EXTREME RISK	Extreme	Housing	Multi-Family Residence	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	4.50	4	54
PRIVATE HOMES - HIGH RISK	High	Housing	Multi-Family Residence	Yes	No	High	Yes	No	Yes	Yes	Yes	Yes	2.5	3	3.50	3	32
GAS STATION (100-01 101 STREET)	High	Infrastructure Systems	Liquid Fuels	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
GAS STATION (112-10 BEACH CHANNEL DRIVE)	High	Infrastructure Systems	Liquid Fuels	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
GAS STATION (115-05 BEACH CHANNEL DRIVE)	High	Infrastructure Systems	Liquid Fuels	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
GAS STATION (115-20 BEACH CHANNEL DRIVE)	High	Infrastructure Systems	Liquid Fuels	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
GAS STATION (441 BEACH 129 STREET)	High	Infrastructure Systems	Liquid Fuels	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
BAYWALL	High	Infrastructure Systems	Stormwater	Yes	No	High	No	Yes	No	Yes	Yes	Yes	2	3	3.00	4	36
A TRAIN LINE	High	Infrastructure Systems	Transportation	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	5	53

Meaning of Risk Scores

Severe (>70)	
High (24-53)	
Moderate (6-23)	
Residual (<6)	

Asset Information							Landscape Attributes							Risk Assessment			
Asset	Risk Area	Asset Class	Asset Sub-category	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion	Waterline	Shore Defenses	Protective Vegetation	Dunes	Barrier Island or Filled Wetland	Landscape Attribute Score (*Yes* = +0.5)	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
FERRY LANDING	High	Infrastructure Systems	Transportation	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
GIL HODGES MEMORIAL BRIDGE	Moderate	Infrastructure Systems	Transportation	Yes	No, Locally Significant	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.00	2	18
ROCKAWAY WASTE WATER TREATMENT PLANT	High	Infrastructure Systems	Wastewater	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	3.50	4	42
ROCKAWAY BEACH	Extreme	Natural and Cultural Resources	Parks and Recreation	Yes	No	High	Yes	No	Yes	Yes	Yes	Yes	2.5	3	4.50	3	41
ROCKAWAY BOARDWALK	High	Natural and Cultural Resources	Parks and Recreation	Yes	No, Locally Significant	High	Yes	No	Yes	Yes	Yes	Yes	2.5	3	3.50	5	53

The following tables contain the complete list of assets for Rockaway West, with additions from the Planning Committee and public.

Table V.4: Complete asset inventory

Economic Assets:

Asset Name	Asset Subcategory	Address
108TH STREET RETAIL CORRIDOR	Downtown Center	
116TH STREET RETAIL CORRIDOR	Downtown Center	
129TH STREET RETAIL CORRIDOR	Downtown Center	
ROCKAWAY BEACH BOULEVARD CORRIDOR	Downtown Center	
BEACH CHANNEL DRIVE RETAIL CORRIDOR (116th BEACH-110th BEACH)	Downtown Center	
BEACH CHANNEL DRIVE RETAIL CORRIDOR (74th BEACH-75th BEACH)	Downtown Center	
BEACH CHANNEL DRIVE RETAIL CORRIDOR (92nd BEACH-93rd BEACH)	Downtown Center	

Housing Assets:

Asset Name	Asset Subcategory	Address
ALL PRIVATE HOMES	Housing	
HOUSING 6+ STORY BUILDINGS	Housing	

Natural & Cultural Assets:

Asset Name	Asset Subcategory	Address
BEACH 88 STREET PARK (FUTURE)	Parks and Recreation	BEACH 88 ST & BCH CHANNEL DR
DOG PARK	Parks and Recreation	BCH 80 ST & BCH CHANNEL DR
DOUGHBOY MONUMENT	Parks and Recreation	BCH 94 ST & RKWY BCH BLVD
FLIGHT 587 MEMORIAL	Parks and Recreation	BCH 116 ST & OCEAN PROMENADE
GWIRTZMAN TRIANGLE	Parks and Recreation	BEACH 144 ST & CRONSTON AVE
JAMAICA Bay	Waterbodies	
PATRICIA A BRACKLEY PARK	Parks and Recreation	BEACH 124 ST & CRONSTON AVE
ROCKAWAY BEACH	Parks and Recreation	
ROCKAWAY BOARDWALK	Parks and Recreation	
TRIBUTE PARK	Parks and Recreation	BEACH CHANNEL DRIVE
VERNAM BARBADOES PENINSULA	Parks and Recreation	AMSTEL BOULEVARD
VETERANS MEMORIAL CIRCLE	Parks and Recreation	120/121 ST & RCKWY BCH BLVD

Infrastructure Assets:

Asset Name	Asset Subcategory	Address
EAST RIVER PETROLEUM	Liquid Fuels	112-01 BEACH CHANNEL DRIVE
GAS STATION	Liquid Fuels	100-01 101 STREET
GAS STATION	Liquid Fuels	112-10 BEACH CHANNEL DRIVE
GAS STATION	Liquid Fuels	115-05 BEACH CHANNEL DRIVE
GAS STATION	Liquid Fuels	115-20 BEACH CHANNEL DRIVE
GAS STATION	Liquid Fuels	441 BEACH 129 STREET
LIPA	Power Supply	BEACH CHANNEL DRIVE
LIPA TRANSFER STATION	Power Supply	67 ROCKAWAY BEACH BLVD
MARKETSPAN GAS CORPORATION	Power Supply	108-03 BEACH CHANNEL DRIVE
BayWALL	Stormwater	BEACH CHANNEL DRIVE
NY TELEPHONE CO	Telecommunications	80-18 ROCKAWAY BEACH BOULE
A TRAIN LINE	Transportation	BEACH 96 STREET
BEACH 90 STREET MTA SUBWAY STATION	Transportation	BEACH 90 STREET
BEACH 98 STREET MTA SUBWAY STATION	Transportation	BEACH 98 STREET
BEACH 105 STREET MTA SUBWAY STATION	Transportation	BEACH 105 STREET
ROCKAWAY PARK - BEACH 116 ST MTA SUBWAY STATION	Transportation	BEACH 116 STREET
CROSS Bay VETERANS MEMORIAL BRIDGE	Transportation	
FERRY LANDING	Transportation	BEACH 108 & BEACH CHANNEL DR
GIL HODGES BRIDGE	Transportation	
ROCKAWAY BEACH	Parks and Recreation	
ROCKAWAY BOARDWALK	Parks and Recreation	
ROCKAWAY WASTE WATER TREATMENT PLANT	Wastewater	BEACH CHANNEL DRIVE

Health & Social Services Assets:

Asset Name	Asset Subcategory	Address
ARVERNE PILGRIM CHURCH	Community Centers	74-16 BEACH CHANNEL DRIVE
BELLE HARBOR YACHT CLUB	Community Centers	533 BEACH CHANNEL DRIVE
JERUSALEM TRUE BAPTIST CHURCH	Community Centers	216-20 BEACH 87 STREET
KNIGHTS OFCOLUMBUS 2672	Community Centers	3-35 BEACH 90 STREET
YMCA (FUTURE)	Community Centers	207 BEACH 73 STREET
BELLE HARBOR JEWISH CENTER	Cultural or Religious Establishments	134-03 ROCKAWAY BEACH BLVD
BETHEL AME CHURCH	Cultural or Religious Establishments	2-15 BEACH 77 STREET
COMMUNITY CHURCH OF GOD	Cultural or Religious Establishments	3-51 BEACH 74 STREET
COMMUNITY MIKVAH/B.H.	Cultural or Religious Establishments	505A BEACH 129 STREET
CONGREGATION BAIS Y/B	Cultural or Religious Establishments	2-29 BEACH 137 STREET
CONGREGATION MERCAZHA	Cultural or Religious Establishments	124-01 ROCKAWAY BEACH BLVD
FIRST CONGREGATIONAL CHURCH - ROCKAWAY BEACH	Cultural or Religious Establishments	320 BEACH 94 STREET
HAVEN MINISTRIES	Cultural or Religious Establishments	1-88 BEACH 84 STREET
NAKASH FAMILY FOUNDATION	Cultural or Religious Establishments	138-05 ROCKAWAY BEACH BLVD
NEW HOPE BAPTIST CHURCH	Cultural or Religious Establishments	219 BEACH 86 STREET
SAINT ROSE OF LIMA SCHOOL	Cultural or Religious Establishments	1-31 BEACH 84 STREET
ST CAMILLUS CHURCH & SCHOOL	Cultural or Religious Establishments	99-13 100 STREET
ST FRANCIS DE SALES CHURCH	Cultural or Religious Establishments	216 BEACH 130 STREET
ST FRANCIS DE SALES RECTORY	Cultural or Religious Establishments	218 BEACH 129 STREET
ST JOHN BAPTIST CHURCH	Cultural or Religious Establishments	74-05 ROCKAWAY BEACH BLVD
TEMPLE BETH EL	Cultural or Religious Establishments	464 BEACH 136 STREET
TEMPLE BETH EL ROCKAWAY	Cultural or Religious Establishments	201 BEACH 121 STREET
GLORIA'S MANOR	Daycare and Eldercare	143 BEACH 118 STREET
NEW PARK INN HOME FOR ADULTS	Daycare and Eldercare	115-02 OCEAN PROMENADE
OCEAN PROMENADE NURSING CENTER	Daycare and Eldercare	112-12 OCEAN PROMENADE
PARK NURSING HOME	Daycare and Eldercare	114-02 OCEAN PROMENADE
PROMENADE REHABILITATION AND HEATH CARE CENTER	Daycare and Eldercare	140 BEACH 114 STREET
SURFSIDE MANOR HOME FOR ADULTS	Daycare and Eldercare	95-02 ROCKAWAY BEACH BLVD
FDNY ENG 268TH, LAD 137TH	Emergency Operations / Response	2-59 BEACH 116 STREET
NYPD 100ST PRECINCT	Emergency Operations / Response	92-20 DE SOTA ROAD

Asset Name	Asset Subcategory	Address
ROCKAWAY BEACH FIREHOUSE	Emergency Operations / Response	92-20 RCKWY BEACH BLVD
USPS ROCKAWAY BEACH	Government and Administrative Services	90-14 ROCKAWAY BEACH BLVD
USPS ROCKAWAY PARK	Government and Administrative Services	113-25 BEACH CHANNEL DRIVE
MEDICAL CENTER (FUTURE, FORMERLY OLD COURTHOUSES)	Health care Facilities	90-01 BEACH CHANNEL DRIVE
PENINSULA QUEENS PUBLIC LIBRARY	Libraries	92-25 ROCKAWAY BEACH BLVD
SEASIDE QUEENS PUBLIC LIBRARY	Libraries	116-17 ROCKAWAY BEACH BLVD
BEACH CHANNEL HIGH SCHOOL	Schools	100-00 BEACH CHANNEL DRIVE
BOARD OF EDUCATION (FORMERLY TEMPLE SCHOOL)	Schools	445 BEACH 135 STREET
MARTIN DE PORRES HIGH SCHOOL	Schools	140 BEACH 112 STREET
MERCAZ HATORAH OF BELLE HARBOR	Schools	505 BEACH 129 STREET
PS 183 DR RICHARD R GREEN	Schools	245 BEACH CHANNEL DRIVE
PS 323 SCHOLARS' ACADEMY	Schools	320 BEACH CHANNEL DRIVE
PS/MS 114 BELLE HARBOR	Schools	134-19 CRONSTON AVENUE
SAINT FRANCIS DE SALES SCHOOL	Schools	237 BEACH 129 STREET
ST. JOHN'S RESIDENCE & SCHOOL FOR BOYS	Schools	110-06 BEACH 110 STREET
WATERSIDE SCHOOL FOR LEADERSHIP	Schools	190 110 BEACH STREET
WEST END TEMPLE NURSERY SCHOOL	Schools	147-02 NEWPORT AVENUE
BELLE HARBOR MANOR	Supportive Housing	209 BEACH 125 STREET
SERVICES FOR THE UNDERSERVED	Supportive Housing	318 BEACH 85 STREET

E. Related projects and programs

The projects and recommendations proposed by the Planning Committees were analyzed within the context of existing federal, regional, city, and local studies and projects. Relevant efforts include studies, campaigns, projects, funding programs, and plans that are both directly related to resiliency and emergency preparedness and those that impact community planning in Breezy Point/Roxbury, Rockaway West, and Rockaway Est. By understanding the wide range of efforts already underway in the Community, the Planning Committees developed recommendations that build-off of existing efforts, fill gaps, and avoid redundancies.

The below table of studies, plans, and projects represent a selection of the key efforts that were considered during the NYRCR process as well as a few critical regional or citywide programs that are particularly relevant to resiliency, planning, and community development. Given the interdependencies between the three Rockaway Peninsula Planning Areas, particularly in the areas of coastal protection, economic development, and transportation/emergency access and evacuation, the key reports are summarized for the three Rockaway Peninsula Planning Areas together in this Appendix.

Table V.5: Existing plans, studies, and projects: Emergency preparedness and capacity building

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Precedent: Disaster preparedness model development	Red Hook Coalition; Good Shepard Services	The Red Hook Coalition is developing a long-term community recovery and emergency preparedness plan that will be a NYC Office of Emergency Management recognized document. This document will identify necessary mitigation, select projects to be undertaken, assign champions, and develop strategies to implement the plan. Supplementing this planning effort, the Red Hook Coalition will help coordinate a teen Community Emergency Response Team (CERT) training program that will engage youth in disaster preparedness.	X		X		

Table V.5: Existing plans, studies, and projects: Emergency preparedness and capacity building

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Precedent: Red Hook WiFi	The Digital Stewards, Red Hook Initiative (RHI)	A community-wide WiFi network was developed by the Red Hook Initiative involving neighbors and volunteers. Well over 18 wireless routers have been installed at businesses and non-profits, extending the coverage to all of the main corridors in Red Hook. This program is now being elevated as an example for both disaster response and access expansion regionally and nationally.	X				X
2014 NYC Hazard Mitigation Plan (HMP)	New York City Office of Emergency (OEM); NYC Department of City Planning (DCP)	The HMP identifies the City's risk to a range of hazards and identified strategies to reduce the effects of these hazards. Strategies outlined in the report influence all neighborhoods of New York City, including across the Rockaways.	X				

Table V.6: Existing plans, studies, and projects: Coastal Protection

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
Hazard Mitigation Grant Program	Federal Emergency Management Agency	FEMA's Hazard Mitigation Grant Program (HMGP) provides funds to support a variety of types of projects that will reduce or eliminate losses from future disasters. Projects must provide a long-term solution and a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. In New York, the HMGP program is administered by New York State. The Breezy Point/Roxbury Community is under consideration for a substantial grant to implement coastal protection measures on the ocean and bay sides of the Community.		X	X		X	X

Table V.6: Existing plans, studies, and projects: Coastal Protection

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
Hurricane Sandy Coastal Resiliency Competitive Grants Program	Department of the Interior	The Hurricane Sandy Coastal Resiliency Competitive Grants Program, funded by the Department of the Interior (DOI) and administered by the National Fish and Wildlife Foundation (NFWF), will award more than \$100 million in grants throughout the region affected by Hurricane Sandy to projects that assess, restore, enhance or create wetlands, beaches and other natural systems to better protect communities, as well as fish and wildlife species and habitats, from the impacts of future storms and naturally occurring events. The Breezy Point/Roxbury Community has partnered with Gateway National Recreation Area to apply for a DOI/NFWF grant to undertake actions to restore the Cove and Breezy Point Tip. The growing acceptance of these types of restoration/resiliency approaches also influenced the development of coastal protection measures in Rockaway West and Rockaway East.					X	X
Targeted Bulkhead Repair/Raising Program	NYC Economic Development Corporation (EDC)	The SIRR Report recommended a city-wide bulkhead raising program targeted to low-lying neighborhoods at risk of regular tidal flooding on the bayside of the Rockaway Peninsula, Broad Channel, Howard Beach, among other locations. This program will work in conjunction with a new citywide waterfront inspections program. NYC EDC is the implementation agency. Beach Channel Drive is already undergoing bulkhead repair under this program. The program could be a source of funding for bulkhead repair in Arverne in Rockaway East.					X	

Table V.7: Existing plans, studies, and projects: Miscellaneous community planning, public realm, open space, and waterfront planning efforts

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
SIRR Report	Special Initiative for Rebuilding and Resiliency	Special Initiative for Rebuilding and Resiliency. On June 11, 2013, former Mayor Michael Bloomberg announced the release of A Stronger, More Resilient New York (SIRR Report), forming New York City's plan for rebuilding post Sandy and ensuring resiliency into the future. The plan contains actionable recommendations both for rebuilding communities in the City affected by the storm and for increasing the resiliency of buildings and infrastructure citywide. All NYRCR Communities within the city have and will need to continue to coordinate with ongoing City initiatives. More broadly, the SIRR Report lays out numerous city-wide initiatives to improve resiliency for systems, including coastal protection, buildings, insurance, utilities, liquid fuels, healthcare, transportation, parks, water and wastewater, and other critical networks.	X	X	X	X	X	X
NYC Building and Zoning Code Revisions	NYC Building Resiliency Task Force	Ongoing and potential future updates to the building and zoning code are particularly relevant to NYRCR communities in the Rockaways. New York City's Building Resiliency Task Force identified 33 recommendations to the City Council. Many of these recommendations are still in various states of review, and 16 initiatives have been passed. In addition, the New York City Department of City Planning's Flood Resilience Zoning Text Amendment was approved by City Council on October 9, 2013. The amendment removed obstacles to homes that are rebuilding in the flood zone, allowing homes to build to the new standards.				X	X	

Table V.7: Existing plans, studies, and projects: Miscellaneous community planning, public realm, open space, and waterfront planning efforts

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
Dredged Materials & Climate Change Pilot Project: Technology, Applications and Demonstration Project - Phase 1	PANYNJ and Nautilus	The Port Authority of New York & New Jersey (PANYNJ) is exploring the beneficial reuse of dredged materials in ways that are environmentally sustainable and can improve coastal resiliency through the Dredged Materials & Climate Change Pilot Project. During the first phase, the pilot is aimed at 1) analyzing state-of-the-art technologies for the reuse of dredged materials, 2) evaluating a range of possible applications that could help address climate change, and 3) proposing a future demonstration project on southwest Brooklyn's waterfront. The findings could provide additional coastal protection options for low-lying South Queens neighborhoods.					X	X
Special Initiative for Rebuilding and Resiliency (SIRR) Analysis - Environmental Justice Alliance	Sandy Regional Assembly, Environmental Justice Alliance (NYC-EJA)	Report analyzes proposals made by the SIRR Report and provides supplemental recommendations aimed at addressing environmental justice and social justice issues. Proposals relevant to Red Hook include providing funding for the Red Hook Significant Maritime Industrial Area (SMIA), expediting the remediation of the Gowanus Canal, and establishing a Community Resilience Center.	X	X	X	X	X	X
DDC Capital Project at Brooklyn Public Library	NYC Department of Design and Construction (NYCDDC) and Brooklyn Public Library	Red Hook Library boiler to be replaced after sustaining considerable damage in Superstorm Sandy			X		X	

Table V.7: Existing plans, studies, and projects: Miscellaneous community planning, public realm, open space, and waterfront planning efforts

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
NYC DCP's Resilient Neighborhoods Initiative	New York City Department of City Planning (DCP)	NYC DCP's Resilient Neighborhoods Initiative is a series of neighborhood planning studies in support of disaster recovery. Working closely with communities, NYC DCP will develop locally specific strategies to address recovery needs, increase resilience, and support the vitality of neighborhoods in the near and long term. Rockaway West is in the phase I set of neighborhoods to be examined under this initiative, which is just getting underway in spring 2014. Rockaway East is in a Phase II set of neighborhoods to be examined under this initiative; however, Phase II has not yet been funded. The NY Rising projects recommended by the Committees, especially those around Beach 108 th Street and Mott Avenue, will be an important part of a larger neighborhood resiliency approach.	X	X				

Table V.8: Existing plans, studies, and projects: Housing

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Weathering the Storm: Rebuilding a More Resilient New York City Housing Authority Post-Sandy	The Alliance for a Just Rebuilding; ALIGN; Community Development Project at the Urban Justice Center; Community Voices Heard; Faith in New York; Families United for Racial and Economic Equality; Good Old Lower East Side; Red Hook Initiative; New York Communities for Change	This report assesses how NYCHA residents living in storm-affected zones are faring after Superstorm Sandy and proposes solutions for how NYCHA and the City can address the issues exposed by Sandy. For this research, participating community groups surveyed public housing residents living in NYCHA buildings in Red Hook, Coney Island, Lower East Side, Far Rockaway, and Gowanus. The report includes research findings and recommendations.				X	
NYC Recovery: Build it Back Program	NYC Recovery	The City's "Build It Back" program seeks to assist homeowners, landlords, and tenants whose homes were damaged by the storm. The NYC Recovery Program is also offering business loans and grants to small business owners whose businesses were damaged by the storm. Most of these recovery programs support resiliency investments and will help improve individual homes and businesses in the communities surrounding Jamaica Bay.				X	

Table V.8: Existing plans, studies, and projects: Housing

			Recovery Support Functions					
Precedent: Sandy Design Help Desk	Fifth Avenue Committee (FAC); Enterprise Community Partners; Architecture for Humanity; New York City Housing Recovery Office (HRO)	A weekend workshop, staffed by volunteer architects, provided pro-bono assistance to Red Hook homeowners/building owners addressing questions about resiliency upgrades and repairs. The workshop was able to assist 12 property owners and highlighted the key challenges that homeowners are facing in repair/resiliency work.				X		
Precedent: Gowanus Houses tenant disaster training program	Fifth Avenue Committee (FAC); Families United for Racial and Economic Equality (FUREE)	The disaster preparedness project will engage and train tenants in Gowanus Houses on climate change, disaster planning and recovery; create a community hub; and develop a disaster preparedness plan and training program for volunteers to respond in disasters	X			X		
FAR ROC Design Competition	NYC Housing Preservation & Development (HPD)	FAR ROC [For a Resilient Rockaway] is a two-phase design competition that will explore innovative strategies for the planning, design and construction of a resilient and sustainable development at Arverne East, an 80+ acre site on the Rockaway Peninsula. The Competition received 117 unique design proposals from over 20 countries around the globe. Competitions winners were announced in October 2013. The winning proposal, "Small Means & Great Ends," incorporates a series of small, affordable, and smart interventions that center on three strategies: reduce and control damage; provide access in the event of a storm; and ensure quick recovery. The design aims not only to better weather future natural disasters, but also to create a stronger socio-economic environment—moving beyond resilience and becoming 'antifragile', where both the design and community benefit and improve after enduring stress.				X		
Best practices for disaster response in supportive housing report	Supportive Housing Network of NY	Research and report on best practices in disaster response plans to supportive housing providers and government partners; clarify government agency roles and protocols as they apply to supportive housing during disasters	X			X		
White paper on reducing regulatory barriers for MF retrofit	Furman Center for Real Estate and Urban Policy	Identify promising retrofit strategies for three common affordable, multi-family housing building types; Prepare and publicize three case studies and engineering analysis and a white paper on findings and recommendations to reduce regulatory barriers				X		
Physical Needs Assessment (PNA) model development with resiliency considerations	NYC Energy Efficiency Corporation	Incorporation of additional resiliency and energy saving analysis into Physical Needs Assessment (PNA), Develop a model for PNA reports that includes energy efficiency and resiliency	X			X		

Table V.9: Existing plans, studies, and projects: Economic development & economic opportunity

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Neighborhood Game-Changer Investment Competition	New York City Economic Development Corporation (EDC)	NYCEDC launched a \$90,000,000 competition for development of “game-changing” projects that will enhance the vitality, connectivity, and economic strength of areas impacted by Superstorm Sandy including South Queens.		X			
NYC Recovery: Business Resiliency Investment Program (BRIP)	New York City Economic Development Corporation (EDC)	The Business Resiliency Investment Program (BRIP) is a \$110 million CDBG-DR-funded program that will provide funds to both business tenants and owners to make improvements that enhance resiliency to severe weather-related events. It will focus on funding a portion of the incremental costs of one or more “Approved Resiliency Measures” through grants and loans; the program focuses on funding resiliency improvements and not repairs.		X			
New York City Regional Economic Development Council’s Five-Year Strategy	New York City Regional Economic Development Council	This plan is a comprehensive economic strategy to address and promote poverty prevention/job training, government fiscal responsibility and infrastructure investment, and balanced investment among all of New York City’s businesses. The Council outlines four key objectives to address these principles: improve quality of life, create a pro-growth, pro-jobs environment, invest in the future, and foster innovation and inter-regional cooperation. Specific approaches such as supporting small businesses and neighborhood revitalization align with the goals of NYRCR.		X			

Table V.10: Existing plans, studies, and projects: Transportation

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
2010 Comprehensive Citywide Ferry Study	NYC Economic Development Corporation (EDC)	This study provided an overview of development potential for passenger ferry transportation throughout New York City. The planning study analyzed and prioritized potential routes drawn from a group of over forty waterfront sites in the five boroughs. As discussed in the study, enhanced ferry service in Red Hook could provide multiple local and regional benefits, including increased access to a variety of destinations in Red Hook, as well as substantial reductions in commuting time to Manhattan, which could further increase the neighborhood's attractiveness.					X
2013 Comprehensive Citywide Ferry Study	NYC Economic Development Corporation (EDC)	Given the success of the East River Ferry's first two years of service and dramatic development changes on New York City's waterfront, NYC EDC is developing an updated and expanded Citywide Ferry Study that builds on the recommendations first identified in the 2010 Comprehensive Ferry Study. A preliminary report was published in late 2013 as a precursor to the Final Report that is anticipated for release in 2014. The preliminary report's findings on economic impacts and potential value capture strategies have relevance for NY Rising communities considering bolstering ferry service. The report found that residential property values near East River ferry stops in Brooklyn and Queens increased 8% over comparable property values further from the stops; similarly areas near ferry stops realized almost 5% more residential and commercial building space development than areas farther from ferry stops. The report found that ferry routes serving more distant locations provide accessibility benefits but generate higher operating costs requiring greater funding support if they are to maintain fares similar to other transit modes.					X

Table V.10: Existing plans, studies, and projects: Transportation

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Ferry Policy and Planning in New York City: Considerations for a Five-Borough Ferry System	NYC EDC	In conjunction with the Citywide Ferry Study update, this paper provides a preliminary road map for expansion to a five-borough ferry system, building on lessons learned and defining best practices.					X
New York-New Jersey-Connecticut Hurricane Sandy Follow-up and Transportation Vulnerability Assessment and Adaptation Analysis Project	FHWA; New York, New Jersey and Connecticut Departments of Transportation; North Jersey Transportation Planning Authority (NJTPA); New York Metropolitan Transportation Council (NYMTC); South Western Regional Planning Agency (SWRPA); Greater Bridgeport Regional Council (GBRC)	This research project, initiated by Federal Highway Administration (FHWA), will examine the impacts on the transportation system from Hurricanes Sandy and Irene and Tropical Storm Lee and identify strategies to protect select transportation assets from the impacts of extreme weather and climate change.					X

Table V.10: Existing plans, studies, and projects: Transportation

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Metropolitan Transportation Authority (MTA) Capital Needs Assessment 2015-2034	Metropolitan Transportation Authority (MTA)	The 20-year capital needs assessment establishes the planning context prior to the development of five-year capital programs for the MTA. As discussed in the document, MTA's goal is to maintain a transportation system that is resilient to future natural hazards and the impacts of possible climate change.					X
MTA Rockaway Crossings Master Plan	Metropolitan Transportation Authority (MTA)	MTA Triborough Bridge and Tunnel Authority (TBTA) is conducting a study to assess and develop engineering alternatives for potential replacement or reconstruction scenarios for the Rockaway Crossings – the Gil Hodges Memorial Bridge and Cross Bay Bridge. The study will develop a Long Term Rockaway Crossing Facility Master Plan, outlining future capital expenditures the Authority should allocate as part of its capital Program.					X
New York Metropolitan Transportation Council (NYMTC) Plan 2040 Regional Transportation Plan (RTP)	New York Metropolitan Transportation Council (NYMTC)	Adopted in September 2013, this plan includes the NYMTC members' vision for the planning area and lays out the long-range framework for maintaining and improving the region's transportation system. One of seven "shared goals" of the NYMTC members is to improve the resiliency of the regional transportation system. As discussed in the document, NYMTC's members will continue to plan for improving the resiliency of the transportation system so that the system can better resist disruptions to services and facilities and recover from them when they occur.					X

Table V.10: Existing plans, studies, and projects: Transportation

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Woodhaven/Cross Bay Boulevards Select Bus Service (SBS) Study	New York City Department of Transportation (NYC DOT) MTA/NYCTransit	NYC DOT and MTA/NYC Transit are studying the Woodhaven/Cross Bay Boulevards for conversion of the existing Limited-Stop Q52/53 bus routes to Select Bus Service (SBS) to make existing bus service substantially faster and more reliable, while maintaining needed traffic flow and parking, and also making the corridor safer for all users. These routes extend from Rockaway Park and Arverne in the Rockaways to Woodside and Rego Park in central Queens; therefore, the study and potential improvements will include not just Woodhaven and Cross Bay Boulevards, but also streets to the north and south including Broadway, Roosevelt Avenue, and Rockaway Beach Boulevard. The Woodhaven/Cross Bay Boulevards corridor was first identified as a preferred location for Select Bus Service improvements in 2009, which led to short-term safety improvements. Long-term recommendations include roadway capital improvements and the implementation of Select Bus Service. This study is just getting under way and the first public workshop will be held on April 24, 2014.					X

Table V.10: Existing plans, studies, and projects: Transportation

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
Remediation of Rockaway Park Former Manufactured Gas Plant Site	NYS DEC and National Grid	The Rockaway Park Former Manufactured Gas Plant (MGP) site sits on a large block at the northwest corner of Beach Channel Drive and Beach 108th Street. From the late 1870s until 1958, gas for cooking, lighting, heating, and commercial purposes was manufactured at the site. Evidence of by-products that resulted from the manufacturing process were found at the site, and required clean-up and remediation to contain contaminants from further spreading in subsurface soil or groundwater. Remediation measures on the site included excavation of soil to eight feet below grade, installing migration barriers, developing recovery wells, and capping the site, among other activities. Remediation measures were completed on the site itself in 2012, before Superstorm Sandy hit. The site was used for staging for Sandy recovery activities, and a portion of the site is currently used for parking for the Rockaway Ferry. Off-site remediation activities are still being defined, but will include complete remediation in the city-owned bulkhead area across Beach Channel Drive; the resulting landscaped open space is included in the NYC DPR Rockaway Parks Conceptual Plan as the Beach 108th Esplanade.		X				X
Assorted DDC Capital Projects and NYC DOT 10 Year Capital Plan Projects	NYC Department of Design and Construction (DDC); NYC Department of Environmental Protection (DEP); NYC Department of Transportation (DOT)	Assorted capital transportation projects planned, underway, or recently completed include: <ul style="list-style-type: none"> – Reconstruction of Columbia Street, Phase II/BED768B/SEK002321 (HWK700B) – Reconstruction of Columbia Street/BED768 (HWK700A) – Brooklyn Waterfront Greenway: Sunset Park Connector (HWK1048D) – Retaining wall - Hamilton Avenue westbound (RWK017) - east of Smith Street – Retrofit/upgrade of asphalt plant at Hamilton Avenue (HWKF2007) – Hamilton Avenue/Gowanus Canal (BIN 2-24023) 					X	X

Table V.11: Existing plans, studies, and projects: Drainage & energy

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
NYC Wastewater Resiliency Plan: Climate Risk Assessment and Adaptation Study	NYC Department of Environmental Protection (DEP)	Building upon previous studies, this climate risk assessment and adaptation study sets forth cost-effective strategies for reducing flooding damage to wastewater infrastructure and safeguarding public health and the environment. This comprehensive study examined buildings and infrastructure at DEP's 96 pumping stations and 14 wastewater treatment plants, identifying and prioritizing infrastructure that is most at risk of flood damage. The plan identified \$15.1 million in resiliency upgrades for Rockaway WWTP, which occupies a superblock along Beach Channel Drive between Beach 108th and Beach 104th streets. Given the damage experienced in Superstorm Sandy and the expense to make the WWTP resilient, the plan notes that NYC DEP is evaluating alternatives for the WWTP, including conversion to a pumping station. Changing the function of the WWTP is a long-term effort, but could greatly benefit plans the Committee has identified for economic resiliency along Beach 108th Street and Beach Channel Drive. The plan also made recommendations for resilience measures at the Bayswater and Seagirt Pumping Stations in Rockaway East.					X	

Table V.11: Existing plans, studies, and projects: Drainage & energy

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
Green Infrastructure Program	NYC DEP	<p>In many parts of New York City, both stormwater and household wastewater flow into a common system, called a combined sewer. In heavy rain events, the system becomes overwhelmed and a mix of excess stormwater and untreated wastewater discharges directly into the City's waterways at combined sewer outfalls.</p> <p>NYC DEP's Green Infrastructure Program was created to address water quality impacts that result from combined sewer overflow events. Under this program, NYC DEP and its partner agencies design, construct and maintain a variety of sustainable green infrastructure practices such as green roofs, rain gardens, and Right-of-way Bioswales on City-owned property such as streets, sidewalks, schools, and public housing. The program also provides grants for green infrastructure projects on private property.</p> <p>The Rockaway Peninsula is served by separated stormwater sewers (or by no stormwater system at all in places, simply surface drainage), so the area is not eligible for the NYC DEP Green Infrastructure Program projects or grants. However, the program's structure, standard designs, and its emphasis on funding maintenance provide guidance and resources for developing a successful bioswales program.</p>					X	X
DDC Capital Projects	NYC Department of Design and Construction (DDC); NYC Department of Environmental Protection (DEP)	Assorted repairs and rehabilitation of intercepting sewers is being undertaken.					X	

Table V.12: Existing plans, studies, and projects: Natural resources & open space

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure
NYC DCP New York City Comprehensive Waterfront Plan—Vision 2020	NYC DCP	A comprehensive analysis and overall vision for New York City's 520 miles of shoreline. It includes a strategic framework for the City's waterfront, short- and long-term strategies, and is used to guide land and water use decisions. Priorities in the plan focus on expanding public access, supporting the working waterfront, improving water quality, restoring the ecology of the waterfront, enhancing the Blue Network (the waterways between the five boroughs), and increasing the resiliency of the City in respect to climate change and sea-level rise.					X
NYC DCP New York City Waterfront Revitalization Program	NYC DCP	The New York City Waterfront Revitalization Program (WRP) is the city's principal coastal management tool, and implements the CWP. It establishes the City's policies for development and use of the waterfront, and provides the framework for evaluating the consistency of all discretionary actions in the coastal area. When a proposed project is located in the City's designated waterfront area, and it requires a local, state, or federal discretionary action, a determination of the project's consistency with the policies and intent of the WRP must be made before the project can move forward.		X			X
NYC DCP Designing for Flood Risk	NYC DCP	Designing for Flood Risk identifies key principles to guide the design of new buildings in flood zones so that construction will be more resilient to the effects of climate change and coastal flood events. Recognizing the distinct character and needs of higher-density urban environments, the report provides recommendations for how regulations and individual project design can incorporate these principles. The study informed the Department of City Planning's Flood Resilience Zoning text amendment adopted by City Council in 2013.		X			X

Table V.12: Existing plans, studies, and projects: Natural resources & open space

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
NYC DCP Urban Waterfront Adaptive Strategies	NYC DCP	The Urban Waterfront Adaptive Strategies (UWAS) report, prepared by the New York City Department of City Planning, provides a systematic assessment of the coastal flood hazards from climate change and sea-level rise that face New York City. The UWAS lays out a risk-based, flexible process for identifying, evaluating and implementing potential coastal protection strategies. It recognizes that waterfronts vary, and may require a range of strategies at different scales. The report also identifies a range of potential adaptive strategies, and analyzes each for their ability to protect waterfront communities. The UWAS strategies informed the development of coastal protection measures for all Rockaway Peninsula Planning Areas.					
Rockaway Public Beach	USACE	This is a two-phase project to re-nourish Rockaway Beach back to its original design profile. The first phase was completed in August 2013 and added more than 500,000 cubic yards of sand to the most eroded portion of Rockaway Beach, between Beach 149 th Street and Beach 89 th Street. Phase 2 will add another 3,000,000 cubic yards of sand between Beach 149 th Street and Beach 19 th Street, to be completed by August 2014. New York City has requested that the re-nourished dune meet the 100-year flood elevation.					X

Table V.12: Existing plans, studies, and projects: Natural resources & open space

			Recovery Support Functions					
Plan/Project Name	Lead Organization(s)	Initiative Description	Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
WAVES Action Agenda & Brooklyn Waterfront Greenway Plan	NYC Mayor's Office	<p>The Waterfront Action Agenda is the three year implementation component of Vision 2020: New York City Comprehensive Waterfront Plan. The WAVES Action Agenda recommends initiatives throughout the City to transform the City's waterfront. Among the recommendations for the Rockaway Peninsula are the following:</p> <ul style="list-style-type: none">Constructing new recreational amenities and landscaping at Rockaway Beach ParkContinuing development of the Edgemere Urban Renewal Area, adding an additional 434 homes, 5.5 acres of parkland, 4 acres of restored wetlands, and infrastructure and pedestrian improvements to the existing 307 housing-unit development.Transforming the vacant lot at the Beach 80th Street Marina into a public waterfront esplanadeCompleting construction of next phase of Arverne by the Sea: the Dunes, a 270 two-family home development, and a new YMCA recreation centerStudying the feasibility of planting 3,000 eelgrass plants at Breezy Point Tip				X	X	X

Table V.12: Existing plans, studies, and projects: Natural resources & open space

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Science and Resilience Institute at Jamaica Bay (SRI@JB)	Brooklyn College, City of New York, National Park Service	<p>The Science and Resilience Institute at Jamaica Bay (SRI@JB) is a new top-tier science and resilience center hosted by Brooklyn College in New York City. The Institute. is a partnership among academic institutions, government agencies, nongovernmental organizations and community groups. Core partnerships are sustained among the National Park Service, the City of New York, and a Consortium of nine research institutions. The Institute advances understanding of how the Jamaica Bay system responds to disturbance and shares this information to facilitate efforts to promote greater resilience in New York City and around the world through the following core activities:</p> <p>Conducts research to understand the temporal nature and robustness of the resilience of Jamaica Bay, New York Harbor, Hudson Raritan Estuary and Gateway National Recreation Area</p> <p>Develop models for studying the fundamental nature of resilient systems, and</p> <p>Determine how best to manage ecosystems to ensure resilience and sustainability;</p> <p>Provides technical assistance and guidance to the institute's governmental partners, including the National Park Service, New York City Parks and the New York City Department of Environmental Protection; and</p> <p>Serves as a center for education and the dissemination of knowledge about processes that affect resilience and contribute to the changes in the urban ecosystem.</p> <p>Further information on the institute, which is still ramping up operations, can be found at http://www.srijb.org.</p>	X		X		X X

Table V.12: Existing plans, studies, and projects: Natural resources & open space

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions				
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure Natural & Cultural Resources
Jamaica Bay Watershed Protection Plan	NYC Department of Environmental Protection (DEP)	Authorized in 2005 and initially published in 2007, the plan is intended to support restoring and maintaining the water quality and ecological integrity of the Bay. A number of ongoing initiatives driven by this plan include wastewater treatment upgrades, green infrastructure and other stormwater management improvements and a variety of ecological improvements and pilot projects. The Plan recommends complete sewer separation for the Rockaways (reflected in the many ongoing sewer projects listed on the City's online project mapper); transfer of lands in Edgemere from NYC Housing Preservation and Development (NYC HPD) to NYC Department of Parks and Recreation (NYC DPR); increased access to Jamaica Bay through implementation of a Rockaway Gateway Greenway; and the acquisition of additional lands for the Seagirt Avenue wetlands restoration project. While Breezy Point does not participate in the City wastewater or stormwater systems, understanding the City's evolving approaches to water management could influence future decisions.					X
Gateway National Recreation Area General Management Plan	National Park Service (NPS)	The majority of the undeveloped land in and around the bay is part of Gateway National Recreation Area, one of the nation's few urban national parks, encompassing 26,607 acres across Brooklyn, Queens, Staten Island, and New Jersey. Given this large presence, NPS will be an important player in resiliency efforts in the Bay. The park is currently updating its General Management Plan (GMP), which has been prepared over the last four years and will guide future management of the park. The final GMP and Environmental Impact Statement will be released in Spring 2014.					X

Table V.12: Existing plans, studies, and projects: Natural resources & open space

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
Hudson Raritan Estuary (HRE) Comprehensive Restoration Plan (CRP)	U.S. Army Corps of Engineers (USACE); Port Authority of New York and New Jersey (PANYNJ)	Adopted in 2009, the USACE and Port Authority of New York/New Jersey developed the HRE-CRP in collaboration with Federal, State, municipal, and non-governmental organizations as well as other regional stakeholders. The plan sets forth a consensus vision, master plan, and strategy for future ecosystem restoration in the New York/New Jersey Harbor. In Jamaica Bay, the plan identified 50 potential restoration sites. Several of these sites are located on the Rockaway Peninsula: Breezy Point Tip and The Cove (near the Breezy Point/Roxbury planning area); Vernam/Barbadoes and Rockaway Reef, in the Rockaway West vicinity; and several locations in Rockaway East, including Brant Point, Dubos Point, and Bayswater State Park, Somerville Basin, Conch Basin, Mott Basin, Seagirt Avenue Wetlands, and Arverne Urban Renewal Area. The identified sites and the proposed ecological restoration measures influenced Committee coastal protection project development.					X	X
Jamaica Bay, Marine Park, and Plumb Beach New York Ecosystem Restoration Feasibility Study	U.S. Army Corps of Engineers (USACE); NYC Department of Environmental Protection (DEP)	The study is a joint undertaking of the USACE and the New York City Department of Environmental Protection (NYC DEP) initiated following Superstorm Sandy and is intended to provide an expedited limited reevaluation of USACE restoration projects in the bay to address post-Sandy changes. The interim draft report identified eight priority restoration sites (550 acres) from the HRE-CRP recommendations; three of them (Brant Point, Dubos Point, and Bayswater State Park) are in Rockaway East. The feasibility study will look at Marsh Island Restoration Projects being undertaken under the USACE's Continuing Authorities Program. The study shows the growing acceptance of ecological restoration as a potential resiliency measure, which informed development of coastal protection measures. This study may be combined with the Rockaway Reformulation Study's Phase 2.					X	X

Table V.12: Existing plans, studies, and projects: Natural resources & open space

Plan/Project Name	Lead Organization(s)	Initiative Description	Recovery Support Functions					
			Community Planning & Capacity Building	Economic Development	Health & Social Services	Housing	Infrastructure	Natural & Cultural Resources
East Rockaway Inlet to Rockaway Inlet (Rockaway Reformulation Study)	U.S. Army Corps of Engineers (USACE)	<p>This study is often referred to as the Rockaway Reformulation Study. The project was authorized by the Flood Control Act in 1965 and modified by the Water Resource Development Act (WRDA) of 1974. When funded, USACE designed, constructed, and maintained the project from 1977 until 2004 under additional appropriations and WRDA authorizations. Because of the high cost of continually replenishing the eroding shoreline, the Corps was directed in 2003 to “reformulate” the original plan so that a long term, cost-effective solution to the effects of continued erosion on the Rockaway Peninsula could be identified. Funding for the reformulation was not appropriated for several years, but by 2011, the USACE had identified alternatives. Superstorm Sandy led to need to revise these alternatives. The Sandy Appropriations Act authorized funding for the reformulation study and reconstruction/re-nourishment of the previously completed ocean beach portions of the project. Phase 1, for which the draft reformulation report is scheduled to be ready by late Spring 2014, looks at beach nourishment and additional erosion control and/or storm damage risk reduction measures on the ocean side of the Rockaway Peninsula. Phase 2, for which the draft reformulation report is expected in November 2015, will investigate flooding on the Jamaica Bay side of the peninsula and evaluate potential coastal storm risk management measures, including nature-based alternatives.</p> <p>Projects that are recommended by the reformulation phases will require further cooperative teaming agreements and funding appropriations. It is under the reformulation study that coastal protection measures proposed by NYRCR Communities around the bay might be considered by the USACE.</p>					X	X

F. Endnotes

1. Five of the 102 localities in the program—Niagara, Herkimer, Oneida, Madison, and Montgomery Counties—are not funded through the CDBG-DR program.
2. The following allocations comprise the NYRCR Community’s total allocation: Belle Harbor - \$10.4 million; Neponsit - \$3.7 million; and Rockaway Park and Rockaway Beach - \$7.2 million (which is a portion of the original \$16.8 million “Rockaway” allocation).
3. Esri. Census 2010 Summary Profile: Rockaway West. Washington: US Census Bureau, 21 Dec 2010. Microsoft Excel file.
4. Esri. Census 2010 Summary Profile: Rockaway West. Washington: US Census Bureau, 21 Dec 2010. Microsoft Excel file.
5. Esri. Census 2010 Market Profile: Rockaway West. Washington: US Census Bureau, 21 Dec 2010. Microsoft Excel file.
6. “America’s Most Crowded Beaches: No. 17 Rockaway Beach, NY,” Travel and Leisure, July 2012. Web. 3 Mar 2014.
7. “Hurricane Sandy.” NOAA National Weather Service. NOAA National Weather Service. n.d. Web. 23 Mar 2014.
8. New York City. Special Initiative for Rebuilding and Resiliency. A stronger, More Resilient New York. 11 June 2013, Web. 3 Mar 2014.
9. Esri. American Community Survey 2005-2009 Housing Summary: Rockaway West. Washington: US Census Bureau, 14 Dec 2010. Microsoft Excel file.
10. Esri. American Community Survey 2005-2009 Housing Summary: Rockaway West. Washington: US Census Bureau, 14 Dec 2010. Microsoft Excel file.
11. Hammes Company. Statewide Planning and Research Cooperative System: Inpatient Admissions. Albany: New York State Department of Health. 2011.
12. Hammes Company. Statewide Planning and Research Cooperative System: Inpatient Admissions. Albany: New York State Department of Health. 2011.
13. Hammes Company. Statewide Planning and Research Cooperative System: Inpatient Admissions. Albany: New York State Department of Health. 2011.
14. (1) Construction costs have been provided by VJ Associates, a construction cost consulting firm. To provide cost estimates that account for the preliminary level of design work that has been conducted, conservative markups were included. As a percentage of estimated hard costs these include: general requirement (10%), general contractor overhead and profit (21%), design contingency (25%), soft cost allowance (30%), and 3% annual escalation. (2) Certain components of building hardening costs were provided by Dewberry, an architecture and engineering firm. (3) All construction job estimates are based on local construction cost and construction wage data, as well as standard industry assumptions of labor as a percentage of total hard costs. Data source is Bureau of Labor Statistics, Quarterly Census of Employment and Wages 2012.
15. Hammes Company. Statewide Planning and Research Cooperative System: Inpatient Admissions. Albany: New York State Department of Health. 2011.
16. New York City. New York City Economic Development Corporation. 2013 Citywide Comprehensive Ferry Study, Preliminary Report. n.d. Web. 17 Feb 2014.
17. Ira Boudway. “How Bike Sharing Would Have Helped New York After Sandy.” Bloomberg Businessweek. Businessweek, 2 Nov 2012. Web. 3 Mar 2014.

G. Glossary

(ADA) Americans with Disabilities Act

A law enacted by U.S. Congress that prohibits discrimination against people with disabilities in employment, transportation, public accommodation, communications, and government activities.

(BFE) Base Flood Elevation

The computed elevation resulting from floodwater that has a 1% chance of equaling or exceeding that level in a given year.

(BRIP) New York City's Business Resiliency Investment Program

A \$110 million CDBG-DR-funded program that will be implemented by New York City Economic Development Corporation (NYCEDC) and will provide funds to both business tenants and building owners to make improvements that enhance resiliency to severe weather-related events.

(CEQR) New York City Environmental Quality Review

A State Environmental Quality Review Act (SEQR) mandated process by which City agencies

determine the effect, if any, the approval of a discretionary action of the City may have on the environment.

(CBO) Community-Based Organization

A not-for-profit organization that operates within a local community.

(CDBG-DR) Community Development Block Grant-Disaster Recovery

Federal grants administered by the U.S. Department of Housing and Urban Development (HUD) and allocated to cities, counties and States to facilitate rebuilding and Recovery of disaster areas as designated by the President of the United States.

(CERT) Community Emergency Response Team

An organization composed of volunteers trained and tasked to provide supplementary emergency care during a major disaster.

(CON) Certificate of Need

A review process, mandated by State law, for any proposed construction, renovation, expansion or

acquisition of a health care facility.

(CRP) Comprehensive Restoration Plan

A master plan developed among stakeholders to facilitate ecosystem restoration within a defined area.

(CUNY) City University of New York

The public university system of New York City.

(DHSES) Division of Homeland Security and Emergency Services

New York State governmental agency responsible for coordination and support of counter terrorism, emergency management, fire prevention and control, and interoperable and emergency communications.

(FDNY) Fire Department of City of New York

The New York City governmental agency responsible for providing first responders to fires, public safety and emergency situations, disasters, and terrorist acts.

(FEMA) Federal Emergency Management Agency

An agency within the U.S. Department of Homeland Security responsible for the coordination of the response to a state of emergency declared disaster.

(FGI) Facility Guidelines Institute

A not-for-profit corporation that provides oversight during a facility review process.

(FIRMs) Flood Insurance Rate Maps

The official map of a community used by FEMA to delineate a community's base flood elevations, flood zones, and floodplain boundaries.

(GMP) General Management Plan

A plan developed and implemented by National Park Service (NPS) concerning the preservation, protection, and management of a national park.

(HRE) Hudson Raritan Estuary

An estuary within the boundaries of New York State and New Jersey State that includes Jamaica Bay, Lower Bay, Arthur Kill, Kill Van Kull, Newark Bay, Hackensack River and Passaic River, Lower Hudson River, Harlem River, East River, Western Long Island Sound, and Upper Bay.

(HRE-CRP) Hudson Raritan Estuary Comprehensive Restoration Plan

A plan developed in 2009 by USACE and Port Authority of New York/New Jersey that established a vision, master plan, and strategy for future ecosystem restoration in the New York/New Jersey Harbor.

(HUD) United States Department of Housing and Urban Development

The U.S. Federal government executive department responsible for executing federal policies on housing and metropolises.

(HMGP) Hazard Mitigation Grant Program

A FEMA administered program that provides grants to local and State governments to encourage long-term hazard mitigation measures after the declaration of a major disaster.

(JBRWG) Jamaica Bay Regional Working Group

A collection of representatives from the NYRCR communities closest to Jamaica Bay tasked with reviewing the NYRCR Final Plan.

(LIPA) Long Island Power Authority

A municipal subdivision of the State of New York

that operates a retail electric system on Long Island and provides service to customers in Nassau and Suffolk counties and the Rockaway Peninsula in Queens.

(MGP) Rockaway Park Manufactured Gas Plant

A manufactured gas plant that operated from the late 1870's to 1958, located at Beach Channel Drive and 108th Street in Rockaway, Queens.

(MTA) Metropolitan Transportation Authority

A public benefit corporation responsible for providing public transportation in 12 counties in southeastern New York and two counties in southwestern Connecticut.

(NFIP) National Flood Insurance Program

A FEMA-run program that provides government-sponsored flood insurance to homeowners, renters and business owners.

(NPS) National Park Service

The U.S. Federal government executive department responsible for the management of U.S. national parks, American national monuments, and historical properties.

(NDRF) National Disaster Recovery Framework

A guide provided by FEMA that provides a flexible, recovery-support, structure for disaster-impacted areas.

(NOAA) National Oceanic and Atmospheric Administration

A scientific agency within the U.S. Department of Commerce responsible for monitoring the condition of the environment, including the oceans and the atmosphere.

(NYC DCP) New York City Department of City Planning

The New York City governmental agency responsible for the strategic development of the City's physical and socioeconomic planning.

(NYC DEP) New York City Department of Environmental Protection

The New York City governmental agency responsible for providing the City's water supply, managing the City's wastewater system, and regulating the City's environment, including air quality, hazardous waste, and quality of life issues.

(NYC DOB) New York City Department of Buildings

The New York City governmental agency responsible for the enforcement of building codes and zoning regulations, the issuance of building permits, and the inspection of new and existing building.

(NYC DOHMH) New York City Department of Health and Mental Hygiene

The New York City governmental agency responsible for public health, including the issuance of birth certificates and dog licenses and the enforcement of restaurant code.

(NYC DOT) New York City Department of Transportation

The New York City governmental agency responsible for the management of the City's transportation infrastructure.

(NYC DPR) New York City Department of Parks and Recreation

The New York City governmental agency responsible for the management of City parks, monuments, and historic house museums, the preservation of the City's ecological diversity, and the provider of recreational and athletic facilities and programs.

(NYC OEM) New York City Office of Emergency Management

The New York City governmental agency responsible for preparation, coordination and education of emergency response and Recovery.

(NYC REDC) New York City Regional Economic Development Council

One of 10 regional councils, created by Governor Andrew M. Cuomo, tasked with developing long-term strategic plans for economic growth in New York City.

(NYCEDC) New York City Economic Development Corporation

The City's official economic development organization charged with leveraging the City's assets to promote economic growth.

(NYCHA) New York City Housing Authority

A public authority responsible for administering public housing for low- and moderate-income residents in New York City.

(NYMTC) New York Metropolitan Transportation Council

A federally mandated metropolitan planning organization representing New York City, Long

Island, and lower Hudson Valley.

(NYRCR) NY Rising Community Reconstruction

A program established by Governor Andrew M. Cuomo to provide additional rebuilding and revitalization assistance to communities damaged by Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee.

(NYS DEC) New York State Department of Environmental Conservation

The New York State governmental agency responsible for the conservation, improvement, and protection of natural resources, the management of State owned lands, and the regulation of environmental laws and regulations.

(NYS DOS) New York State Department of State

The New York State governmental agency responsible for strategic investment in the revitalization and economic growth of regions.

(PSE&G) PUBLIC SERVICE ELECTRIC AND GAS COMPANY

A New Jersey based utility company that provides service to nearly three quarters of New Jersey's population with additional customers in

Nassau and Suffolk counties and the Rockaway Peninsula of Queens.

(RFEI) Request for Expressions of Interest

A process, by which, an agency or business outlines a potential procurement of services and accepts parties of interest from which future partnerships can be created.

(RFP) Request for Proposals

A bidding process, by which, an agency or business outlines a procurement of services and accepts solicitations from potential suppliers.

(ROW) Right-of-way

A strip of land granted or reserved for public purposes.

(SEQR) New York State Environmental Quality Review

A mandated process by which the sponsoring or approving governmental body determines and mitigates the effect, if any, the approval of a discretionary action of a government entity may have on the environment.

(SIRR Report) A Stronger, More Resilient New York

A comprehensive City plan commissioned by former Mayor Michael Bloomberg detailing actionable recommendations for the rebuilding and increased resiliency of communities and infrastructure impacted by Superstorm Sandy.

(STOA) Statewide Mass Transportation Operating Assistance

Allocation of statewide funds by the New York State Department of Transportation (NYS DOT) to transit operators.

(USACE) United States Army Corps of Engineers

The U.S. Federal agency under the Department of Defense composed of civilian and military personnel and responsible for providing public and military engineering services.

(WRDA) Water Resource Development Act

A law enacted by U.S. Congress in 1974 concerning the scope of authority for reservoir projects.

(WWTP) Wastewater Treatment Plant

A facility designed to remove biological or chemical waste products from water.



NY Rising
Community Reconstruction Program

